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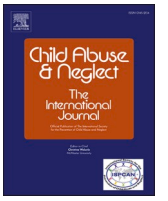

The role of positive childhood experiences in the link between childhood maltreatment and affective lability in a sample of incarcerated men and women

Telma Catarina Almeida [a,b,c,*,**,***], Raquel Margarida Fernandes [a,c], Olga Cunha [d,e]

[a] Instituto Universitário Egas Moniz (IUEM), Caparica, Portugal
[b] CiiEM – Centro de Investigação Interdisciplinar Egas Moniz, IUEM, Portugal
[c] LabPSI – Laboratório de Psicologia Egas Moniz, IUEM, Portugal
[d] Universidade Lusófona do Porto, Portugal
[e] Hei-Lab, Portugal

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ABSTRACT

Background: Individuals with a history of child maltreatment (CM) tend to show high affective lability (AL) and criminal behavior. However, positive childhood experiences (PCEs) may act as a protective factor even in the presence of child maltreatment.
Objective: The present study aimed to analyze the relationship between CM, PCEs, and AL in adulthood, identify the predictors of AL and analyze the moderating role of PCEs in the relationship between CM and AL in a sample of 424 incarcerated men ($n = 343$) and women ($n = 81$), aged between 18 and 73 years ($M = 37.88$).
Methods: Participants responded to an online protocol consisting of a sociodemographic questionnaire, the Childhood Trauma Questionnaire (CTQ), the Benevolent Childhood Experiences Scale (BCEs), and the Affective Lability Scale – Short Version (ALS-18).
Results: CM was positively associated with AL and negatively associated with PCEs, and PCEs are negatively associated with AL. Regression analyses, after controlling for age, sex, and education, confirmed the role of PCEs on AL, above and beyond CM. However, moderation analysis showed that PCEs did not moderate the relationship between CM and AL for either men or women.
Conclusions: These results highlight the complexity of human development and behavior from early childhood into adulthood. Further studies are needed to better understand the role of PCEs in the relationship between ACEs and AL among inmates in order to develop more appropriate prevention and intervention programs.

1. Introduction

Child maltreatment (CM) has become a growing concern in the scientific community (Almeida et al., 2020; Caridade et al., 2018).

* Corresponding author at: LabPSI – Laboratório de Psicologia Egas Moniz, IUEM, Portugal.
** Corresponding author at: CiiEM – Centro de Investigação Interdisciplinar Egas Moniz, IUEM, Portugal.
*** Corresponding author at: Instituto Universitário Egas Moniz, Campus Universitário, Quinta da Granja, Monte de Caparica, 2829 - 511 Caparica, Portugal.
E-mail address: telma.c.almeida@gmail.com (T.C. Almeida).

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CM is a type of interpersonal victimization that affects children and adolescents (Salmon et al., 2022). CM is characterized by the commission or omission of acts that result in actual or potential harm to the child's health, development, or dignity, including physical, sexual, and emotional/psychological abuse, and neglect (Berzenski & Yates, 2022; Gonzalez et al., 2022). Exposure to domestic violence is also a type of child maltreatment (Turner et al., 2017) resulting from verbal, emotional, and physical violence between parents (Almeida et al., 2022; Katz, 2016). The World Health Organization (2022) characterizes CM as the abuse and neglect of children under 18 years of age, including negligence, physical and/or emotional ill-treatment, sexual abuse, and commercial or other exploitation. The negative consequences of CM on children are well recognized, resulting in harm to their health, development, survival, or dignity concerning responsibility, trust, or power relationships (WHO, 2022). CM has been recognized as a serious public health problem and a specific type of adverse childhood experience (ACE; Centers for Disease Control and Prevention [CDC], 2022). Research shows that one in four children suffers or will suffer from CM (Lippard & Nemeroff, 2019). In Portugal, the data pointed to 45,132 cases of CM reported to the Child Protection Services in 2021 (Child and Youth Protection Commission, 2021).

CM experiences increase the likelihood of individuals becoming victims (e.g., Lopes & Almeida, 2020) or offenders later in their lifetime (e.g., Jones et al., 2021; Ruiz & Pereda, 2022; Turner et al., 2021). Criminal behavior in adulthood might be linked to youth victimization, especially for individuals who have been victims of physical abuse or exposed to domestic violence (Franzese et al., 2016). Indeed, literature revealed that incarcerated individuals show a higher prevalence of ACEs than the general population (Zhang et al., 2021). A study on a sample of prisoners found that 71 % were exposed to at least one type of CM, and 39 % were abused in childhood (Meade & Steiner, 2013). Sánchez et al. (2019) also found that 40 % of male incarcerated individuals reported at least one type of CM, with emotional and physical abuse being the most reported types. Literature also points to sex differences regarding maltreatment rates among imprisoned populations, with women reporting more physical and sexual victimization history than men (McDaniels-Wilson & Belknap, 2008). 77 % to 90 % of incarcerated women suffered from emotional, physical, and sexual abuse (Mejía et al., 2015), revealing more victimization episodes than women in the general population (Wilson & Widom, 2010).

