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# Emotion regulation in the context of protective and adverse childhood experiences: A comparative study of perpetrators of sex crimes and a community sample

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## ARTICLE INFO

## Keywords:

Childhood experiences  
Emotional regulation  
Community  
Perpetrators of sex crimes

## ABSTRACT

**Background:** Adverse childhood experiences (ACEs) can have an impact on emotional development, affecting the ability to regulate emotions effectively. Positive childhood experiences (PCEs) can also occur, enhancing the ability to cope with stressful situations and improving emotional regulation skills.

**Objective:** Analyze the relationship between the ACEs, PCEs, and emotional regulation difficulties (ERD); compare a sample of the community with a sample of perpetrators of sex crimes in terms of these variables, and analyze the predictors of ERD.

**Participants:** The sample comprised 764 males (537 from the community sample and 209 serving time for sex crimes).

**Method:** A sociodemographic questionnaire, the Adverse Childhood Experiences Questionnaire, the Benevolent Childhood Experiences Scale, and the Difficulties in Emotion Regulation Scale.

**Results:** Positive correlations were verified between ACEs and ERD, and negative ones between PCEs and ACEs, and between PCEs and ERD. Perpetrators of sex crimes have more ACEs and fewer PCEs and ERD compared to the community sample. Age, education level, sexual abuse, emotional neglect, parental divorce, family mental illness or suicide, and PCEs are predictors of ERD.

**Conclusion:** This study increases the understanding of the relationship between ACEs, PCEs, and their impact on ERD in adulthood, as well as the differences between the community sample and perpetrators of sex crimes in some of the variables studied. Furthermore, it also highlights the importance of intervening with families to increase PCEs, mitigate the effects of ACEs on ERD, and prevent crime.

## 1. Introduction

Childhood is a crucial stage in an individual's life (Untung et al., 2023), and experiences during this period of development influence long-term functioning (Cain et al., 2024). These experiences can occur from birth to the age of 18 (O'Neill et al., 2021) and are classified as positive childhood experiences (PCEs) (Almeida et al., 2021) and adverse childhood experiences (ACEs) (Altikriti et al., 2025; Felitti et al., 1998), affecting development and well-being differently (Almeida et al., 2024b; Daines et al., 2021).

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<https://doi.org/10.1016/j.chiabu.2026.107949>

Received 18 October 2025; Received in revised form 4 February 2026; Accepted 11 February 2026

Available online 21 February 2026

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ACEs are potentially traumatic events that can include household dysfunction, physical neglect, emotional neglect, sexual abuse, physical abuse, and emotional abuse (Felitti et al., 1998; Pinto et al., 2014). Experiencing ACEs can lead to long-term physical and psychological issues (Kuhar & Zager Kocjan, 2021), including emotional dysregulation (Cloitre et al., 2019), and increased risks of substance abuse (Mongan et al., 2025) and delinquent behavior (Pires & Almeida, 2023).

PCEs include experiences such as perceived relational and internal security (e.g., having one safe caregiver and comforting beliefs), a positive and predictable quality of life (e.g., regular meals and bedtimes), and interpersonal support (e.g., a caring teacher) (Almeida et al., 2021; Narayan et al., 2018). A lack of PCEs can be as damaging (Narayan et al., 2021) or even more detrimental than adversity (Almeida et al., 2021). PCEs play a significant role in mitigating the adverse effects of ACEs, acting as a buffer (Cain et al., 2024; Feiler et al., 2023) and boosting physical and mental health (Crandall et al., 2019). PCEs enhance resilience, enabling individuals to recover more quickly from stressful events (Crouch et al., 2024). To understand the role of PCEs in human development, the allostasis provides a fundamental theoretical framework (Cunha et al., 2024). Allostasis refers to the physiological adaptation processes through which individuals respond to stressors, enabling the dynamic regulation of biological systems across variable environmental contexts and maintaining physiological and behavioral stability (Santamaría-García et al., 2025). After exposure to a stressor, regulatory systems tend, under normative conditions, to recover their basal equilibrium, returning to a state of adaptive activation (Word et al., 2022). Even in highly stressful contexts, the presence of protective factors associated with PCEs can more effectively modulate the stress response, promoting adaptation processes and reinforcing resilience throughout the individual's development (Boullier & Blair, 2018).

