Journal of Criminal Justice 97 (2025) 102357

Contents lists available at ScienceDirect

Journal of Criminal Justice

journal homepage: www.elsevier.com/locate/jcrimjus

Exploring mental health profiles of male youth detained in forensic settings: Implications for research and clinical practice

Diana Ribeiro da Silva [a,*], Nina Lindberg [b], Carlo Garofalo [c]

[a] University of Coimbra, Center for Research in Neuropsychology and Cognitive Behavioral Intervention, Faculty of Psychology and Educational Sciences of the University of Coimbra, Coimbra, Portugal
[b] University of Helsinki and Helsinki University Hospital, Department of Psychiatry, Helsinki, Finland
[c] Department of Philosophy, Social Sciences, and Education, University of Perugia, Perugia, Italy

ARTICLE INFO

Keywords:
Antisocial behavior
Emotion regulation difficulties
Fears of compassion
Latent profile analysis
Psychopathic traits
Psychopathology
Shame

ABSTRACT

Youth detained in forensic settings display a high prevalence rate of mental health disorders, mostly Conduct Disorder (CD), usually in comorbidity with other psychopathologies. However, few studies explored whether there are different mental health profiles of these youth. This exploratory study aims to answer two research questions: What mental health profiles exist in youth detained in forensic settings? What are the underlying patterns across and within profiles? A Latent Profile Analysis based on the number of CD criteria and number of comorbid disorders was performed in a sample of 119 male youth detained in Portuguese juvenile detention facilities. Significant mean differences on variables of interest (e.g., sociodemographic/legal/criminal/clinical) across profiles were also tested. Results found two profiles, a severe mentally disturbed profile (moderate/severe type of CD and moderate comorbidity rates) and a highly severe mentally disturbed profile (severe type of CD and high comorbidity rates), which also differ on variables of interest. Findings shed light on the potential heterogeneity of these youth considering their mental health patterns, giving also clues on complexities across and within profiles. This study reinforces the need for accurate assessments and personalized treatment approaches for the specific intervention needs of these youth.

1. Introduction

Youth with a severe pattern of antisocial behavior, namely those facing juvenile detention, display a high prevalence rate of mental health disorders, mostly Conduct Disorder (CD), usually in comorbidity with other psychopathologies (Abram et al., 2015; Abram, Teplin, McClelland, & Dulcan, 2003; Beaudry, Yu, Långström, & Fazel, 2020; Borschmann et al., 2020; Fairchild et al., 2019; Livanou, Furtado, Winsper, Silvester, & Singh, 2019; Rijo et al., 2016; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). However, if CD tends to be a rather non-specific marker of psychopathology in detained youth, the co-occurrence of CD with other forms of psychopathology may differentiate them. Yet, there is a scarcity of research focused on exploring the mental health heterogeneity of detained youth, namely, whether there are different profiles considering the number of CD criteria and the number of comorbid diagnoses. The study of the potential mental health heterogeneity among this population is crucial not only to demask and map the underlying patterns of different profiles, but also to personalize psychotherapeutic interventions, increasing therefore their suitability and efficacy.

It is estimated that around 6 to 18 % of youth are sentenced in Juvenile Justice Systems (JJS) across the world for displaying a severe pattern of antisocial behavior (e.g., aggression, robbery, homicide; American Psychiatry Association/APA, 2013; World Health Organization/WHO, 2022). The presence of a persistent pattern of antisocial behavior in adolescence is more frequent in male youth and it is usually linked with a CD diagnosis, highly prevalent in youth involved in JJS, which is not surprising as most diagnostic criteria for CD are also considered criminal acts (Fairchild et al., 2019). In fact, research across the globe consistently shows that youth involved in JJS, mostly those detained in forensic settings, present high prevalence rates of mental health disorders (Beaudry et al., 2020; Borschmann et al., 2020; Livanou et al., 2019; Rijo et al., 2016). Although CD is usually the primary diagnosis for most of these youth, other comorbid mental health

* Corresponding author at: Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), Faculty of Psychology and Educational Sciences, University of Coimbra, Rua do Colégio Novo, 3001-802 Coimbra, Portugal.
E-mail address: diana.rs@fpce.uc.pt (D. Ribeiro da Silva).

https://doi.org/10.1016/j.jcrimjus.2025.102357
Received 25 September 2024; Received in revised form 23 January 2025; Accepted 23 January 2025

disorders tend to be present, mostly Oppositional Defiant Disorder (ODD) and Substance-Related Disorders, but also Attention-Deficit Hyperactivity Disorder/ADHD as well as Anxiety and Depressive Disorders (Fairchild et al., 2019; Rijo et al., 2016). Three recent and robust systematic reviews/meta-analysis corroborate this knowledge, claiming for the urgent need to assess and treat the mental health intervention needs of this population during detention (Beaudry et al., 2020; Borschmann et al., 2020; Livanou et al., 2019).

Although of most interest, prevalence studies do not consider the potential mental health heterogeneity of youth detained in forensic settings and do not inform how mental health functioning may differ across and within distinct groups of these youth (Ribeiro da Silva, 2023). Increasing research has been interested in studying the manifestations of symptoms/disorders on a person-by-person basis (i.e., how those vary within individuals) using robust and accurate person-centered methods, such as Latent Profile Analysis (LPA; Muthén, 2001). LPA is used to classify individuals from a heterogeneous population into smaller, more homogeneous subgroups based on individuals' scores on continuous variables (Bauer & Curran, 2003; McLachlan & Peel, 2004; Muthén, 2001; Vermunt & Magidson, 2002). An increasing body of studies is using LPA to classify youth with antisocial behavior based on several criminogenic and clinical indicators (e.g., deviant personality traits, criminal recidivism risk, substance use, psychopathological symptoms; Hilterman, Vermunt, Nicholls, Bongers, & van Nieuwenhuizen, 2019; Ribeiro da Silva, Rijo, & Salekin, 2019a; Vaughn, Freedenthal, Jenson, & Howard, 2007; Wojciechowski, 2021). However, to our knowledge there are no studies exploring whether there are distinct mental health profiles of these youth considering the number of CD criteria and the number of comorbid diagnoses. This represents an important gap because identifying relatively homogeneous sub-groups of youth based on constellations of mental health disorders can save resources facilitating early allocation of youth to specialized treatments.

Besides considering the number of CD criteria as well as the number of comorbid diagnoses to establish profiles, it is also crucial to characterize those profiles on relevant sociodemographic, legal, criminal, and clinical indicators, such as the presence of specific mental health disorders. Among clinical indicators, psychopathic traits (i.e., constellation of grandiose-manipulative/GM; callous-unemotional/CU, and impulsive-irresponsible/II or daring-impulsive/DI traits) should also be considered as this set of traits are linked with the most early, severe, and stable forms of antisocial behavior (Colins, Andershed, Salekin, & Fanti, 2018; Geerlings, Asscher, Stams, & Assink, 2020; Lansing, Plante, Beck, & Ellenberg, 2018; Raine, 2019; Ribeiro da Silva, Rijo, & Salekin, 2019a; Salekin, Andershed, & Clark, 2018). Although psychopathic traits may overlap with some CD criteria, this set of traits can provide further information on the relational, affective, and behavioral patterns of youth that is not addressed in this diagnosis (Fairchild et al., 2019). Recent research has also been pointing out the relevance of shame (i.e., pervasive feelings of being inferior and unvaluable; Gilbert, 2019) and emotion regulation difficulties as transdiagnostic markers of psychopathology and behavioral disturbances, particularly among forensic populations (Franco-O'Byrne et al., 2021; Garofalo, Neumann, & Velotti, 2018; Garofalo et al., 2020b, b; Ribeiro da Silva, Rijo, & Salekin, 2015; Ribeiro da Silva, Vagos, & Rijo, 2019b). Finally, compassion-related variables should also be considered, as compassion (motivation to be sensitive to the suffering of the self/others, allied with the desire to prevent/alleviate that suffering; Gilbert, 2019) seems to be feared among these youth in result of their harsh rearing environments (Branson, Baetz, Horwitz, & Hoagwood, 2017; Dávila Gómez, Dávila Pino, & Dávila Pino, 2020; Grady, Levenson, & Bolder, 2017; Hill, Barnett, Ward, Morton, & Schmidt, 2023; Lansing et al., 2018; Malvaso et al., 2022; Ribeiro da Silva & Rijo, 2022; Rijo et al., 2022; Zelechoski et al., 2021). Harsh rearing environments tend to lead these youth to perceive the world and others as hostile, shameful, and unpredictable, accentuating evolutionary survival strategies of aggression and competition as well as fears of giving compassion to others, in receiving compassion from others, and to be self-compassionate (Dávila Gómez et al., 2020; Gilbert, 2019; Glenn, 2019; Ribeiro da Silva et al., 2015; Ribeiro da Silva & Rijo, 2022; Rijo et al., 2022). Despite this general knowledge, how distinct mental health profiles are characterized in terms of psychopathic traits, shame, emotion regulation, and compassion represent an unexplored area of research with potential clinical implications.