CM is also associated with developing psychological and functional problems (e.g., Lopes & Almeida, 2020). Research highlights that victimization might cause mental health problems, namely post-traumatic stress (Narayan et al., 2018), personality disorders (Maniglio, 2012), anxiety and depression (Wadji et al., 2021), low self-esteem (Pereira et al., 2021), substance abuse (Afifi et al., 2008), sleep disturbances (Cardoso et al., 2018), and self-injury (Brick et al., 2021). Maltreated children may also develop deficits in emotional regulation (Nowalis et al., 2022; Pereira et al., 2021), increasing the odds of emotional problems in adulthood (Fergusson et al., 2008). Affective lability (AL) is one such emotional problems since literature has reported high levels of AL among individuals with a history of childhood victimization (Aas et al., 2014, 2016; Almeida et al., in press). AL can be defined as the occurrence of uncontrollable crying or laughing events, with great difficulties in controlling emotions, which leads the person to react in an incompatible way to the stimulus that triggered such emotion (Parvizi et al., 2006; Santos, 2019).

AL is common in the general population and is even more prevalent among individuals with a history of childhood trauma (Aas et al., 2014, 2016). The research found higher prevalence rates of AL among individuals who were victims of emotional abuse, emotional neglect, and sexual abuse in childhood (Aas et al., 2014). The literature consistently revealed that victims of CM have higher AL than those who have not suffered any victimization (Crow et al., 2014; Kim-Spoon et al., 2012). Indeed, CM has been significantly related to a decrease in emotion regulation and an increase in emotion dysregulation (Gruhn & Compas, 2020). Research conducted with incarcerated individuals also revealed that those who reported CM are more likely to develop psychological or emotional problems than the general population (Tripodi & Pettus-Davis, 2013). Furthermore, emotional dysregulation is a core feature that may help to account for this heightened risk (Dvir et al., 2014). Among incarcerated women, sexual revictimization in childhood has been significantly associated with emotional regulation difficulties in adulthood (Walsh et al., 2011).

AL has been linked to criminal behavior (e.g., Anestis et al., 2009; Donahue et al., 2014), as AL decreases individuals' ability to control their emotions (Dvorak et al., 2013). Individuals with aggressive behaviors are more likely to reveal low tolerance to frustration, difficulties in regulating emotions, and higher levels of AL (Miller et al., 2019; O'Connor, 2018). Other studies also found that individuals who commit crimes tend to show more emotional instability (Llorca-Mestre et al., 2017; Samper et al., 2021). A European study with incarcerated women identified that 55 % showed impulsivity and/or emotional instability (Loinaz & Andrés-Pueyo, 2017). A recent study in Portugal (Almeida et al., in press) found that incarcerated individuals revealed higher levels of AL than individuals from the community. Indeed, research has revealed that emotion regulation deficits are more common among offenders than among individuals from the community (Rogier et al., 2020), and improvements in emotional regulation skills while incarcerated were significantly related to lower recidivism rates (Docherty et al., 2021). In general, studies have shown the importance of emotional regulation in aggressive behavior (e.g., Llorca-Mestre et al., 2017; Loinaz & Andrés-Pueyo, 2017) and among incarcerated populations (Almeida et al., in press; Docherty et al., 2021).

1.1. Positive childhood experiences, child maltreatment and affective lability

ACEs are not the only early experiences linked to long-term mental health outcomes (Narayan et al., 2021). Higher positive childhood experiences (PCEs) predicted better mental health in adulthood (Crandall et al., 2019; Crandall et al., 2020; Narayan et al., 2018). For example, PCEs have been linked to lower depressive symptoms and lower perceived stress (Bethell et al., 2019; Doom et al., 2021; Hou et al., 2022; Narayan et al., 2018). Despite being less studied, a recent study also found that PCEs are related to lower levels of affective lability (Almeida et al., in press). Indeed, PCEs seem to promote adult health by reinforcing the ability to regulate emotions (Kuhar & Kocjan, 2021), increasing empathy (Duarte et al., 2021), and decreasing recidivism among juvenile justice-involved adolescents (Baglivio & Wolff, 2021). PCEs also positively predict cognitive, emotional, and behavioral self-regulation, while ACEs negatively predict them (Rollins & Crandall, 2021).

Although research has emphasized the role of childhood adversity on individuals' adaptative development rather than the role of positive childhood experiences (PCEs; Crandall et al., 2019), both ACEs and PCEs shape the individual's brain development and health throughout life (Shonkoff et al., 2012). Adverse and positive childhood experiences impact the development and maintenance of self-regulation and AL (Edwards et al., 2021; Rollins & Crandall, 2021). While PCEs, including healthy attachment bonds, effective parenting behaviors, and other community resources (Almeida et al., 2021; Crandall et al., 2019), promote adequate emotional development (Whittle et al., 2014) and self-regulation (Rollins & Crandall, 2021), ACEs increase the likelihood of emotional dysregulation and AL (Aas et al., 2014, 2016; Marwaha et al., 2013). This occurs as experiencing adversity in the early stages might produce significant changes in the children's expectable environment essential to their adaptative development (Toth & Cicchetti, 2013). On the contrary, PCEs may protect lifelong individuals from the adverse impact of ACEs (e.g., Baglivio & Wolff, 2021; Crandall et al., 2019; Crouch et al., 2021; Daines et al., 2021; Hou et al., 2022; Karatzias et al., 2020). Studies also found that PCEs predict better adult health after controlling for adult resources and ACEs (Bethell et al., 2019). The ecological-transactional model of CM postulates the existence of protective factors (individual factors, from family, from the community) in a broad integrative framework with the CM. The harmless and the protective factors interact with each other's, influencing themselves (Cicchetti, 1993; Cicchetti & Toth, 2016). Despite the existence of CM, the PCEs can contribute positively to individual development, constructing positive functioning and a healthy adjustment through emotional, cognitive, behavioral, and social levels (Gartland et al., 2019).