### 1.1. Childhood experiences and emotional regulation

Experiencing ACEs impairs emotional regulation (Cole & Diaz, 2024), a complex process (Bettis et al., 2022) involving awareness, understanding, and processing of emotions (Marques, 2020). Emotional regulation difficulties (ERD) arise when individuals struggle to understand, identify, respond to, accept, and control emotions (Burton et al., 2022). Early trauma alters brain organization (Feinstein, 2023), affecting the processing of emotional information and emotional regulation (Jaggi & Kumari, 2024). ERD causes health problems (Feiler et al., 2023) and behavioral issues (Almeida & Costa, 2023). Children with ERD exhibit cognitive deficits and externalizing and antisocial behaviors (Muniz et al., 2019), including difficulty controlling aggressive impulses, frustration, and hostility (Wolff & Baglivio, 2016), that can predict aggressiveness (Almeida et al., 2024a) and illegal acts (Almeida & Costa, 2023).

On the other hand, when the childhood experiences are positive, ERD tends to decrease (Feiler et al., 2023). This process enhances cognitive and emotional processing of experiences, promoting the adaptive reevaluation of stressful events (Cheong et al., 2017). Children raised in safe, nurturing environments learn to tolerate and view intense emotions as functional, rather than fearing them (Mikulincer & Shaver, 2010). Thus, PCEs are vital for developing skills such as emotion management, which is crucial for maintaining healthy relationships later (Tang et al., 2023).

### 1.2. Childhood experiences and emotional regulation of perpetrators of sex crimes

The literature has demonstrated an association between ACEs and crime (Almeida et al., 2023; Almeida & Costa, 2023), including sex crimes (Almeida & Costa, 2023). Perpetrators of sex crimes often experience a variety of ACEs (Albuquerque & Almeida, 2025), registering higher levels of these experiences when compared to the community sample (Kahn et al., 2021). Furthermore, empirical evidence suggests that exposure to ACEs occurs more frequently in individuals convicted of sex crimes when compared to offenders involved in other types of crimes (Drury et al., 2019). Although a substantial part of the research has focused on characterizing the prevalence of ACEs throughout development among offenders (Pessoa & Almeida, 2024), empirical research dedicated to identifying and analyzing the role of PCEs remains relatively scarce (Almeida et al., 2023). These experiences offer a relevant conceptual framework for understanding the mechanisms through which some individuals, despite exposure to ACEs, develop resilience skills, emotional self-regulation, and prosocial behaviors, which are fundamental for interrupting persistent trajectories of criminal involvement and recidivism in the criminal justice system (Huang et al., 2023).

Emerging research has shown that PCEs can play a significant protective role in populations exposed to high criminogenic risk (Azami et al., 2023). Specifically, the presence of secure and consistent emotional bonds with caregivers (Scharpf et al., 2024), involvement in structured school or community settings (Gearhart & Littman, 2024), as well as the quality of interpersonal relationships with peers, have been consistently associated with a lower likelihood of engaging in criminal behavior (Zúñiga et al., 2024).

Studies conducted with perpetrators of sex crimes suggest that they tend to experience more ACEs than PCEs (Kahn et al., 2021), compared to the community population (Daines et al., 2021). However, the literature is inconsistent, since another study found no differences in PCEs between perpetrators of sex crimes and the community (Almeida & Costa, 2023). A study with young perpetrators of sex crimes shows positive maternal caregiving can mitigate trauma effects, suggesting nurturing environments may lower the risk of future offenses (Yoder et al., 2022). Nevertheless, research on PCEs in offenders (Almeida et al., 2023), particularly perpetrators of sex crimes, remains scarce, highlighting a gap in understanding their impact on this sample (Almeida & Costa, 2023).

The Developmental Psychopathology Theory explains how ACEs may contribute to the likelihood of committing sex crimes (Toth & Cicchetti, 2013), suggesting that more ACEs hinder child development, increasing exposure to risk and antisocial behavior in the future. Conversely, PCEs and secure relationships lay the groundwork for healthier relationships and social interactions (Toth & Cicchetti, 2013).

Perpetrators of sex crimes tend to show more ERD compared to the community sample (Pazhooyan et al., 2024). ERD may be more prevalent among individuals who experience ACEs (Marques, 2020) and engage in criminal sexual behavior (Almeida & Costa, 2023). According to Multimodal Self-Regulation Theory, perpetrators of sex crimes use harmful sexual behaviors as a maladaptive self-

regulatory strategy to cope with short-term stressors, causing harm to others (Stinson et al., 2023). These behaviors can be learned and normalized through victimization during childhood (Hedén et al., 2023), which fosters beliefs and cognitions that support such actions (Silva et al., 2024; Stinson et al., 2023).