2. Current study

This is an exploratory study that aims to answer two specific research questions: 1) What mental health profiles exist in youth detained in forensic settings? 2) What are the underlying patterns across and within profiles? The first research question will establish mental health profiles of youth detained in forensic settings considering the number of CD criteria and the number of comorbid diagnoses assessed with a semi-structured clinical interview. The second research question will characterize and compare emerging profiles on variables of interest, namely: sociodemographic (e.g., age, socioeconomic status/SES), legal (e.g., previous contact with the Child Protection System), criminal (e.g., previous contact with JJS), and clinical (i.e., presence of specific mental health disorders and its specifiers as well as levels of psychopathic traits, shame, emotion regulation difficulties, and fears of compassion). Considering the novelty of this study, we refrain from formulating hypothesis regarding the emergence of specific mental health profiles. However, considering the continuous nature of the variables of interest as well as previous LPA studies reporting on severity-based profile solutions among detained youth (e.g., Ribeiro da Silva, Rijo, & Salekin, 2019a; Vaughn et al., 2007), we expect at least two mental health profiles, one with a more severe pattern of mental health disorders than the other. Regarding the second research question, and in line with previous person- and variable-centered studies, we expect that the more severe profile is the most impaired in legal, criminal, and clinical indicators (Dávila Gómez et al., 2020; Franco-O'Byrne et al., 2021; Garofalo et al., 2020b, b; Geerlings et al., 2020; Hill et al., 2023; Malvaso et al., 2022; Raine, 2019; Ribeiro da Silva et al., 2015; Ribeiro da Silva, Rijo, & Salekin, 2019a; Ribeiro da Silva, Vagos, & Rijo, 2019b; Rijo et al., 2022; Zelechoski et al., 2021).

3. Method

3.1. Participants

Participants were 119 male youth, detained in Portuguese juvenile detention facilities, aged between 14 and 18 years old ($M = 15.80$; $SD = 1.07$). Participants had completed an average of 5.80 years of education ($SD = 1.22$). Most participants had a low SES ($n = 112$; 94.1 %), 5 youth (4.2 %) had a medium SES and 2 (1.7 %) a high SES. Most participants were Portuguese ($n = 104$; 87.4 %), remaining others had other nationalities, but they were all fluent in Portuguese. Most participants have had previous contacts with Child Protection System (95 %) and with the JJS (75.6 %). Participants had an average current detention length of 18.55 months ($SD = 5.59$).

3.2. Measures

Participants were assessed individually with a clinical interview and with a set of self-report measures. Sociodemographic, legal, and criminal data of participants were collected from JJS record files.

3.2.1. Mental health disorders

The Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010; Portuguese version by Rijo et al., 2016) is a semi-structured clinical interview that assesses DSM (APA, 2013) disorders in children/adolescents. The MINI-KID is organized into diagnostic sections, each starting with screening questions for

each specific disorder. Additional questions within each disorder section are asked only if the screen questions are positively answered. MINI-KID considers DSM criteria A, the impairment and frequency of the symptoms, and rules out medical/organic/drug causes for disorders, being considered a brief and precise measurement tool to diagnose mental health disorders (e.g., Mood, Anxiety, Substance-related, ADHD, Disruptive disorders). For the current study, we considered the number of criteria met for CD and the number of comorbidities (including the CD diagnosis) to establish profiles. To characterize and compare profiles we also considered: the specifier for CD onset; the presence of ODD; the specifier for ODD severity; and the presence of Mood, Anxiety, Alcohol/Substance Use, and ADHD disorders (we considered these diagnoses as they were prevalent in at least 5 % of the sample).

3.2.2. Psychopathic traits

Psychopathic traits were assessed with the Youth Psychopathic Traits Inventory-Short (YPIS; Van Baardewijk et al., 2010; Portuguese version by Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015) and the Proposed Specifiers for Conduct Disorders (PSCD; Salekin & Hare, 2016; Portuguese version by Ribeiro da Silva et al., 2021b).

The YPIS is an 18-item self-report version of the original Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), which assesses psychopathic traits in youth considering three different factors, allied with Cooke and Michie (2001) conceptualization: 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"); II (e.g., "I like to do exciting and dangerous things, even if it is forbidden or illegal"). Each item is rated on a four-point scale (1 = Does not apply at all; 4 = Applies very well). In this study, the YPIS total score (YPIS-T) and its factors showed acceptable internal consistency based on alpha (YPIS-*T* = 0.78; GM = 0.70; CU = 0.72; II = 0.66).

The PSCD is a 24-item self-report measure that assesses psychopathic traits in youth considering four distinct factors (Salekin & Hare, 2016), allied with the Hare (2020) conceptualization: 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"); CD (e.g., "I have engaged in physical aggression against animals or people"). Each item is rated on a three-point scale (0 = Not true; 2 = True). In this study, the PSCD total score (PSCD-T) and its factors showed acceptable to good internal consistency based on alpha (PSCD-*T* = 0.84; GM = 0.66; CU = 0.67; DI = 0.64; CD = 0.68).

3.2.3. Shame

The Other as Shamer Scale Brief–Adolescent version (OASB-A; Vagos, Ribeiro da Silva, Brazão, Rijo, & Gilbert, 2016; the adolescent shorter version of the Other as Shamer Scale; Goss, Gilbert, & Allan, 1994) is a unidimensional eight-item self-report scale that assesses shame (e.g., "Other people see me as not good enough"). Items are rated on a five-point scale (0 = Never; 4 = Almost always). In this study, the OASB-A showed an excellent internal consistency ($\alpha = 0.90$).

3.2.4. Emotion dysregulation

The Difficulties in Emotion Regulation Scale—Adolescent Version (DERS-AV; Gratz & Roemer, 2004; Portuguese version by Coutinho, Ribeiro, Ferreirinha, & Dias, 2010) is a 36-item self-report measure that assesses emotion regulation difficulties (e.g., "When I am upset, I become out of control"). Items are rated in a five-point scale (1 = Almost never; 5 = Almost always). Although the scale also presents six defined factors, several studies reported psychometric issues within some factors (Coutinho et al., 2010; Gratz & Roemer, 2004; Moreira, Gouveia, & Canavarro, 2022; Sousa, Linharelhos, Ribeiro da Silva, & Rijo, 2023). For this reason and to maintain parsimony, we only used DERS-AV total score in this study, which showed an excellent internal consistency ($\alpha = 0.92$).

3.2.5. Fears of compassion

Fears of Compassion Scales (FCS; Gilbert, McEwan, Matos, & Rivis, 2011; Portuguese version for adolescents by Duarte, Pinto-Gouveia, & Cunha, 2014) encompass three distinct scales that assess: Fears of Giving Compassion to Others (FCS-G; 10 items; e.g., "People will take advantage of me if they see me as too compassionate"); Fears of Receiving Compassion from Others (FCS-R; 13 items; e.g., "Wanting others to be kind to oneself is a weakness"); Fears of Self-Compassion (FCS-SC; 15 items; e.g., "I find it easier to be critical toward myself rather than compassionate"). Items are rated on a five-point scale (0 = Do not agree at all; 4 = Completely agree). In this study, the three scales showed good to excellent internal consistency based on alpha (FCS-G = 0.84; FCS-*R* = 0.89; FCS-SC = 0.92).