PCEs can appease the adverse effects of ACEs on psychological problems, being a protective factor (Hou et al., 2022; Narayan et al., 2018). The resiliency model also integrates some of the PCEs factors in an ecological framework that comprises multiple systems (e.g., individual characteristics, family, neighborhood) (Masten & Cicchetti, 2016), affecting personal development positively (Narayan et al., 2021).

1.2. The present study

As previously mentioned, incarcerated individuals show higher rates of both CM (Sánchez et al., 2019) and mental health disorders (Tadros, 2021), including emotion regulation problems and AL, than individuals from the community. In addition, AL has been identified as a core feature of different mental disorders (Høegh et al., 2020), highly represented among incarcerated individuals, which may help explain the relationship between mental health and crime commitment (Dvir et al., 2014), despite the lack of studies

Table 1
Sociodemographic and juridical characterization.

	n	%
Sex		
Male	343	80.9
Female	81	19.1
Nationality		
Portuguese	369	87.0
Other	55	13.0
Education		
No education	14	3.3
Until 4th grade	2	6.1
Until 6th grade	79	18.6
Until 9th grade	96	22.6
Until 12th grade	149	35.1
Graduation	33	7.8
Master	4	0.9
PhD	2	0.5
Other	10	2.3
Marital status		
Single	190	44.8
Married/cohabitation	165	38.9
Separated/divorced	52	12.3
Widow	14	3.3
Crime committed		
Drug trafficking	164	38.7
Robbery	55	12.9
Theft	53	12.5
Homicide	34	8.0
Domestic violence	24	5.7
Fraud	23	5.4
Physical offenses	19	4.5
Driving without licence	16	3.8
Attempted homicide	13	3.1
Others	83	19.6
Previous convictions		
No	177	41.7
Yes	126	29.7
Missing	121	28.5

concerning AL among inmates. Besides, empirical literature concerning the understanding of the long-term role of PCEs in the individual's emotional regulation in the presence of CM, although scarce, has demonstrated the lifelong protective effect of PCEs even in the presence of ACEs (e.g., Baglivio & Wolff, 2021; Crouch et al., 2021; Daines et al., 2021; Karatzias et al., 2020). However, even though PCEs tend to occur more frequently than negative ones (Daines et al., 2021), as far as we know, there are no studies focused on the relationship between CM, PCEs, and AL among specific populations such as inmates. Thus, this study aimed to extend previous literature on the role of PCEs by analyzing the relationship between CM, PCEs, and AL in adulthood, identifying the predictors of AL, and exploring the moderating role of PCEs in the relationship between CM and AL in adulthood in a sample of male and female inmates. Therefore, consistent with previous studies, it was hypothesized that there is a relationship between CM, PCEs, and AL, and that CM and the PCEs predict AL. To further elucidate this relationship, it was hypothesized that there would be a moderation effect of PCEs in the relationship between CM and AL.

2. Method

2.1. Participants

This study comprises a non-random convenience sample of 424 incarcerated individuals, aged between 18 and 73 years (M = 37.88, SD = 10.56). 80.9 % of the participants were men (n = 343) and 19.1 % (n = 81) were women. The most part were Portuguese (n = 369; 87 %), completed between 9 and 12 years of education (n = 245; 57.8 %) and almost half were single (n = 190; 44.8 %). Most of participants were convicted by drug trafficking (n = 164; 38.7 %), robbery (n = 55; 12.9 %), theft (n = 53; 12.5 %), and homicide (n = 34; 8.0 %) and almost a half had no previous convictions (n = 177; 41.7 %). Sociodemographic and juridical data are presented in Table 1.

2.2. Measures

A **Sociodemographic and Juridical Questionnaire** was applied to collect the following variables: age, sex, nationality, education level, marital status, the crime for which they were detained, and previous convictions.

The **Childhood Trauma Questionnaire – Short Version** (CTQ; Bernstein et al., 2003; Portuguese version Dias et al., 2013) is a self-report measure to assess the exposure to abuse situations occurring up to 15 years of age. It consists of 28 items, set on a 5-point Likert scale ("never true" from "very often true"), consisting of five subscales, which reflect the different types of abuse: Emotional Abuse, Physical Abuse, Sexual Abuse, Physical Neglect, and Emotional Neglect. There is also a general indicator of exposure to abuse, which refers to the total sum of the subscales, with higher scores indicating greater severity of childhood trauma. The original version revealed good psychometric properties, with Cronbach's alphas ranging from 0.66 (physical neglect) to 0.92 (sexual abuse; Bernstein et al., 2003). The Portuguese version (Dias et al., 2013) reached internal consistency values varying between 0.47 (physical neglect) and 0.79 (emotional neglect). The internal consistency values for the current study sample were 0.75 for the total score, 0.78 for emotional abuse, 0.91 for emotional neglect, 0.81 for sexual abuse, 0.86 for physical abuse, and 0.50 for physical neglect.