### 1.3. The present study

ACEs are linked to ERD (Cole & Diaz, 2024), preventing individuals from adaptively coping with emotions (Asmamaw, 2024) and can lead to criminal behavior, like sexual aggression (Almeida & Costa, 2023; Stinson et al., 2023). Compared to the community sample, perpetrators of sex crimes tend to show more ERD (Pazhooyan et al., 2024). On the other hand, PCEs can serve as a protective factor against ACEs, reducing adverse outcomes (Almeida et al., 2021; Narayan et al., 2018). Despite their importance, PCEs are less studied compared to ACEs (Crandall et al., 2019), especially in perpetrators of sex crimes (Almeida & Costa, 2023). This research examines the relationship between ACEs, PCEs, and ERD, comparing the community sample with the sample of perpetrators of sex crimes. The study also aims to identify the predictors of ERD. According to the literature, we expect that perpetrators of sex crimes report more levels of ACEs (Kahn et al., 2021) and ERD (Pazhooyan et al., 2024) and fewer levels of PCEs compared to the community sample (Albuquerque & Almeida, 2025). Furthermore, it is expected that ACEs will be positively associated with ERD (Girard & Almeida, 2025), while PCEs will be negatively associated with ERD (Crandall et al., 2019) in both groups. Finally, ACEs and PCEs are

**Table 1**  
Sociodemographic characterization of the sample ( $n = 746$ ).

	Community sample ( $n = 537$ )		Perpetrators of sex crimes sample ( $n = 209$ )	
	<i>n</i>	%	<i>n</i>	%
Nationality				
Portuguese	516	95.3	181	86.7
Brazilian	8	1.4	10	4.8
Cabo Verdian	1	0.2	10	4.8
Other	11	2.2	7	3.5
Sexual orientation				
Heterosexual	491	91.4	199	95.2
Homosexual	25	4.7	3	1.4
Bisexual	18	3.4	4	1.9
Asexual	1	0.2	0	0
Other	2	0.4	3	1.4
Marital status				
Single	364	67.8	82	39.2
Married/common law marriage	150	27.9	60	28.7
Separated/divorced	22	4.1	58	27.8
Widow	1	0.2	4	1.9
Educational qualifications				
No education	0	0	8	3.8
Until 4th grade	1	0.2	34	16.3
Until 6th grade	3	0.6	47	22.5
Until 9th grade	26	4.8	46	22
Until 12th grade	262	48.8	54	25.8
Degree	182	33.9	14	6.7
Master's degree	57	10.6	3	1.4
Doctorate	4	0.7	0	0
Other	1	0.2	2	1
Socioeconomic status				
Low	30	5.6	17	8.1
Medium-low	112	20.9	41	19.6
Medium	270	50.3	100	47.8
Medium-high	112	20.9	43	20.6
High	1	0.2	7	3.3
Recidivism conviction				
No	0	0	159	75.6
Yes	0	0	50	24.4
Conviction sexual assault				
Children	0	0	123	58.9
Adults	0	0	67	32.1
Adolescents	0	0	13	6.2
Disabled	0	0	4	1.9
Children and adults	0	0	2	1
Previously met the victim				
No	0	0	55	26.3
Yes	0	0	150	71.8
Relationship victim				
No	0	0	90	43.1
Yes	0	0	85	40.7

expected to predict ERDs (Rzeszutek et al., 2025). Only two studies in Portugal have focused on the effect of PCEs on the presence of ACEs in perpetrators of sex crimes (Albuquerque & Almeida, 2025; Almeida & Costa, 2023). Still, to the best of our knowledge, no study has analyzed the interaction of ACEs, PCEs, and ERD in a sample of perpetrators of sex crimes.

## 2. Method

### 2.1. Participants

The study included 746 males aged between 18 and 84 ( $M = 36.20$ ,  $SD = 14.80$ ). The sample comprised 537 (72%) participants from the community sample aged between 18 and 78 ( $M = 32.32$ ,  $SD = 14.17$ ), and the remaining 209 (28%) participants were incarcerated for sexual offenses, aged between 23 and 84 ( $M = 46.19$ ,  $SD = 11.30$ ). Most community participants have Portuguese nationality ( $n = 516$ , 95.3%), are single ( $n = 364$ , 67.8%), and have completed 12th grade ( $n = 262$ , 48.8%).

In the perpetrators of sex crimes sample, most participants have Portuguese nationality ( $n = 181$ , 86.7%), are single ( $n = 82$ , 39.2%), and have 12th grade ( $n = 54$ , 25.8%). The type of sexual assault varied, with 122 (58.4%) of the crimes being committed against children, 66 (31.6%) against adults, 13 (6.2%) against adolescent victims, 4 (1.9%) against disabled victims, and 2 (1%) against child and adult victims simultaneously. Of the sample, 150 (71.8%) perpetrators previously knew the victim, and 85 (40.7%) reported having a family relationship with the victim. Table 1 provides further sociodemographic data.