3.3. Procedures

This study used the data of the baseline assessment of a sample that participated in the clinical trial (ClinicalTrials.gov ID: NCT03971682) testing the efficacy of the PSYCHOPATHY.COMP program among youth detained in forensic settings (Ribeiro da Silva et al., 2021a; Rijo et al., 2022). This study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra (31/05/2023; CEDI/FPCEUC:76/13) and by the Portuguese Ministry of Justice. This study followed the ethical principles of the European Code of Conduct for Research Integrity and of the Declaration of Helsinki.

A first meeting with the research team and eligible participants was conducted after the first month of detention, as this is considered an adaptation period. At this meeting, researchers explained the goals of the study, that their participation 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. Participants older than 18 years gave written consent for their own participation; participants younger than 18 years verbally assented to their own participation in addition to their parents/legal guardians' written consent.

Eligible participants were male youth aged between 14 and 18 years old, facing detention in Portuguese juvenile detention facilities (female detained youth were excluded as they represent a small percentage of detained youth in Portugal, and any possible idiosyncrasies from this cohort would be underrepresented; Rijo et al., 2016). Although 153 male detained youth were invited to participate in the study, 3 (2 %) declined to participate and 31 (20.2 %) met exclusion criteria of the abovementioned clinical trial: 17 (11.1 %) would stay in the juvenile detention facility for less than 12 months (timeframe required for the clinical trial), 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. The final sample consisted of 119 youth, who were assessed individually at two time-points by trained researchers, first with the MINI-KID interview (i.e., first assessment session that took 30/90 min) and then with the set of the self-report measures (i.e., second assessment session that took 30/60 min; considering the low literacy rate of most participants, to minimize reading/comprehension issues, researchers assisted youth by reading the items whenever needed). Please note that data is not publicly available as it contains confidential information from these participants, which also represent a vulnerable population.

3.4. Data analysis

Data were analyzed using *SPSS* v29 and *Mplus* v8 (Muthén & Muthén, 2010) statistical software. *SPSS* was used for descriptive and internal consistency calculations (Clark & Watson, 1995). *Mplus* was used to conduct LPA to identify profiles of youth based on their number of criteria for CD and number of comorbid diagnoses. The first stage in LPA was to determine the number of classes with well-defined differentiated

profiles, starting with the specification of a one class model. The number of classes was then subsequently increased until there was no further improvement in the model fit indices (Lubke & Muthén, 2007). We followed Morin (2016) recommendations to avoid Local Likelihood Maxima: increasing the sets of random start values to 3000, increasing the number of iterations to 100, and checking the replicability of best log likelihood value.

The adjustment of the models and the decision about model selection were judged following Ram and Grimm (2009) guidelines. We compared the models using Information Criteria (IC) based on fit statistics: Bayesian Information Criteria (BIC; Schwartz, 1978), Akaike Information Criteria (AIC; Akaike, 1987), and Sample- Size-Adjusted BIC (SSA-BIC; Sclove, 1987). Lower values on those (i.e., of at least 20 points) indicate better model fit (i.e., an optimum trade-off between model parsimony and residuals), with BIC being considered a better fit statistic index than the other IC indices (Nylund, Asparouhov, & Muthén, 2007). Next, we examined Entropy values, which assess the accuracy that models classify individuals into their most likely class. Entropy ranges from 0 to 1, values superior to 0.70 indicate clear classification to predict profile membership (Muthén, 2001). We then tested the statistical significance to determine whether a more complex model (*k*-classes) would fit the data significantly better than a more parsimonious model (*k*–1 classes) by using the Lo-Mendell-Rubin test (LMR; Lo, Mendell, & Rubin, 2001) and the Bootstrap Likelihood Ratio Test (BLRT; McLachlan & Peel, 2004). LMR/BLRT tests provide *p*-values that can be used to determine if there is a statistically significant improvement in fit for the inclusion of one more class. The sample size of profiles was then evaluated, models with a class of <1 % and/or numerically $n < 25$ members should be rejected or rigorously grounded (Bauer & Curran, 2003). Finally, because LPA is a probabilistic approach, we also considered the average probabilities of class membership (Rost, 2006). The more distinct the average latent class probabilities for the most likely class membership are, the more useful and accurate the latent class solution will be (average probabilities $\geq$0.80 indicate a good class solution; Rost, 2006).

After determining the optimal number of profiles, we characterized profiles and tested for significant mean differences between profiles on variables of interest using the auxiliary variable function in *Mplus* (allows for comparisons between profiles while considering participants' partial membership in classes; Asparouhov & Muthén, 2014). We selected the modified Bolck, Croon, & Hagenaars, 2004 method (the BCH method) for continuous variables (i.e., age, years of education, detention length duration, psychopathic traits, shame, emotion regulation difficulties, fears of compassion; Bakk & Vermunt, 2016) and the DCAT method for categorical variables (i.e., SES, previous contact with the Child Protection System/JJS, and presence of specific mental health disorders and its specifiers; Lanza, Tan, & Bray, 2013). BCH and DCAT are the most robust approaches and the recommended methods for examining relationships between profiles on continuous and categorical distal outcomes, respectively (Asparouhov & Muthén, 2014).

4. Results

Table 1 shows the LPA model fit indices. Solutions with latent profiles fit the data better than it did a solution with one latent profile. The IC based fit statistics, along with entropy values, the average probabilities of class membership, and LMR/BLRT tests, indicated that a two-profile solution was the best model for allocating youth to profiles. Although the three-profile model presented a better entropy, BIC decreased less than 20 points compared to the two-profile solution and one profile have 10 youth only (cf. supplementary material for specifications of the three-profile model) (cf. Table 1).

Table 2 reports profile allocation based on maximum posterior probability for the two latent profiles, mean scores on the number of CD criteria and number of comorbid diagnoses as well as average probabilities of profile membership. Considering those mean scores, mental health profiles were labeled as: Severe Psychopathology Profile (SSP; moderate/severe subtype of CD and moderate comorbidity rates) and Highly Severe Psychopathology Profile (HSPP; severe subtype of CD and high comorbidity rates). The HSPP represented more than 60 % of the sample. The average probabilities of class membership were always superior to 0.80 (cf. Table 2).

Table 3 reports the relationships between the two mental health profiles on variables of interest, in addition to overall chi-square tests for comparisons between profiles. There were no differences between profiles on sociodemographic, legal, and criminal variables (cf. Table 3). Regarding clinical variables, results indicate that those with a HSPP presented a higher probability of having a diagnosis of CD with a childhood subtype than those in the SPP. The HSPP profile also presented a higher risk for having an ODD (severe subtype), Substance-Related disorders, and ADHD than the SPP. We found no differences between profiles for Mood and Anxiety Disorders. Regarding differences between profiles on self-report measures, with few exceptions (CU dimension of the YPIS and the GM dimension of the PSCD), the HSPP presented higher levels of psychopathic traits, shame, difficulties in emotion regulation, and fears of compassion than the SPP (cf. Table 3).

Please note that the three-profile solution yielded similar profiles of the two-profile solution (i.e., the SPP and the HSPP) in addition to an Extremely Severe Psychopathological Profile (ESPP; cf. supplementary material).

Table 2
Profile Allocation Based on Maximum Posterior Probability for Two Latent Profiles. Mean scores on the number of CD criteria and number of diagnosis. Average probabilities of profile membership

	N	%	NrCDc	NrDiag	Latent Profile	
					SPP	HSPP
SPP	45	37.8	6.66 (2.21)	2.81 (0.93)	93	
HSPP	74	62.2	11.27 (2.06)	4.20 (1.38)		95

Note: SPP = Severe Psychopathology Profile; HSPP = Highly Severe Psychopathology profile.
NrCDc = Number of Conduct Disorder criteria established with the MINI-KID (Mini-International Neuropsychiatric Interview for Children and Adolescents); NrDiag = number of diagnoses established with the MINI-KID (including CD). Information for NrCDc and NrDiag is presented as M (SD).