The **Affective Lability Scale – Short Version** (ALS-18; Look et al., 2010; Portuguese version Almeida et al., in press) is a self-report of 18 items scored on a 4-point Likert scale, ranging from "very uncharacteristic of me" to "very characteristic of me". The total score ranges from 0 to 54 points, with higher scores indicating greater affective lability. It is composed of three subscales: Anxiety/Depression (AD), Depression/Elation (DE), and Anger (Ang). The original version revealed good psychometric properties (DA = 0.82; DE = 0.78, and Ang = 0.84). The Portuguese version also reached good to excellent Cronbach's alphas: 0.90 for AD, 0.89 for DE, 0.86 for Ang, and 0.95 for the total scale. The current sample showed the following Cronbach's alphas: 0.83 for DA, 0.85 for DE, 0.77 for Ang, and 0.92 for the total scale.

The **Benevolent Childhood Experiences Scale** (BCEs; Narayan et al., 2018; Portuguese version Almeida et al., 2021) is a 10-item, self-report instrument that assesses positive and supportive experiences from birth to 18 years of age. The positive experiences include internal and external safety and security, supportive relationships, and a positive and predictable quality of life. The original version reached test-retest reliability of 0.89, and the Portuguese version showed an internal consistency value of 0.68. In this sample, the internal consistency was 0.71.

2.3. Procedure

2.3.1. Data collection

Before data collection, an authorization was requested from the General Directorate of Reintegration and Prison Services – Ministry of Justice (DGRSP-MJ). After that, contact was made with prison directors, explaining the study objectives, the methodology, and scheduling the data collection. Potential participants identified by the prison staff were then contacted. All of them were informed about the nature of the study, were asked to voluntarily participate in the study, and signed an informed consent. Measures were completed individually in a paper-and-pencil format in a private room inside the prison to guarantee the confidentiality of data. Institutional files were also consulted to complement information regarding criminal history. The sample was recruited from 17 national prisons. The study was conducted following the ethical principles outlined in the Declaration of Helsinki (World Medical Association, 2013), and the protocol was approved by the Institutional Review Board of the Egas Moniz - Cooperativa de Ensino Superior.

2.4. Statistical analysis

All the statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 27.0. Descriptive statistics were used for sample and main variables characterization. Pearson, Spearman, and Point Biserial correlation coefficients were performed to analyze the correlation between all variables in the study. T-tests to compare the main variables' averages by sex and Chi-Squared tests to analyze the associations between the prevalence of CM and sex were also used. To determine whether child maltreatment (i.e., CTQ total scores and subscales) and positive childhood experiences (i.e., BCEs total scores) were related to affective lability (i.e., ALS total scores), two linear regression analyses were performed. To test the moderating role of PCEs (W) in the link between the CM and AL, two simple moderation analyses by sex were performed with Process Model 1 (Hayes, 2022). Process Model 1 enables testing the conditional effect (i.e., the effect of one variable on another, conditioned on a third or interaction), by estimating the effect of X on Y at a certain point (or points) along the moderator, and testing whether this effect is significant.

3. Results

3.1. Descriptive analyses

Analyzing the prevalence of CM, results revealed that all the participants reported at least one CM experience. Emotional neglect (EN; 89.6 %) was the most reported type of maltreatment, followed by physical neglect (PN; 84.2 %) and emotional abuse (EA; 69.3 %). Sexual abuse (SA) was the type of maltreatment less reported by inmates (21 %). Regarding PCEs, all the participants reported at least one positive experience in childhood, with a mean average of 8.36 ($SD = 1.94$). Participants revealed an average of 21.36 ($SD = 12.03$) on the total frequency of AL, 6.42 ($SD = 3.95$) for anxiety/depression, 9.71 ($SD = 5.65$) for depression/elation, and 5.23 ($SD = 3.64$) for anger. Results are presented in Table 2.

3.2. Correlation analyses

The correlation analyses between all variables in the study are presented in Table 3. Results revealed statistically significant correlations between all variables except between CM and age, between EA and EN, age, sex, and education, between physical abuse (PA) and EN, DA subscale, age, sex, and education, between PN and age, between EN and SA, PCEs, AL total scores and subscales, and age, between SA and AL total scores and subscales, age, and education, between PCEs and sex and education, and between sex and Anger and DE subscales of AL, and age. In general, as expected, CM was positively correlated to AL in adulthood, and PCEs were negatively correlated to CM and AL in adulthood.

3.3. Comparison analyses

Chi-squared tests were performed to test the associations between the prevalence of child maltreatment and sex. Results showed statistically significant differences between sex in all the types of child abuse (cf. Table 4). EA and PA were more prevalent among incarcerated men, and EN, SA, and PA were more prevalent among women.

Regarding the sum scores, results revealed differences between men and women on CM total scores, $t(422) = 6.163$, $p < .001$, emotional neglect, $t(422) = 6.440$, $p < .001$, sexual abuse, $t(422) = 3.818$, $p < .001$, physical neglect, $t(422) = 4.553$, $p < .001$, AL total scores, $t(422) = 2.104$, $p = .036$, and on depression/anxiety, $t(422) = 3.960$, $p < .001$ (cf. Table 4). Female inmates are those who present the highest scores in all the variables.