### 2.2. Measures

The **Sociodemographic Questionnaire** was used to analyze sociodemographic variables, namely, age, nationality, sexual orientation, marital status, educational qualifications, socioeconomic status, recidivism conviction, type of sex crime, whether perpetrators of sex crimes previously knew the victim, and whether there is a family relationship with the victim.

The **Adverse Childhood Experiences Questionnaire** (ACEs; Felitti et al., 1998; Portuguese version; Pinto et al., 2014) is a self-report measure assessing childhood adversity before the 18 age through 17 dichotomous items across 10 subscales: emotional, physical and/or sexual abuse, emotional and/or physical neglect, parental divorce, exposure to domestic violence family, substance abuse, family mental illness or suicide, and family imprisonment. ACE presence is confirmed if at least one question is answered affirmatively. Higher scores indicate more ACEs. The instrument showed good psychometric properties in this sample ( $\alpha = 0.86$ ), and the subscales showed acceptable psychometric properties: Emotional Abuse,  $\alpha = 0.69$ ; Physical Abuse,  $\alpha = 0.61$ ; Sexual Abuse,  $\alpha = 0.67$ ; Emotional Neglect,  $\alpha = 0.67$ ; Physical Neglect,  $\alpha = 0.56$ ; Exposure to Domestic Violence,  $\alpha = 0.52$ .

The **Benevolent Childhood Experiences Scale** (BCEs; Narayan et al., 2018; Portuguese version; Almeida et al., 2021) is a self-report scale consisting of 10 dichotomous response items that assess positive experiences and support from birth to 18 years (e.g., protection, internal and external security, supportive relationships, and a positive and predictable quality of life). Higher scores indicate more positive experiences. The instrument revealed good psychometric properties in this sample ( $\alpha = 0.74$ ).

The **Difficulties in Emotion Regulation Scale - Short Form** (DERS-SF; Kaufman et al., 2016; Portuguese version; Gouveia et al., 2022) is a self-report measure of emotional regulation difficulties comprising 18 items across 6 subscales in a 5-point Likert scale: Strategies, Non-Acceptance, Impulse, Goals, Awareness, and Clarity. Higher scores indicate greater difficulties in emotion regulation. The instrument revealed very good psychometric properties in this sample ( $\alpha = 0.91$ ) for the total score. The psychometric properties were also very good in some subscales, namely, Strategies ( $\alpha = 0.86$ ), Non-Acceptance ( $\alpha = 0.84$ ), Impulse ( $\alpha = 0.90$ ), Goals ( $\alpha = 0.89$ ), and Clarity ( $\alpha = 0.83$ ). The Awareness subscale showed good psychometric properties ( $\alpha = 0.75$ ).

### 2.3. Procedure

The study was approved by the University Ethics Committee. All necessary ethical considerations were considered to protect the confidentiality and rights of participants, following the ethical principles outlined in the Declaration of Helsinki (World Medical Association, 2024). Finalizing the research protocol required about twenty minutes.

To collect data from the community sample, we used an online Qualtrics protocol. The online protocol was disseminated via social networks (e.g., email, Facebook, WhatsApp, and Instagram) to adult individuals who can read and write Portuguese. Participants provided informed consent online, and all ethical issues underlying data collection were strictly adhered to, including maintaining participant anonymity.

The sample of perpetrators of sex crimes includes adults serving prison sentences for sexual crimes in 12 Portuguese prisons, from the north to the south of the country. Permission to collect data in prisons was obtained from the *Direção-Geral de Reinserção e Serviços Prisionais* [General Directorate of Reintegration and Prison Services] (DGRSP). We contacted the prison directors by email to explain the study and inquire about scheduling data collection if approved. Prison staff contacted potential participants. They were informed of the study's nature, invited to participate voluntarily, and signed an informed consent form before completing the research protocol. The informed consent explained that participation was voluntary, data would be kept confidential, and there were no expected risks or benefits (e.g., financial, legal, or other). Data were collected through in-person interviews, conducted in private rooms within the prison to ensure confidentiality.