Table 1
Model fit of the latent profile analyzes

	Log-likelihood (number of replications)	N° of free parameters	AIC	BIC	SSA-BIC	Entropy	LMR *p*	BLRT *p*
1 Class	−493.253 (100/100)	3	995.348	1006.464	993.818	–	–	–
2 Classes	**−473.486 (100/100)**	**7**	**960.971**	**980.425**	**958.295**	**0.79**	**<0.001**	**<0.001**
3 Classes	−460.313 (100/100)	10	940.625	968.417	936.803	0.84	0.0005	<0.001
4 Classes	−457.127 (85/100)	13	940.254	976.383	935.285	0.81	0.146	0.333

Note: AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SSA-BIC = Sample-Size Adjusted BIC; LMR *p* = *p* value of the Lo-Mendell-Rubin test; BLRT *p* = *p* value of the Bootstrap Likelihood Ratio Test. Optimal model is highlighted in boldface.

Table 3
Relations of the two latent profiles on sociodemographic, legal, criminal, and clinical variables

	SPP* $n = 45$)	HSPP* ($n =$ 74)	$\chi 2$
Age	15.80 (1.21)	15.80 (1.03)	(0.00) $p = .990$
Years of Education	5.98 (1.41)	5.69 (1.20)	(1.14) $p = .285$
SES			(0.06) $p = .972$
Low	0.94 (0.27)	0.94 (0.26)	
Medium	0.04 (0.20)	0.04 (0.26)	
High	0.02 (0.13)	0.01 (0.09)	
Previous contact with the CPS			(2.20) $p = .333$
No	0.08 (0.34)	0.03 (0.18)	
Residential Care Facility	0.36 (0.54)	0.51 (0.52)	
Other	0.55 (0.60)	0.46 (0.77)	
Previous contact with the JJS			(0.33) $p = .564$
No	0.22 (0.47)	0.17 (0.43)	
Yes	0.78 (0.47)	0.83 (0.43)	
Detention Length	17.86 (5,70)	18.98 (6.02)	(0.91) $p = .339$
CD – onset**			(5.88) $p = .015$
Childhood	0.37 (0.60)	0.65 (0.52)	
Adolescent	0.63 (0.60)	0.35 (0.52)	
ODD**			(5.75) $p = .016$
Yes	0.76 (0.47)	0.94 (0.26)	
No	0.24 (0.47)	0.06 (0.26)	
ODD – severity**			(16.21) $p = .001$
NA	0.25 (0.47)	0.06 (0.26)	
Low	0.12 (0.34)	0.01 (0.09)	
Moderate	0.14 (0.40)	0.00 (0.00)	
Severe	0.49 (0.67)	0.93 (0.26)	
Mood Disorders**			(0.27) $p = .605$
Yes	0.04 (0.20)	0.06 (0.26)	
No	0.96 (0.20)	0.94 (0.26)	
Anxiety Disorders**			(2.53) $p = .112$
Yes	0.15 (0.40)	0.29 (0.52)	
No	0.85 (0.40)	0.71 (0.52)	
Alcohol Use Disorder **			(30.64) $p <$ .000
Yes	0.14 (0.40)	0.68 (0.52)	
No	0.86 (0.40)	0.32 (0.52)	
Substance Use Disorder **			(12.98) $p <$ .000
Yes	0.44 (0.67)	0.85 (0.43)	
No	0.56 (0.67)	0.15 (0.43)	
ADHD**			(11.02) $p = .001$
Yes	0.03 (0.20)	0.22 (0.43)	
No	0.97 (0.40)	0.78 (0.43)	
YPIS-T	40.58 (8.05)	47.40 (7.03)	(25.20) $p < .001$
YPIS-GM	13.19 (3.49)	15.24 (3.35)	(9.01) $p = .003$
YPIS-CU	12.14 (3.62)	13.08 (3.10)	(1.86) $p = .173$
YPIS-II	15.25 (2.82)	19.08 (2.92)	(45.64) $p < .001$
PSCD-T	21.31 (8.05)	29.21 (7.31)	(25.92) $p < .001$
PSCD-GM	5.42 (2.22)	6.06 (2.67)	(1.11) $p = .293$
PSCD-CU	2.64 (2.48)	4.02 (2.58)	(7.48) $p = .006$
PSCD-DI	7.19 (2.55)	9.24 (2.49)	(16.47) $p < .001$
PSCD-AS	6.05 (2.68)	9.89 (2.24)	(59.99) $p < .001$
OASB-A	6.34 (7.18)	9.46 (7.05)	(4.75) $p = .029$
DERS-AV	77.71 (20.94)	95.15 (20.90)	(17.41) $p < .001$
FCS-G	16.84 (9.80)	22.96 (10.49)	(9.27) $p = .002$
FCS-R	11.80 (10.00)	19.21 (13.24)	(10.63) $p = .001$
FCS-SC	9.96 (12.35)	15.63 (15.48)	(4.31) $p = .038$

Analyzes were performed with BCH and DCAT methods. SPP = Severe Psychopathology Profile; HSPP = Highly Severe Psychopathology Profile. * Information presented as M (SD). SES = Socioeconomic Status; CPS = Child Protection System; JJS = Juvenile Justice System. ** Assessed with the MINI-KID (Mini-International Neuropsychiatric Interview for Children and Adolescents). ADHD = Attention-Deficit Hyperactivity Disorder; YPIS = Youth Psychopathic Traits Inventory: T = total score; GM = Grandiose-Manipulative; CU = Callous-Unemotional; II = Impulsive-Irresponsible. PSCD = Proposed Specifier for Conduct Disorder: T = total score; GM = Grandiose-Manipulative; CU = Callous-Unemotional; DI = Daring-Impulsive; AS = Antisocial; OASB-A = Other as Shamer Scale Brief–Adolescent version; DERS-AV = Difficulties in Emotion Regulation Scale – Adolescent Version, total score; FCS = Fears of Compassion Scales: G = Fears of Giving Compassion; R = Fears of Receiving Compassion; SC = Fears of Self-Compassion.

5. Discussion

This exploratory study aimed to answer two specific research questions: 1) What mental health profiles exist in youth detained in forensic settings? 2) What are the underlying patterns across and within profiles? To address those, we used LPA to identify profiles of male youth detained in forensic settings based on their number of CD criteria and number of comorbid disorders. We also characterize and compare the mental health profiles on sociodemographic, legal, criminal, and clinical variables of interest.

Regarding the first research question (What mental health profiles exist in youth detained in forensic settings?), considering the guidelines recommended for LPA, the two-profile solution provided a better model fit than a one or a three-profile solution (Akaike, 1987; Lo et al., 2001; McLachlan & Peel, 2004; Muthén, 2001; Nylund et al., 2007; Ram & Grimm, 2009; Rost, 2006; Schwartz, 1978; Sclove, 1987). Those mental health profiles were labeled as Severe Psychopathology Profile (SSP; moderate to severe subtype of CD and moderate comorbidity rates) and Highly Severe Psychopathology Profile (HSPP; severe subtype of CD and high comorbidity rates). Most youth were allocated to the HSPP group, suggesting that highly severe psychopathology represented the norm rather than an exception in our sample, hence attesting to the high level of mental health needs of this population. These findings reinforce previous prevalence studies reporting on the very high prevalence rates of mental health disorders in youth in contact with JJS, particularly those facing detention during adolescence (Abram et al., 2003, 2015; Beaudry et al., 2020; Borschmann et al., 2020; Fairchild et al., 2019; Livanou et al., 2019; Rijo et al., 2016; Teplin et al., 2002).

This study also adds to the current knowledge by suggesting at least two different mental health profiles of youth detained in forensic settings. Although both profiles presented a concerning mental health pattern, most youth present a HSPP, i.e., a highly severe psychopathological pattern. These data reinforce the urgent need to fully assess and treat the mental health intervention needs of these youth (Beaudry et al., 2020; Borschmann et al., 2020; Fairchild et al., 2019; Livanou et al., 2019; Ribeiro da Silva, Rijo, et al., 2021a; Rijo et al., 2022). These profiles differed in the severity of psychopathology across the board, in line with findings that psychopathology tends to manifest in rather a-specific ways and with substantial comorbidity across a large spectra of mental health disorders, especially in adolescence (e.g., McElroy, Belsky, Carragher, Fearon, & Patalay, 2018).