Table 2
Frequencies of childhood trauma and descriptive of benevolent childhood experiences and affective lability ($n = 424$).

	n	%
Childhood trauma	424	100
Emotional abuse	294	69.3
Emotional neglect	380	89.6
Sexual abuse	89	21.0
Physical abuse	215	50.7
Physical neglect	357	84.2

	M (SD)	Min - Max
Benevolent childhood experiences	8.36 (1.94)	1–10
Affective lability	21.36 (12.03)	0–54
Depression/anxiety	6.42 (3.95)	0–15
Depression/elation	9.71 (5.65)	0–24
Anger	5.23 (3.64)	0–15

Table 3
Correlation analysis between the main variables ($n = 424$).

	CT	EA	PA	PN	EN	SA	BCE	AL	DA	DE	Ang	Age	Sex
CT	1												
EA	.437***	1											
PA	.452***	.663***	1										
PN	.774***	.176***	.146**	1									
EN	.786***	−.060	−.037	.681***	1								
SA	.299***	−.350***	.326***	.004	−.046	1							
BCE	−.146**	−.464**	−350***	−.084	.074	−.187***	1						
AL	.165**	.195***	.167**	.155**	.062	.063	−.263***	1					
DA	.161**	.170***	.130**	.156**	.082	.062	−.228***	.891***	1				
DE	.136**	.173***	.135**	.133**	.043	.045	−.244***	.930***	.720***	1			
Ang	.161**	.192***	.203***	.136**	.048	.071	−.43***	.896***	.744***	.743***	1		
Age	.077	−.020	.071	.031	.040	.009	.060	−.118*	−.129**	−.084	−.119*	1	
Sex	−.287***	.009	−.002	−.216***	−.299***	−.181***	.000	−.102*	−.189***	−.020	−.088	−.041	1
Edu	−.237***	−.022	−.018	−.283***	−.261***	−.045	.083	−.179***	−.163**	−.153**	−.183***	−.090	–

Note. Pearson correlations were performed for all variables, except for education (Spearman correlations) and sex (Point Biserial correlations). CT = Childhood Trauma; EA = Emotional Abuse; EN = Emotional Neglect; SA = Sexual Abuse; PA = Physical Abuse; PN = Physical neglect; BCE = Benevolent Childhood Experiences; AL = Affective Lability; DA = Depression/Anxiety; DE = Depression/Elation; Ang = Anger.; Edu = Education.

** $p < .01$.

*** $p < .001$.

Table 4
Comparison analysis between women and men in childhood trauma, benevolent childhood experiences and affective lability ($n = 424$).

	Women ($n = 81$)	Men ($n = 343$)	χ^2	p	*Cramer's' V*
	N (%)	N (%)			
CT	81 (100)	343 (100)			
EA	44 (54.3)	250 (72.9)	10.623	.001	.158
EN	80 (98.8)	300 (87.5)	8.999	.001	.146
SA	26 (34.6)	61 (17.8)	11.130	.001	.162
PA	33 (40.7)	182 (53.1)	3.979	.030	.097
PN	81 (100)	276 (80.5)	18.792	<.001	.211

	Women ($n = 81$)	Men (343)	t	p	CI	d
	M (SD)	M (SD)				
CT	67.37 (7.45)	58.27 (12.78)	6.163	.000	6.20–12.00	.76
EA	8.54 (4.60)	8.63 (3.86)	−.175	.861	−1.06–.89	−.02
PA	7.57(4.34)	7.55 (3.74)	.048	.962	−.91–.96	.01
PN	13.14 (2.70)	10.85 (4.33)	4.553	.000	1.30–3.28	.56
EN	20.0 (5.23)	14.64 (7.05)	6.440	.000	3.73–7.00	.80
SA	6.78 (3.54)	5.66 (2.03)	3.782	.000	.54–1.70	.48
BCEs	8.36 (2.12)	8.36 (1.90)	−.002	.998	−.47–.47	.00
AL	23.88 (12.54)	20.76 (11.85)	2.104	.036	.21–6.03	.26
DA	7.95 (4.04)	6.05 (3.84)	3.960	.000	.96–2.84	.49
DE	10.04 (5.97)	9.64 (5.57)	.575	.566	−.97–1.77	.07
Ang	5.89 (3.81)	5.07 (3.59)	1.817	.070	−.07–1.70	.23

Note. CT = Childhood Trauma; EA = Emotional Abuse; EN = Emotional Neglect; SA = Sexual Abuse; PA = Physical Abuse; PN = Physical neglect; BCE = Benevolent Childhood Experiences; AL = Affective Lability; DA = Depression/Anxiety; DE = Depression/Elation; Ang = Anger.

3.4. Regression analysis

Two linear regression analyses were performed to determine the relationship between PCEs (BCEs) and AL (ALS-18) after controlling for sex, age, education, and CM (CTQ). In the first regression, sex, age, education, and CM (CTQ total score) were entered in step 1, followed by PCEs (BCEs total score) in Step 2. The second regression included sex, age, education, EA, PA, and PN (CTQ subscales) in Step 1 and PCEs (BCEs total score) in Step 2. Results are displayed in Table 5.