**Table 2**Pearson's Correlation between ACEs, BCEs, and DERS ( $n = 746$ ).

Community sample ( $n = 537$ )																			
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. EA	1	0.63**	0.18**	0.48**	0.31*	0.20*	0.36**	0.33*	0.27**	0.07	0.74**	-0.26**	0.17**	0.16*	0.16**	0.22**	-0.02	0.22**	0.21**
2. PA		1	0.21**	0.31**	0.33**	0.18**	0.33**	0.16**	0.24**	0.17**	0.65**	-0.19**	0.09*	0.05	0.13**	0.11**	-0.02	0.08	0.10*
3. SA			1	0.15**	0.22**	0.05	0.19**	0.10*	0.15**	0.12**	0.35**	-0.10*	0.03	0.07	0.09*	0.07	0.06	-0.03	0.07
4. EN				1	0.31**	0.18*	0.29**	0.29**	0.28**	0.11*	0.63**	-0.34**	0.31*	0.28**	0.21**	0.27**	-0.04	0.28**	0.30**
5. PN					1	0.20**	0.53**	0.30**	0.25*	0.12**	0.50**	-0.16**	0.05	0.05	0.05	0.04	-0.01	0.06	0.05
6. PD						1	0.22**	0.21**	0.19**	0.22**	0.49**	-0.07	-0.03	0.00	-0.01	-0.03	0.01	0.05	-0.00
7. EDV							1	0.33**	0.28**	0.24**	0.58**	-0.15**	0.04	0.02	0.00	0.03	0.04	0.04	0.04
8. FSA								1	0.32**	0.18**	0.55**	-0.12**	0.08	0.08	-0.01	0.06	0.02	0.10*	0.07
9. FMIS									1	0.12**	0.55**	-0.15**	0.08	0.11*	0.07	0.13**	0.00	0.08	0.11*
10. FI										1	0.34**	-0.04	-0.02	-0.03	-0.06	-0.05	0.04	-0.06	-0.04
11. ACEs											1	-0.29**	0.16*	0.16**	0.12**	0.17**	0.02	0.17*	0.18**
12. BCEs												1	-0.34**	-0.29**	-0.24**	-0.24**	0.07	-0.30**	-0.31**
13. DERS S													1	0.77**	0.79**	0.73**	-0.01	0.65**	0.90**
14. DERS N-A														1	0.72**	0.72**	-0.01	0.62**	0.88**
15. DERS I															1	0.65**	0.01	0.54**	0.85**
16. DERS G																1	0.02	0.53**	0.84**
17. DERS A																	1	-0.10*	0.19**
18. DERS C																		1	0.74**
19. DERS																			1

Perpetrators of sex crimes sample ( $n = 209$ )																			
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. EA	1	0.78**	0.27**	0.56**	0.48**	0.38*	0.51**	0.47*	0.42**	0.18**	0.81**	-0.50**	0.23**	0.31**	0.22**	0.21**	0.04	0.17*	0.28**
2. PA		1	0.18**	0.54**	0.46**	0.36**	0.47**	0.44**	0.41**	0.18**	0.76**	-0.49**	0.15*	0.22**	0.18**	0.18*	0.09	0.15*	0.23**
3. SA			1	0.26**	0.23**	0.10	0.24**	0.22*	0.13	0.20**	0.40**	-0.19**	0.16*	0.17*	0.23*	0.23**	-0.05	0.20**	0.22**
4. EN				1	0.57**	0.21**	0.40**	0.34**	0.33**	0.11	0.66**	-0.44**	0.26**	0.28**	0.24**	0.20**	0.04	0.22**	0.29**
5. PN					1	0.19**	0.42**	0.43**	0.30*	0.11	0.62**	-0.51**	0.23**	0.26**	0.27**	0.24**	0.03	0.30**	0.31**
6. PD						1	0.30**	0.20**	0.16*	0.15**	0.48**	-0.09	0.09	0.09	-0.02	0.12	0.03	-0.02	0.07
7. EDV							1	0.41**	0.38**	0.17*	0.65**	-0.47**	0.13	0.13	0.14*	0.14*	0.07	0.14*	0.18*
8. FSA								1	0.38**	0.21**	0.65**	-0.35**	0.21**	0.27**	0.22**	0.23*	-0.01	0.21**	0.26**
9. FMIS									1	0.12	0.54**	-0.30**	0.22**	0.25**	0.25**	0.31**	0.06	0.16*	0.29**
10. FI										1	0.36**	-0.08	0.02	-0.04	0.11	0.07	-0.11	0.13	0.06
11. ACEs											1	-0.51**	0.26**	0.32**	0.26**	0.27**	0.01	0.27**	0.33**
12. BCEs												1	-0.19**	-0.22**	-0.21**	-0.14**	-0.03	-0.39**	-0.27**
13. DERS S													1	0.71**	0.72**	0.64**	-0.06	0.61**	0.85**
14. DERS N-A														1	0.63**	0.66**	-0.01	0.61**	0.85**
15. DERS I															1	0.68**	-0.05	0.62**	0.84**
16. DERS G																1	-0.03	0.50**	0.81**
17. DERS A																	1	-0.09	0.19**
18. DERS C																		1	0.75**
19. DERS																			1