Regarding the second research question (What are the underlying

patterns across and within profiles?), results showed no differences between profiles on sociodemographic variables, i.e., profiles were similar on age, years of education, and SES. Contrary to our predictions (Geerlings et al., 2020; Raine, 2019), there were no differences between profiles on legal and criminal variables, i.e., their previous contacts with both the Child Protection System and the JJS (most youth from both profiles have had previous contacts with these systems) as well as on their current detention length. These results highlight the need to look beyond the socioeconomic, legal, or criminal trajectories of these youth, as these seem to mask their mental health intervention needs, crucial to be addressed in the rehabilitation process. These results are also alarming, as they point to an ineffectiveness of these systems to rehabilitate these youth (Zelechoski et al., 2021). In fact, increasing research is arguing for a paradigm shift in Child Protection Systems and JJS, claiming for trauma-informed and/or mental health-informed approaches to rehabilitate youth with antisocial behavior (Branson et al., 2017; Grady et al., 2017; Hill et al., 2023; Lansing et al., 2018; Malvaso et al., 2022; Ribeiro da Silva, Rijo, et al., 2021a; Zelechoski et al., 2021).

Regarding comparisons between mental health profiles on clinical variables, there were significant differences between profiles on almost all indicators assessed by the clinical interview. Compared with the SPP, the HSPP presented a higher probability of having a diagnosis of CD with a childhood onset, ODD with a severe subtype, as well as Alcohol/Substance-Use disorders, and ADHD. In detail, although both the SPP and the HSPP seem to meet criteria for CD and ODD (in a more early and severe presentation for the HSPP), those in the HSPP seem to have a greater probability of also meeting criteria for Substance-related disorders, and ADHD, which posits specific therapeutic challenges for these youth. No differences were found between profiles for both Mood and Anxiety Disorders, suggesting that the two-profile solution may not be effective in capturing potential differences at this level. Again, these findings reinforce current knowledge on the high prevalence rates of mental health disorders in youth detained in forensic settings, particularly for those in the HSPP (Beaudry et al., 2020; Borschmann et al., 2020; Livanou et al., 2019; Rijo et al., 2016) and give clues to the potential mental health heterogeneity among this population.

Concerning clinical indicators assessed via self-report measures, there were significant differences between profiles on almost all variables, with the HSPP presenting a more severe presentation than the SPP. The HSPP presented significant higher levels of psychopathic traits than the SPP, except for the CU dimension assessed with the YPIS (but not with the PSCD) and the GM dimension assessed with the PSCD (but not with the YPIS). These findings are contrary to some theoretical conceptualizations (Cleckley, 1941/1988) and reinforce some recent research pointing to a positive association between psychopathic traits and several mental health disorders other than CD (Begin et al., 2023; Ribeiro da Silva, Rijo, & Salekin, 2019a). These differences may be related to the distinct underlying conceptualizations of these measures; the YPI-S is attuned with the three-factor model (Cooke & Michie, 2001), while the PSCD is attuned with the four-factor model of psychopathy (Hare, 2020). Despite this, it is worth noting that GM and CU traits may be less strongly related to comorbidity with other forms of psychopathology, possibly representing distinctive features of psychopathy more specifically (e.g., Eisenbarth, Demetriou, Kyranides, & Fanti, 2016; Garofalo et al., 2020b, b).

The HSPP, compared with the SPP, also presented higher levels of shame and higher difficulties in emotion regulation. These findings are in line with increasing research, which calls attention to the presence of shame and emotion regulation difficulties in forensic populations (Franco-O'Byrne et al., 2021; Garofalo et al., 2018; Garofalo et al., 2020b, b; Ribeiro da Silva et al., 2015; Ribeiro da Silva, Vagos, & Rijo, 2019b). Nonetheless, these findings go beyond current knowledge, by helping to draw a roadmap of distinct profiles of youth detained in forensic settings, clearly showing a higher emotional deterioration in youth of the HSPP.

Finally, the HSPP presented higher fears of compassion that the SPP. This finding indicates that an increased mental health deterioration in youth detained in forensic settings (which is the case of the HSPP) also encompasses higher fears of giving and receiving compassion as well as in being compassionate to the self. Although few studies focused on the study of compassion-related variables among forensic populations (Dávila Gómez et al., 2020; Rijo et al., 2022), some theoretical conceptualizations and parallel research points that antisociality is in part a product of traumatic and harsh rearing environments (Hill et al., 2023; Malvaso et al., 2022; Morley, 2015; Ribeiro da Silva et al., 2015; Ribeiro da Silva & Rijo, 2022; Zelechoski et al., 2021). Antisociality is considered the antithesis of compassion, and decades of research provide strong support on the impact of traumatic experiences and lack of warmth and safeness experiences on the development and maintenance of antisocial behavior (Cowan, Callaghan, Kan, & Richardson, 2016; Del Giudice, 2016; Farrington, Ullrich, & Salekin, 2010; Gilbert & Basran, 2019; Hill et al., 2023; Malvaso et al., 2022; Ribeiro da Silva, Vagos, & Rijo, 2019b; Zelechoski et al., 2021).

Taken together, findings were generally in line with the characterization of the two profiles that emerged as distinct, mostly in terms of general clinical severity, but also on specific comorbidities. These findings also give clues on the mental health intervention needs of each profile, emphasizing that a large percentage of youth (i.e., those of the HSPP) present complex comorbidities that likely account for their disturbed functioning. Considering that the main goal of JJS is to rehabilitate youth with antisocial behavior, the detention period should be regarded as a privileged period to diagnose and properly treat these youth (Ribeiro da Silva & Rijo, 2022). Specifically, it may be helpful to deliver interventions for youth that consider their psychopathological profile, by allocating them to treatment approaches capable of tackling their specific mental health intervention needs. For instance, youth with a HSPP should be referred to treatment programs that address not only CD/ODD symptoms, but also other comorbidities, including interventions for Substance-related disorders.

Finally, it is important to mention that although the three-profile solution did not have a better model fit than the two-profile solution, this may be due to the limitations of the sample size of this study. Thus, it seems important to note that the three-profile solution yielded similar profiles of the two-profile solution (i.e., the SPP and the HSPP) in addition to another profile, the Extremely Severe Psychopathological Profile (ESPP; cf. supplementary material). The ESPP also has a severe subtype of CD (number of criteria met for CD is similar to the HSPP) but the comorbidity rates are extreme, i.e., around seven diagnoses (against approximately four in the HSPP). Interestingly, like the two-profile solution, the three profiles did not differ on sociodemographic, legal, and criminal variables, which again suggest that these variables may not be the best solution to decide for the therapeutic rehabilitation of these youth. Regarding specific comorbidities, the three profiles had a high probability of having a CD and an ODD diagnosis (CD childhood subtype mostly for the ESPP and the HSPP). In addition, the HSPP and the ESPP had a high probability of having Substance-Related Disorders compared with the SPP. Finaly, comparing with other profiles, the ESPP had a high probability of meeting criteria for Mood/Anxiety disorders and ADHD. Considering other clinical indicators, although comparisons across the SPP and the HSPP seem to be in line with a degree of severity (and similar to the two-profile solution), there are no differences between the HSPP and the ESPP. Despite the fragilities of the three-profile model, results reinforce the idea of a potential mental health divergency of this population.

5.1. Limitations and future directions

Some limitations should be considered when interpreting findings of this study. First, the sample size is relatively small, although similar to previous literature using LPA in forensic samples (Chui, Khiatani, She, & Chan, 2023; Pederson, Griffith, Nowalis, & Fite, 2022). Without any prior LPA study to guide hypotheses, estimating the power for the LPA

was not possible, as power is dependent on parameter values of previous studies (Ferguson et al., 2020; Nylund-Gibson & Choi, 2018; Spurk, Hirschi, Wang, Valero, & Kauffeld, 2020). To somehow solve potential problems related to sample size, we opted for a parsimonious model to set profiles (i.e., with only two indicators). Another limitation is related with the use of male youth only. Future studies should encompass a larger sample size, with both male and female detained youth, preferably from different countries and randomly selected, which will allow to have a more clear and accurate representation of the potential heterogeneity of this population. The inclusion of youth regardless of their sentence length should also be considered in future research, to capture whether lower sentences have an impact on the establishment and/or characterization of profiles. Future research should also control bias responding (e.g., using validity scales) and include the assessment of other relevant sociodemographic variables (e.g., household, employment and marital status of parents) as well as variables that do not rely uniquely on self-report data (e.g., physiological/neural variables).