The model with sex, age, education, and CM was statistically significant, $F(4, 407) = 7.745$, $p < .001$ (AIC = 3254.112; BIC = 3700.445). Individual analysis revealed that age ($b = -0.146$, $p = .008$, 95%CI [−0.253; −0.038]), education ($b = -1.415$, $p < .001$, 95%CI [−2.196; −0.634]) and CM ($b = 0.108$, $p = .030$, 95%CI [0.010; 0.205]) significantly predicted AL. When added to the model, PCEs significantly predicted AL, $F(1, 406) = 22.820$, $p < .001$, independent of sex, age, education, and CM (AIC = 3248.944; BIC =

Table 5
Linear regression models of affective lability.

	Model 1				Model 2			
	b	SE	*p*	95 % CI	*b*	SE	*p*	95 % CI
Step 1								
Age	−0.146	0.055	.008	[−0.253; −0.038]	−0.144	0.054	.008	[−0.250; −0.037]
Sex	−2.009	1.502	182	[−4.962; 0.944]	−2.615	1.456	.073	[−5.477; 0.247]
Education	−1.415	0.397	.000	[−2.196; −0.634]	−1.461	0.395	.000	[−2.234; −0.684]
CT	0.108	0.049	.030	[0.010; 0.205]				
EA					0.367	0.190	.054	[−0.006; 0.740]
PA					0.244	0.197	.217	[−0.144; 0.632]
PN					0.166	0.146	.254	[−0.120; 0.453]
Step 2								
Age	−0.125	0.053	.020	[−0.230; −0.020]	−0.128	0.054	.018	[−0.233; −0.022]
Sex	−2.298	1.465	.117	[−5.178; 0.581]	−2.590	1.435	.072	[−5.412; 0.231]
Education	−1.189	0.390	.002	[−1.955; −0.422]	−1.233	0.395	.002	[−2.010; −0.457]
CT	0.079	0.048	.104	[−0.016; 0.174]				
EA					0.137	0.198	.489	[−0.252; 0.526]
PA					0.194	0.195	.321	[−0.189; 0.577]
PN					0.187	0.144	.194	[−0.096; 0.470]
BCEs	−1.395	0.292	.000	[−1.968; −0.821]	−1.162	0.328	.000	[−1.807; −0.518]

Note. CT = Childhood Trauma; EA = Emotional Abuse; PA = Physical Abuse; PN = Physical neglect; BCE = Benevolent Childhood Experiences; AL = Affective Lability.

3731.467). The R^2 *change* value was 0.049, which means that PCEs contributed with an additional variance of 4.9 % to the model. Analyzing individually the variables used in the prediction of AL, age ($b = -0.125$, $p = .020$, 95%CI [−0.230; −0.020]), education ($b = -1.189$, $p = .002$, 95%CI [−1.955; −0.422]), and PCEs ($b = -1.395$, $p < .001$, 95%CI [−1.968; −0.821]) were negatively associated with AL. Thus, for each unit increase in age, education, and PCEs, AL would be expected to decrease by a factor of 0.125, 1.189, and 1.395, respectively. CM no longer predicts AL.

In the second model, the model with sex, age, education, EA, PA, and PN was statistically significant, $F(6,405) = 7.567$, $p < .001$ (AIC = 3232.817; BIC = 3695.235). However, only age ($b = -0.144$, $p = .008$, 95%CI [−0.250; −0.037]), and education ($b = -1.461$, $p < .001$, 95%CI [−2.238; −0.684]) significantly predicted AL. When added to the model, PCEs also significantly predicted AL, $F(1,404) = 12.569$, $p < .001$, independent of sex, age, education, EA, PA, and PN (AIC = 3232.039; BIC = 3730.646). The R^2 *change* value was 0.027, meaning that PCEs contributed to the model with an additional variance of 2.7 %. An individual analysis of the variables included in the prediction model revealed that age ($b = -0.128$, $p = .018$, 95%CI [−0.233; −0.022]), education ($b = -1.233$, $p = .002$, 95%CI [−2.010; −0.457]), and PCEs ($b = -1.162$, $p < .001$, 95%CI [−1.807; −0.518]) were negatively related to AL. Thus, each unit increase in age, education, and PCEs decreases AL by a factor of 0.128, 1.233, and 1.162, respectively.

3.5. Moderation analysis

Moderation models were used to test whether PCEs moderated the effect of CM on AL by sex, after controlling for age and education. For men, the moderation model explained 11.5 % of the variance of AL, which was significant, $F(5, 325) = 8.433$, $p < .001$, $R^2 = 0.115$. After controlling for age, $b = -0.083$, SE = 0.060, $t = -1.380$, $p = .168$, and education, $b = -0.876$, SE = 0.427, $t = -2.051$, $p = .041$, PCEs was significantly correlated to AL, $b = -1.625$, SE = 0.334, $t = -4.869$, $p \leq 0.001$, but CM no longer showed significance, $b = 0.076$, SE = 0.051, $t = 1.497$, $p = .135$. The interaction effect CM x PCEs was also non-significant, $b = 0.016$, SE = 0.022, $t = -0.747$, $p = .455$. Thus, there was no moderation effect of PCEs.