Note: EA = Emotional Abuse; PA = Physical Abuse; SA = Sexual Abuse; EN = Emotional Neglect; PN = Physical Neglect; PD = Parental Divorce; EDV = Exposure to Domestic Violence; FSA = Family Substance Abuse; FMIS = Family Mental illness or Suicide; FI = Family Imprisonment; DERS S = Strategies; DERS N-A: Non-Acceptance; DERS I = Impulse; DERS G = Goals; DERS A = Awareness; DERS C = Clarity.

\*  $p < 0.05$ .\*\*  $p < 0.01$ .

## 2.4. Statistical analysis

Statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS) software, version 30.0. Descriptive statistics were used to characterize the samples. Reliability was evaluated using Cronbach's Alpha to assess the selected factor structure's internal consistency. To assess the psychometric properties of the selected factor structure's internal consistency, reliability was evaluated using Cronbach's Alpha, with values above 0.80 considered very good, 0.70–0.80 good, 0.70–0.45 acceptable, and below 0.45 unacceptable (Taber, 2017). Pearson correlation coefficients were used to assess the relationships among ACEs, PCEs, and Emotional Regulation. ANCOVA compared the community and perpetrator of sex crimes samples in each scale and subscale. Finally, multiple linear regressions were used to analyze the predictive validity of ERD.

## 3. Results

### 3.1. Prevalence of ACEs and PCEs

In the community sample, 93.1% of participants reported experiencing at least one ACE. Emotional abuse was reported by 29.5% of the participants, while 25.1% experienced physical abuse, and 8% reported sexual abuse during childhood. Emotional neglect was endorsed by 24.8% of participants, whereas 5.8% reported physical neglect. Regarding household dysfunction, 23.3% of participants reported parental divorce or separation, and 10.2% experienced exposure to violence. Additionally, 15.6% indicated living with a family member who abused substances, 18.6% reported a family history of mental illness or suicide, and 3.4% experienced having an incarcerated family member. Regarding PCEs, 99.1% of participants reported experiencing at least one positive childhood experience.

Among those who perpetrated sex crimes, 88.5% reported at least one ACE. Emotional abuse was reported by 39.2% of the sample, while 40.2% faced physical abuse, and 24.9% reported sexual abuse during childhood. Emotional neglect was cited by 35.9%, whereas 24.4% reported physical neglect. Regarding household dysfunction, 26.8% reported parental divorce or separation, and 32.5% witnessed violence. Additionally, 32.5% lived with a family member who abused substances, 21.5% had a family history of mental illness or suicide, and 14.4% had a family member who was incarcerated. Regarding PCEs, all participants reported at least one positive childhood experience.

### 3.2. Correlation analyses

Results in the community sample (Table 2) point to statistically negative significant correlations between BCEs and ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, and Family Mental Illness or Suicide, DERS, Strategies, Non-Acceptance, Impulse, Goals, and Clarity. The correlations are small.

DERS shows statistically positive significant correlations with ACEs, Emotional Abuse, Physical Abuse, Emotional Neglect, and Family Mental Illness or Suicide. On the DERS subscales, Strategies shows a positive correlation with ACEs, Emotional Abuse, Physical Abuse, and Emotional Neglect. The Non-Acceptance reveals positive correlations with ACEs, Emotional Abuse, Emotional Neglect, and Family Mental Illness or Suicide. The Impulse indicates a positive correlation with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, and Emotional Neglect. Goals show statistically positive significant correlations with ACEs, Emotional Abuse, Physical Abuse, Emotional Neglect, and Family Mental Illness or Suicide. Finally, Clarity reveals positive correlations with ACEs, Emotional Abuse, Emotional Neglect, and Family Substance Abuse. All the correlations are small.

In the perpetrators of sex crimes sample (Table 2), the results reveal statistically significant negative correlations between BCEs and ACEs, Emotional Abuse, Physical Abuse, Emotional Neglect, Sexual Abuse, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, Family Mental Illness or Suicide, DERS and Strategies, Non-Acceptance, Impulse, Goals, and Clarity. Most of the correlations are small (e.g., BCEs and Strategies, BCEs and Sexual Abuse, BCEs and Goals). At the same time, some are medium (e.g., BCEs and Emotional Abuse, BCEs and Emotional Neglect, BCEs and Physical Neglect).