6. Conclusion

Despite its limitations, this is among the first studies that aimed to explore, characterize, and compare mental health profiles of youth detained in forensic settings. The present findings reaffirm studies reporting on the high prevalence rate of mental health disorders in this high- and at-risk population (Beaudry et al., 2020; Borschmann et al., 2020; Fairchild et al., 2019; Livanou et al., 2019; Rijo et al., 2016). Findings also indicate an apparent heterogeneity of these youth considering their mental health profiles. This heterogeneity was not evident from the composition of the profiles, which instead was characterized by differences in severity. Rather, some degree of heterogeneity emerged from the patterns of comorbidity inspected by looking at external correlates. In fact, the two profiles that emerged seem to have a distinctive pattern considering the presence of specific mental health disorders (which is even more evident in the three-profile solution; cf., supplementary material), as well as an attuned severity pattern regarding other clinical indicators (psychopathic traits, shame, emotion regulation difficulties, and fears of compassion). In a way or another, an accurate and extensive mental health assessment (based on psychopathological symptoms and disorders and other relevant clinical indicators) should be performed prior to detention, guiding for tailored rehabilitation efforts, including personalized psychotherapies addressing the specific mental health intervention needs of these youth (Beaudry et al., 2020; Borschmann et al., 2020; Fairchild et al., 2019; Livanou et al., 2019; Ribeiro da Silva, 2023; Ribeiro da Silva & Rijo, 2022; Ribeiro da Silva, Rijo, et al., 2021a; Rijo et al., 2022). Moreover, this study reinforces the critical need for the investment in trauma-informed and/or mental health-informed personalized treatment approaches to rehabilitate these highly traumatized population (Branson et al., 2017; Grady et al., 2017; Hill et al., 2023; Lansing et al., 2018; Malvaso et al., 2022; Ribeiro da Silva, Rijo, et al., 2021a; Zelechoski et al., 2021). Finaly, this study underlines the urgency to shift the research agenda for the study of antisocial behavior in adolescence, a research agenda where antisocial behavior is only one of the layers of the multiple underlying patterns of this heterogenous population.

Funding

This research has been supported by the Portuguese Foundation for Science and Technology (FCT) in the framework of the project 2022.00715.CEECIND.

CRediT authorship contribution statement

Diana Ribeiro da Silva: Writing – review & editing, Writing – original draft, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Nina Lindberg:** Writing – review & editing, Validation, Supervision. **Carlo Garofalo:** Writing – review & editing, Validation, Supervision.

Declaration of competing interest

The authors declared no potential conflicts of interests.

Acknowledgements

The authors want to thank to all youth enrolled in this study, to the staff members of the detention facilities, and to Marlene Paulo and Rita Miguel for their support in data collection.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jcrimjus.2025.102357.

References

Abram, K. M., Teplin, L. A., McClelland, G. M., & Dulcan, M. K. (2003). Comorbid psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 60* (11), 1097–1108. https://doi.org/10.1001/archpsyc.60.11.1097

Abram, K. M., Zwecker, N. A., Welty, L. J., Hershfield, J. A., Dulcan, M. K., & Teplin, L. A. (2015). Comorbidity and continuity of psychiatric disorders in youth after detention: A prospective longitudinal study. *JAMA Psychiatry, 72*(1), 84–93. https://doi.org/10.1001/jamapsychiatry.2014.1375

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52*, 317–332. https://doi.org/10.1007/BF02294359

American Psychiatric Association, & DSM-5 Task Force. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5™* (5th ed.). American Psychiatric Publishing, Inc.. https://doi.org/10.1176/appi.books.9780890425596

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-reffered youth: Initial test of a new assessment tool. In E. Blaauw, & I. Sheridan (Eds.), *Psychopaths: Current international perspectives* (pp. 131–158). Elsevier.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal, 21*, 329–341. https://doi.org/10.1080/10705511.2014.915181

Bakk, Z., & Vermunt, J. K. (2016). Robustness of stepwise latent class modeling with continuous distal outcomes. *Structural Equation Modeling: A Multidisciplinary Journal, 2*, 20–31. https://doi.org/10.1080/10705511.2014.955104

Bauer, D. J., & Curran, P. J. (2003). Over extraction of latent trajectory classes: Much ado about nothing? Reply to Rindskopf (2003), Muthén (2003), and Cudeck and Henly (2003). *Psychological Methods, 8*, 384–393. https://doi.org/10.1037/1082-989X.8.3.384

Beaudry, G., Yu, R., Långström, N., & Fazel, S. (2020). Mental disorders among adolescents in juvenile detention and correctional facilities: An updated systematic review and metaregression analysis. *Journal of the American Academy of Child and Adolescent Psychiatry, 60*(1), 46–60. https://doi.org/10.1016/j.jaac.2020.01.015

Begin, V., Fontaine, N. M., Vitaro, F., Boivin, M., Tremblay, R. E., & Cote, S. M. (2023). Childhood psychopathic traits and mental health outcomes in adolescence: Compensatory and protective effects of positive relationships with parents and teachers. *European Child & Adolescent Psychiatry, 32*(8), 1403–1413. https://doi.org/10.1007/s00787-022-01955-2

Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12*, 3–27. https://doi.org/10.1093/pan/mph001

Borschmann, R., Janca, E., Carter, A., Willoughby, M., Hughes, N., Snow, K., & Kinner, S. A. (2020). The health of adolescents in detention: A global scoping review. *The Lancet Public Health, 5*(2), e114–e126. https://doi.org/10.1016/S2468-2667(19)30217-8

Branson, C. E., Baetz, C. L., Horwitz, S. M., & Hoagwood, K. E. (2017). Trauma-informed juvenile justice systems: A systematic review of definitions and core components. *Psychological Trauma Theory Research Practice and Policy, 9*(6), 635. https://doi.org/10.1037/tra0000255

Chui, W. H., Khiatani, P. V., She, M. H. C., & Chan, B. P. Y. (2023). A latent profile analysis of child maltreatment among at-risk youth gang members: Associations with violent delinquency, non-violent delinquency, and gang organizational structures. *Child Abuse & Neglect, 135*, Article 105989. https://doi.org/10.1016/j.chiabu.2022.105989

Clark, L., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309–319. https://doi.org/10.1037/1040-3590.7.3.309

Cleckley, H. (1988). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (6th ed.). Mosby: St. MO (original work published in 1941).

Colins, O. F., Andershed, H., Salekin, R. T., & Fanti, K. A. (2018). Comparing different approaches for subtyping children with conduct problems: Callous-unemotional traits only versus the multidimensional psychopathy construct. *Journal of Psychopathology and Behavioral Assessment, 40*, 6–15. https://doi.org/10.1007/s10862-018-9653-y

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment, 13*(2), 171. doi:10.1037111040-3590.13.2.171.