For women, the overall moderation model was significant, $F(5,75) = 3.181$, $p = .012$, $R^2 = 0.175$, explaining 17.5 % of the variance. After controlling for age, $b = -0.333$, SE = 0.124, $t = -2.686$, $p = .009$, and education, $b = -2.791$, SE = 1.120, $t = -2.492$, $p = .015$, neither CM, $b = 0.202$, SE = 0.226, $t = 0.892$, $p = .375$, or PCEs, $b = -0.625$, SE = 0.641, $t = -0.976$, $p = .332$, were significantly correlated to AL. The interaction effect CM x PCEs was also non-significant, $b = -0.026$, SE = 0.064, $t = -0.407$, $p = .685$, being no moderation effect of PCEs.

4. Discussion

This study aimed to examine the relationship between CM, PCEs, and AL, identify the predictors of AL, and understand whether PCEs moderated the relationship between CM and AL in a sample of male and female inmates. This study extends previous literature as previous research has focused primarily on the study of ACEs to the detriment of PCEs (Crandall et al., 2019), especially among inmates, despite the literature highlighting the protective and buffer role of PCEs (Baglivio & Wolff, 2021; Crouch et al., 2021; Daines et al., 2021; Karatzias et al., 2020). Besides, as far as we know, there are no studies in Portugal focusing on the role of PCEs in the context of CM, and international studies on PCEs are also sparse (e.g., Almeida et al., 2021).

Our results showed that CM was positively associated with AL (Almeida et al., in press; Fergusson et al., 2008; Santos, 2019) and negatively associated with PCEs (Hou et al., 2022; Rollins & Crandall, 2021), supporting prior research. These results reinforce the role of victimization experiences on individuals' development and adjustment (Afifi et al., 2008; Maniglio, 2012; Narayan et al., 2018), and particularly on emotion regulation (Nowalis et al., 2022; Pereira et al., 2021) and AL (Aas et al., 2014, 2016; Almeida et al., in press). Victimization by physical and sexual abuse and neglect have also been associated with mood disorders (Carr et al., 2013; Wadji et al., 2021). A recent systematic review points out that CM increases the methylation of the glucocorticoid receptor gene, which is positively associated with higher HPA axis activity, externalizing problems, and AL (Wadji et al., 2021). On the contrary, we found a negative association between PCEs and AL. This result is consistent with previous findings showing that higher levels of PCEs, including growing up with at least one safe caregiver, having one or more close friends, and having a predictable home routine, are associated with better mental health in adulthood (Bethell et al., 2019; Crandall et al., 2020; Narayan et al., 2018). In addition, PCEs and secure relationships early in life are key factors in acquiring developmental abilities, such as resilience, self-control, and emotional regulation (Cicchetti & Toth, 2009; Toth & Cicchetti, 2013).

Our results showed a high prevalence of all types of CM among incarcerated individuals, following prior research conducted with imprisoned individuals (Meade & Steiner, 2013; Zhang et al., 2021). Although some differences between men and women in the prevalence of different types of CM were found, with men reporting more EA and PA and women reporting more EN, SA, and PA, incarcerated women revealed the highest scores in all types of CM. Thus, when they are victims of CM, women seem to suffer higher levels of abuse than men. In addition, women reported the highest levels of AL. This result was in accordance with prior research that points out differences between men and women concerning victimization in childhood (e.g., Drapalski et al., 2009) and mental health problems, with females showing the highest levels (e.g., Turner et al., 2021). Studies identified high rates of CM in offenders, with females reporting more frequently all forms of CM and clinical symptomatology such as anxiety and depression compared with males (Turner et al., 2021). A recent study with a sample from a forensic psychiatric facility showed that females report a higher average than males in CM (Stinson et al., 2021). Despite the scarcity of studies about AL in inmates, the literature identifies higher levels of negative emotions among females (Jang et al., 2021) and higher levels of AL (Aas et al., 2014; Almeida et al., in press).

After controlling for age, sex, and education, regression analyses revealed that PCEs have an important role in AL, contrary to CM, that no longer predicts AL. Thus, even in the presence of CM, PCEs significantly predicted AL more than CM. These findings suggest

that PCEs may buffer the effects of CM on AL. The ecological-transactional model explains the role of PCEs as a protective factor for victimization experiences (Cicchetti & Toth, 2016). Recent studies revealed that PCEs could buffer the adverse impact of CM (e.g., Baglivio & Wolff, 2021; Karatzias et al., 2020). PCEs may increase the individual's ability to deal with adverse experiences by developing competencies to adapt positively to negative events (Gartland et al., 2019). Thus, higher PCEs may mean a less negative effect on emotion regulation and, therefore, lower levels of AL. Previous literature found that PCEs interact with ACEs such that higher levels of PCEs may buffer or neutralize the effects of ACEs on adverse health outcomes (Crandall et al., 2019; Crandall et al., 2020, Narayan et al., 2018) and, more specifically, on AL.