The DERS in this sample shows statistically positive significant correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, and Family Mental Illness or Suicide. Strategies show positive correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Family Substance Abuse, and Family Mental Illness or Suicide. The Non-Acceptance reveals positive correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Family Substance Abuse, and Family Mental Illness or Suicide. The Impulse indicates positive correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, and Family Mental Illness or Suicide. Goals show statistically positive significant correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, and Family Mental Illness or Suicide. Clarity shows positive correlations with ACEs, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, and Family Mental Illness or Suicide. All the correlations are small.

### 3.3. Group differences

To compare the community and the perpetrators of sex crimes samples (Table 3), we performed an ANCOVA analysis including age, education level, and marital status as covariates. Since our samples differ on these variables, they may affect the results and should be

**Table 3**ANCOVA test between ACEs, BCEs, and DERS in a sample of perpetrators of sex crimes and the community sample ( $n = 746$ ).

	Community sample ( $n = 537$ )		Perpetrators of sex crimes sample ( $n = 209$ )				$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P value</i>	
ACEs	1.72	2.05	3.10	2.87	19.42	<0.001	0.10
Emotional Abuse	0.42	0.69	0.61	0.82	4.31	<0.002	0.02
Physical Abuse	0.31	0.58	0.62	0.81	8.55	<0.001	0.05
Sexual Abuse	0.10	0.37	0.36	0.68	11.07	<0.001	0.06
Emotional Neglect	0.34	0.64	0.55	0.80	9.21	<0.001	0.05
Physical Neglect	0.07	0.32	0.31	0.59	18.92	<0.001	0.09
Parental Divorce	0.23	0.42	0.27	0.44	5.61	<0.001	0.03
Exposure to Domestic Violence	0.23	0.80	0.87	1.47	16.52	<0.001	0.08
Family Substance Abuse	0.16	0.36	0.33	0.47	9.85	<0.001	0.05
Family Mental Illness or Suicide	0.19	0.39	0.22	0.41	1.75	0.14	0.01
Family Imprisonment	0.03	0.18	0.15	0.36	9.79	<0.001	0.05
BCEs	8.72	1.77	8.44	2.06	8.64	<0.001	0.05
DERS	26.57	14.98	24.49	14.59	10.87	<0.001	0.06
Strategies	3.60	3.36	3.19	3.47	10.37	<0.001	0.05
Non-Acceptance	4.15	3.53	4.36	3.60	5.66	<0.001	0.03
Impulse	3.11	3.31	2.34	3.21	5.45	<0.001	0.03
Goals	5.45	3.70	3.99	3.32	15.35	<0.001	0.08
Awareness	6.68	3.19	7.27	3.49	2.49	0.04	0.01
Clarity	3.59	3.18	3.35	3.19	17.69	<0.001	0.09

controlled for in this analysis. The results obtained in this analysis show that the sample of perpetrators of sex crimes has significantly higher scores compared to the community sample in ACEs and almost all their subscales, namely, Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, Physical Neglect, Parental Divorce, Exposure to Domestic Violence, Family Substance Abuse, and Family Imprisonment. The ACE score in the sample perpetrators of sex crimes is almost twice as high as that in the community sample. Conversely, the community sample scored higher on the BCEs and DERS, including the Strategies, Impulse, Objectives, and Clarity subscales. In contrast, perpetrators of sex crimes show higher scores in Non-Acceptance and Awareness. In the Family Mental Illness or Suicide, no differences were verified between the samples.

Concerning the effect size, the results indicate a medium effect regarding ACEs, Sexual Abuse, Physical Neglect, Exposure to Domestic Violence, DERS, and the subscales of Goals and Clarity. A small effect was revealed regarding Physical Abuse, Emotional Abuse, Emotional Neglect, Parental Divorce, Family Substance Abuse, Family Imprisonment, BCEs, Strategies, Non-Acceptance, Impulse, and Non-Acceptance.

### 3.4. Regression analysis

The explanatory model of DERS using Multiple Linear Regression is significant in the community sample [ $F(4,532) = 26.15, p < 0.001$ ]. The Durbin-Watson value was 2.04, and the VIF was <3. Marital Status, Education Level, Emotional Abuse, Physical Abuse, Sexual Abuse, Physical Neglect, Exposure to Domestic Violence, Family Substance Abuse, Family Mental Illness or Suicide, and Family Imprisonment are not significant. For this reason, a new model was developed with only the significant paths. The model explains 16% of the variance in the DERS. Age ( $\beta = -0.16, p < 0.001$ ), Emotional Neglect ( $\beta = 0.21, p < 0.001$ ), Parental Divorce ( $\beta = -0.08, p = 0.05$ ), and BCEs ( $\beta = -0.22, p < 0.001$ ) significantly predict the difficulties in emotional regulation.