Coutinho, J., Ribeiro, E., Ferreirinha, R., & Dias, P. (2010). Versão portuguesa da escala de dificuldades de regulação emocional e sua relação com sintomas psicopatológicos. *Archives of Clinical Psychiatry, 37*(4), 145–151. https://doi.org/10.1590/S0101-60832010000400001

Cowan, C. S. M., Callaghan, B. L., Kan, J. M., & Richardson, R. (2016). The lasting impact of early-life adversity on individuals and their descendants: Potential mechanisms and hope for intervention. *Genes, Brain, and Behavior, 15*(1), 155–168. https://doi.org/10.1111/gbb.12263

Dávila Gómez, M., Dávila Pino, J., & Dávila Pino, R. (2020). Self-compassion and predictors of criminal conduct in adolescent offenders. *Journal of Aggression, Maltreatment and Trauma, 29*(8), 1020–1033. https://doi.org/10.1080/10926771.2019.1697778

Del Giudice, M. (2016). The life history model of psychopathology explains the structure of psychiatric disorders and the emergence of the p factor: A simulation study. *Clinical Psychological Science, 4*(2), 299–311. https://doi.org/10.1177/2167702615583628

Duarte, C., Pinto-Gouveia, J., & Cunha, M. (2014). Fears of compassion in adolescence: Fears of compassion Scales' examination and implications in this population. In *Poster session presented at the 3rd international conference on compassion focused therapy, Birmingham, U.K.*

Eisenbarth, H., Demetriou, C. A., Kyranides, M. N., & Fanti, K. A. (2016). Stability subtypes of callous–unemotional traits and conduct disorder symptoms and their correlates. *Journal of Youth and Adolescence, 45*, 1889–1901. https://doi.org/10.1007/s10964-016-0520-4

Fairchild, G., Hawes, D. J., Frick, P. J., Copeland, W. E., Odgers, C. L., Franke, B., … De Brito, S. A. (2019). Conduct disorder. *Nature Reviews Disease Primers, 5*(1), 43. https://doi.org/10.1038/s41572-019-0095-y

Farrington, D. P., Ullrich, S., & Salekin, R. T. (2010). Environmental influences on child and adolescent psychopathy. In R. T. Salekin, & D. R. Lynam (Eds.), *Handbook of child and adolescent psychopathy* (pp. 202–230). Guilford Press.

Ferguson, S. L., Moore, G., E. W, & Hull, D. M. (2020). Finding latent groups in observed data: A primer on latent profile analysis in Mplus for applied researchers. *International Journal of Behavioral Development, 44*(5), 458–468. https://doi.org/10.1177/0165025419881721

Franco-O'Byrne, D., Ibáñez, A., Santamaría-García, H., Patiño-Saenz, M., Idarraga, C., Pino, M., & Baez, S. (2021). Neuroanatomy of complex social emotion dysregulation in adolescent offenders. *Cognitive, Affective, & Behavioral Neuroscience, 21*(5), 1083–1100. https://doi.org/10.3758/s13415-021-00903-y

Garofalo, C., Neumann, C. S., Kosson, D. S., & Velotti, P. (2020a). Psychopathy and emotion dysregulation: More than meets the eye. *Psychiatry Research, 290*, Article 113160. https://doi.org/10.1016/j.psychres.2020.113160

Garofalo, C., Neumann, C. S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57*(4), 116–125. https://doi.org/10.1016/j.jcrimjus.2018.05.013

Garofalo, C., Sijtsema, J. J., De Caluwé, E., Vaughn, M. G., & DeLisi, M. (2020b). A latent profile analysis of the psychopathic personality inventory in a representative sample of referred boys. *Personality Disorders, Theory, Research, and Treatment, 11*(5), 365. https://doi.org/10.1037/per0000393

Geerlings, Y., Asscher, J. J., Stams, G. J. J., & Assink, M. (2020). The association between psychopathy and delinquency in juveniles: A threelevel meta-analysis. *Aggression and Violent Behavior, 50*(1). https://doi.org/10.1016/j.avb.2019.101342. Article 101342.

Gilbert, P. (2019). Explorations into the nature and function of compassion. *Current Opinion in Psychology, 28*(8), 108–114. https://doi.org/10.1016/j.copsyc.2018.12.002

Gilbert, P., & Basran, J. (2019). The evolution of prosocial and antisocial competitive behavior and the emergence of prosocial and antisocial leadership styles. *Frontiers in Psychology, 1*(6), 610–620. https://doi.org/10.3389/fpsyg.2019.00610

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice, 84*(3), 239–255. https://doi.org/10.1348/147608310X526511

Glenn, A. L. (2019). Early life predictors of callous-unemotional and psychopathic traits. *Infant Mental Health Journal, 40*(1), 39–53. https://doi.org/10.1002/imhj.21757

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures-I: The "Other as Shamer Scale.". *Personality and Individual Differences, 17*(5), 713–717. https://doi.org/10.1016/0191-8869(94)90149-X

Grady, M. D., Levenson, J. S., & Bolder, T. (2017). Linking adverse childhood effects and attachment: A theory of etiology for sexual offending. *Trauma, Violence & Abuse, 18*, 433–444. https://doi.org/10.1177/1524838015627147

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41–54. https://doi.org/10.1023/b:joba.0000007455.08539.94

Hare, R. D. (2020). The PCL-R assessment of psychopathy. In A. R. Felthous, & H. Saß (Eds.), *The Wiley international handbook on psychopathic disorders and the law* (pp. 63–106). John Wiley & Sons.

Hill, L., Barnett, J. E., Ward, J., Morton, A., & Schmidt, A. T. (2023). Trauma-informed care for justice-involved youth: A narrative review and synthesis. *Juvenile and Family Court Journal, 74*(2), 21–33. https://doi.org/10.1111/jfcj.12236

Hilterman, E. L., Vermunt, J. K., Nicholls, T. L., Bongers, I. L., & van Nieuwenhuizen, C. (2019). Profiles of SAVRY risk and protective factors within male and female juvenile offenders: A latent class and latent transition analysis. *International Journal of Forensic Mental Health, 18*(4), 350–364. https://doi.org/10.1080/14999013.2019.1580803

Lansing, A. E., Plante, W. Y., Beck, A. N., & Ellenberg, M. (2018). Loss and grief among persistently delinquent youth: The contribution of adversity indicators and psychopathy-spectrum traits to broadband internalizing and externalizing psychopathology. *Journal of Child & Adolescent Trauma, 11*, 375–389. https://doi.org/10.1007/s40653-018-0209-9

Lanza, S. T., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling: A Multidisciplinary Journal, 20*, 1–26. https://doi.org/10.1080/10705511.2013.742377

Livanou, M., Furtado, V., Winsper, C., Silvester, A., & Singh, S. P. (2019). Prevalence of mental disorders and symptoms among incarcerated youth: A meta-analysis of 30 studies. *International Journal of Forensic Mental Health, 18*(4), 400–414. https://doi.org/10.1080/14999013.2019.1619636

Lo, Y., Mendell, N., & Rubin, D. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*, 767–778. https://doi.org/10.1093/biomet/88.3.767

Lubke, G., & Muthén, B. O. (2007). Performance of factor mixture models as a function of model size, covariate effects, and class-specific parameters. *Structural Equation Modeling, 14*, 26–47. https://doi.org/10.1080/10705510709336735

Malvaso, C. G., Cale, J., Whitten, T., Day, A., Singh, S., Hackett, L., & Ross, S. (2022). Associations between adverse childhood experiences and trauma among young people who offend: A systematic literature review. *Trauma, Violence & Abuse, 23*(5), 1677–1694. https://doi.org/10.1177/15248380211013

McElroy, E., Belsky, J., Carragher, N., Fearon, P., & Patalay, P. (2018). Developmental stability of general and specific factors of psychopathology from early childhood to adolescence: Dynamic mutualism or p-differentiation? *Journal of Child Psychology and Psychiatry, 59*(6), 667–675. https://doi.org/10.1111/jcpp.12849

McLachlan, G., & Peel, D. (2004). *Finite mixture models.* Wiley.

Moreira, H., Gouveia, M. J., & Canavarro, M. C. (2022). A bifactor analysis of the difficulties in emotion regulation scale - short form (DERS-SF) in a sample of adolescents and adults. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 41*(2), 757–782. https://doi.org/10.1007/s12144-019-00602-5

Morin, A. J. S. (2016). Person-centered research strategies in commitment research. In J. P. Meyer (Ed.), *The handbook of employee commitment* (pp. 490–508). Edward Elgar.

Morley, R. H. (2015). Violent criminality and self-compassion. *Aggression and Violent Behavior, 24*(5), 226–240. https://doi.org/10.1016/j.avb.2015.05.017

Muthén, B. (2001). Latent variable mixture modeling. In G. A. Marcoulides, & R. E. Schumacker (Eds.), *New developments and techniques in structural equation modeling* (pp. 1–33). Mahwah, NJ: Lawrence Erlbaum Associates.