These findings should, however, be interpreted cautiously as moderation analyses by sex did not confirm the moderation role of PCEs in the relationship between CM and AL, which was not following the existing literature that points to a potential protective role of PCEs even in the context of CM (Baglivio & Wolff, 2021; Crouch et al., 2021; Daines et al., 2021; Karatzias et al., 2020). The unique characteristics of our sample (i.e., inmates with a significant prevalence of CM experiences) may explain the obtained results. The absence of studies using inmates to understand the moderator role of PCEs on the relationship between CM and AL prevents us from making reliable comparisons and considerations regarding previous literature. Even so, this study found other promising results.

Interestingly, moderation analyses revealed that for male inmates, after controlling for age and education, while PCEs remain statistically associated with AL, CM lacks significance, i.e., it no longer showed correlations with AL. These findings highlight the potential role of PCEs among men (as they remain negatively and significantly related to AL) together with other factors that may act as protective factors or interact with both PCEs and CM. However, after controlling for age and education, neither CM nor PCEs were statistically associated with AL for women. These findings suggest that PCEs may be less relevant for AL among women than among men and that other factors may interact with each other and contribute to AL. Indeed, moderation analyses revealed that age and education levels for men and education levels for women seem to have an important role in the relationship between CM and AL, as CM was no longer significant after controlling for those variables. Although no firm conclusions can be drawn from these results as age and education are only entered into the model as covariates, previous literature has pointed to the potential role of those variables. In fact, age has been assumed to be a significant aspect of understanding mental health issues, with young inmates having a higher prevalence of mental health issues and psychological distress than older ones (Chiclana et al., 2019; Gonçalves et al., 2016). The lack of education may also explain the high prevalence of psychopathological problems among inmates (Every-Palmer et al., 2014). According to different studies, younger age and lower education are associated with mental health problems (Gonçalves et al., 2016; Pat et al., 2021). The ecological-transactional model (Cicchetti, 1993; Cicchetti & Toth, 2016) and the developmental psychopathology theory (Toth & Cicchetti, 2013) might explain these results. Each level of the ecology shows compensatory and potentiating risk factors associated with CM, influencing other environmental levels. Although CM has a very significant impact on the development of the individual, there are infinite permutations of the protective and risk variables across and within the ecology levels, and the protective and compensatory factors may attenuate the negative impact (Cicchetti & Toth, 2016). Depending on the coping mechanisms of each one, individuals can oscillate between functional pathologies and non-pathologies (Toth & Cicchetti, 2013). The presence of assets and resources can promote resilience and modify the relationship between risks, such as ACEs (Zimmerman, 2014). Furthermore, resilience may also promote post-traumatic growth, a positive psychological change experienced after an adverse event (Tedeschi et al., 2017). Stimulating relationships, safe, protective, and equitable environments, and healthy development of social and emotional competencies (Center for the Study of Social Policy, 2017; Crouch et al., 2021; Sege & Browne, 2017) may contribute to developing adaptive skills and resilience, preventing maladjustments and mental health problems (Cicchetti & Toth, 2009).

Despite the significant contributions, this study also possesses some limitations that should be considered. First, our findings are based on cross-sectional data, and future work should consider longitudinal designs. Second, answers from a self-report protocol may be compromised by social desirability. Third, despite being widely used, the instrument to assess child maltreatment does not include items related to exposure to intimate partner violence. Fourth, our sample has considerably more male participants than females, and future research should expand the number of female participants. Fifth, our sample is a convenience one, and as such, not representative of the entire Portuguese prison population, not allowing the generalization of results. However, it is important to stress that the sample contemplates a considerable number of regions of Portugal, from north to south.

The principal contribution of this study is revealing the contribution of PCEs but also of other potential protective factors to AL, even in the presence of CM, in a specific sample, i.e., incarcerated men and women. In addition, our findings suggest that PCEs may have a differential role in AL for men and women. This study is of great relevance because it contributes to developmental psychology, forensic psychology, and clinic psychology, showing how PCEs and other potentially protective factors can be relevant for individuals throughout their development, even in the presence of CM, and that these factors might have a different impact on men and women. Although CM might decrease emotion regulation skills, this study showed that PCEs, especially among men, along with other protective factors, might reduce the negative impact of CM on health outcomes, particularly on AL. Indeed, PCEs and other protective factors can promote resilience in individuals with a history of CM (Masten & Cicchetti, 2016). Our findings also point out to the importance of assessing offenders' vulnerabilities and strengths and identify the specificities of men and women, in order to implement reliable interventions to decrease their emotional and affective problems and, therefore, their involvement in new crimes. Knowing and understanding the relationship between vulnerabilities and strengths and the gender-specific needs allow for designing more effective prevention (and intervention) strategies to prevent affective lability. Prevention programs should also be created for children and youth to increase their positive experiences and reduce the likelihood of developing emotional problems and delinquency. These data can also contribute to develop and implement screening processes for at-risk children, decreasing mental health problems and criminal behavior in adulthood.

In short, although the impact of CM on lifespan development was well-documented, less is known about the role of PCEs, especially among forensic populations. Thus, this study expands previous research by analyzing the role of PCEs on the AL in a sample of

incarcerated men and women that suffered from CM. Our results claim attention to the need to implement preventive efforts to promote children and youth's safe, stable, and stimulating close relationships, as well as predictable home routine, as these factors are related to better mental and behavioral outcomes in adulthood (Bethell et al., 2019; Crandall et al., 2020; Narayan et al., 2018).

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Data availability

Data will be made available on request.

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