Muthén, L. K., & Muthén, B. O. (2010). *Mplus user's guide* (6th ed.).

Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling. A Monte Carlo simulation study. *Structural Equation Modeling, 14*, 535–569. https://doi.org/10.1080/10705510701575396

Nylund-Gibson, K., & Choi, A. Y. (2018). Ten frequently asked questions about latent class analysis. *Translational Issues in Psychological Science, 4*(4), 440–461. https://doi.org/10.1037/tps0000176

Pechorro, P., Andershed, H., Ray, J. V., Maroco, J., & Gonçalves, R. A. (2015). Validation of the youth psychopathic traits inventory and youth psychopathic traits inventory—Short version among incarcerated juvenile delinquents. *Journal of Psychopathology and Behavioral Assessment, 37*(4), 576–586. https://doi.org/10.1007/s10862-015-9490-1

Pederson, C. A., Griffith, R. L., Nowalis, S., & Fite, P. J. (2022). Creating profiles of juvenile offenders using functions of aggression and callous-unemotional traits: Relations to crime type. *Psychiatry, Psychology and Law, 30*(5), 713–736. https://doi.org/10.1080/13218719.2022.2116609

Raine, A. (2019). The neuromoral theory of antisocial, violent, and psychopathic behavior. *Psychiatry Research, 277*, 64–69. https://doi.org/10.1016/j.psychres.2018.11.025

Ram, N., & Grimm, K. J. (2009). Growth mixture modeling: A method for identifying difference in longitudinal change among unobserved groups. *International Journal of Behavioral Development, 33*, 565–576. https://doi.org/10.1177/0165025409343765

Ribeiro da Silva, D. (2023). Personalizing youth psychotherapy: The road ahead. *Clinical Psychology: Science and Practice, 30*(1), 66–69. https://doi.org/10.1037/cps0000134

Ribeiro da Silva, D., & Rijo, D. (2022). Compassion focused therapy in forensic settings. In G. Simos, & P. Gilbert (Eds.), *Compassion focused therapy: Clinical practice and applications (pp. 505–518)*. Routledge. https://doi.org/10.4324/9781003035879 (ISBN: 9780367476908).

Ribeiro da Silva, D., Rijo, D., Brazão, N., Paulo, M., Miguel, M., Gilbert, P., & Salekin, R. T. (2021a). The efficacy of the PSYCHOPATHY.COMP program in reducing psychopathic traits: A controlled trial with male detained youth. *Journal of Consulting and Clinical Psychology, 89*(6), 499–513. https://doi.org/10.1037/ccp0000659

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2015). The evolutionary roots of psychopathy. *Aggression and Violent Behavior, 21*, 85–96. https://doi.org/10.1016/j.avb.2015.01.006

Ribeiro da Silva, D., Rijo, D., & Salekin, R. T. (2019a). Psychopathic profiles: A latent profile analysis in youth samples with implications for the diagnosis of conduct disorder. *Journal of Criminal Justice, 60*, 74–83. https://doi.org/10.1016/j.jcrimjus.2018.12.003

Ribeiro da Silva, D., Sousa, R., Rijo, D., Mendez, B., Tsang, S., & Salekin, R. T. (2021b). Proposed specifiers for conduct disorder (PSCD): Factor structure and validation of the self-report version in community and forensic samples of Portuguese youth. *Assessment, 30*(1), 124–143. https://doi.org/10.1177/10731911211044534

Ribeiro da Silva, D., Vagos, P., & Rijo, D. (2019b). An evolutionary model to conceptualize psychopathic traits across community and forensic male youth. *Journal of Offender Therapy and Comparative Criminology, 63*, 574–596. https://doi.org/10.1177/0306624X18823624

Rijo, D., Brazão, N., Barroso, R., Ribeiro da Silva, D., Vagos, P., Vieira, A., … Macedo, M. (2016). Mental health problems in male young offenders in custodial versus community based-programs: Implications for juvenile justice interventions. *Child and Adolescent Mental Health and Psychiatry, 10*, 40–48. https://doi.org/10.1186/s13034-016-0131-6

Rijo, D., Ribeiro da Silva, D., Brazão, N., Paulo, M., Miguel, R., Castilho, P., Vagos, P., & Gilbert, P. (2022). Promoting a compassionate motivation in male detained youth: A secondary data analysis of a controlled trial with the PSYCHOPATHY.COMP program. *Personality Disorders, Theory, Research, and Treatment, 14*(2), 223–236. https://doi.org/10.1037/per0000594

Rost, J. (2006). Latent-class-analyse [latent class analysis]. In F. Petermann, & M. Eid (Eds.), *Handbuch der psychologischen Diagnostik [handbook of psychological assessment]* (pp. 275–287). Hogrefe.

Salekin, R. T., Andershed, H., & Clark, A. P. (2018). Psychopathy in children and adolescents: Assessment and critical questions regarding conceptualization. In C. J. Patrick (Ed.), *Handbook of psychopathy* (2nd ed., pp. 479–508). Guilford Press.

Salekin, R. T., & Hare, R. D. (2016). *Proposed specifiers for conduct disorder (PSCD) (unpublished test)*.

Schwartz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6*, 461–464. https://doi.org/10.1214/aos/1176344136

Sclove, L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52*, 333–343. https://doi.org/10.1007/BF02294360

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavs, J., Bannon, Y., Rogers, J. E., … Wilkinson, B. (2010). Reliability and validity of the Mini international neuropsychiatric interview for children and adolescents (MINI-KID). *The Journal of Clinical Psychiatry, 71*(3), 313–326. https://doi.org/10.4088/JCP.09m05305whi

Sousa, R., Linharelhos, M., Ribeiro da Silva, D., & Rijo, D. (2023). The difficulties in emotion regulation scale: Dimensionality, measurement invariance, and physiological correlates in community adolescents. *Journal of Clinical Psychology, 79*(10), 2351–2363. https://doi.org/10.1002/jclp.23553

Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent profile analysis: A review and "how to" guide of its application within vocational behavior research. *Journal of Vocational Behavior, 120*, Article 103445. https://doi.org/10.1016/j.jvb.2020.103445

Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K., & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 59*(12), 1133–1143. https://doi.org/10.1001/archpsyc.59.12.1133

Vagos, P., Ribeiro da Silva, D., Brazão, N., Rijo, D., & Gilbert, P. (2016). Dimensionality and measurement invariance of the other as Shamer scale across diverse adolescent samples. *Personality and Individual Differences, 98*, 289–296. https://doi.org/10.1016/j.paid.2016.04.046

Van Baardewijk, Y., Andershed, H., Stegge, H., Nilsson, K., Scholte, E., & Vermeiren, R. (2010). Development and tests of short versions of the youth psychopathic traits inventory and the youth psychopathic traits inventory-child version. *European Journal of Psychological Assessment, 26*(2), 122–128. https://doi.org/10.1027/1015-5759/a000017

Vaughn, M. G., Freedenthal, S., Jenson, J. M., & Howard, M. O. (2007). Psychiatric symptoms and substance use among juvenile offenders: A latent profile investigation. *Criminal Justice and Behavior, 34*(10), 1296–1312. https://doi.org/10.1177/0093854807304062

Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. A. Hagenaars, & A. McCutcheon (Eds.), *Applied latent class analysis* (pp. 89–106). Cambridge University Press.

Wojciechowski, T. (2021). Latent profile analysis of personality dimensions among juvenile offenders: Relevance for predicting offending seriousness. *Crime & Delinquency, 67*(2), 212–233. https://doi.org/10.1177/00111287209289

World Health Organization. (2022). ICD-11: International classification of diseases (11th revision). https://icd.who.int/.

Zelechoski, A. D., Cross, H. L., Luehrs, R., Freedle, A., Bruick, S., Harrison, K., et al. (2021). Trauma assessment in juvenile justice: Are we asking the right questions in the right ways? *Journal of Aggression, Maltreatment & Trauma, 30*, 324–346. https://doi.org/10.1080/10926771.2020.1832167