The explanatory model of DERS using Multiple Linear Regression shows that the model is significant in the perpetrators of sex crimes sample [ $F(3,204) = 10.93, p < 0.001$ ]. The Durbin-Watson value was 2.40, and the VIF was <3. Age, Marital Status, Emotional Abuse, Physical Abuse, Emotional Neglect, Exposure to Domestic Violence, Family Substance Abuse, Family Imprisonment, and BCEs are not significant. For this reason, a new model was developed with only the significant paths. The model explains 13% of the variance in the DERS. Education Level ( $\beta = -0.14, p = 0.04$ ), Sexual Abuse ( $\beta = 0.19, p = 0.01$ ), and Family Mental Illness or Suicide ( $\beta = 0.28, p < 0.001$ ) significantly predict the difficulties in emotional regulation.

## 4. Discussion

The results of the present study enable us to assess the relationship between the variables in both the community sample and the sample of the perpetrators of sex crimes. In this study, a negative relationship between PCEs and ACEs was found in both samples. This finding is consistent with the literature, as PCEs involve safe, stable, and stimulating relationships and environments (Kallapiran et al., 2025), and in contrast, ACEs are described as potentially traumatic events (Karatekin & Ahluwalia, 2016), such as abuse and neglect (Mahmood & Fatmi, 2025). Perpetrators of sex crimes tend to come from dysfunctional families (Levenson & Grady, 2016). Additionally, adverse and positive experiences may co-occur (Sousa et al., 2025), with PCEs potentially serving as buffers that may mitigate the negative effects of ACEs (Cunha et al., 2024; Kallapiran et al., 2025). However, research on PCEs in perpetrators of sex crimes is still in its infancy (Almeida & Costa, 2023). Emerging evidence suggests that multiple PCEs may confer cumulative protective benefits for mental health and well-being (Sousa et al., 2025), although this area of research remains relatively underexplored. In this study, more

PCEs were associated with lower ERD across all subscales in both samples, and PCEs predicted lower ERD levels in the community sample. Results indicate that, in this study and in the literature (Crandall et al., 2019), PCEs are associated with less ERD, suggesting that supportive environments from parents, friends, and caregivers help children develop better emotion regulation (Crandall et al., 2019; Lowe et al., 2024). A secure parent-child relationship may foster emotional safety, enabling children to express their emotions freely (Morris et al., 2018) and build resilience to stress in adulthood (Urban et al., 2022), without fear or avoidance (Mikulincer & Shaver, 2010).

More ACEs were associated with higher ERD levels in both samples, indicating that early adversity may impact adult emotion regulation, consistent with existing research (Girard & Almeida, 2025; Rzeszutek et al., 2025). Intense and prolonged stressful experiences may change brain regions (Feinstein, 2023) responsible for regulating emotions, specifically the amygdala and hippocampus (Jaggi & Kumari, 2024). Thus, children with ACEs may identify signs of danger faster than those without ACEs (Briggs-Gowan et al., 2015), which can be useful in hostile settings but may also lead to future mental health issues (Wade et al., 2022).

High levels of emotional abuse were associated with high levels of ERD, strategies, non-acceptance, impulse, goals, and clarity, in both samples. When parents belittle (Witte et al., 2020), insult, and humiliate children's emotions, children may struggle to adapt and express emotions adaptively (Karagöz & Dağ, 2015). This abuse prevents victims from accepting unpleasant emotional states (Watts et al., 2020), potentially leading to impulsive (Karagöz & Dağ, 2015) and maladaptive strategies for negative emotions (Watts et al., 2020). These children also tend to find it harder to complete tasks and adopt goal-oriented behaviors (Oshri et al., 2015).

Higher levels of emotional neglect were associated with higher levels of ERD, strategies, non-acceptance, impulse, goals, and clarity, in both samples. The results also showed that emotional neglect predicts ERD in the community sample. Studies indicate that emotional neglect may relate to poor parental emotional regulation (Wang, 2022), with parents unresponsive to children's basic emotional and psychological needs (Krause-Utz et al., 2019). This may lead children to experience more negative emotions and less adaptive emotional regulation (Kahl et al., 2020).

High levels of physical abuse were related to higher levels of ERD, strategies, impulses, goals, and clarity in the community sample. In the perpetrators of sex crimes sample, the physical abuse was also related to non-acceptance. This aligns with studies (e.g., Tilstra-Ferrell et al., 2022). Physical abuse may hamper children's skill development (Tilstra-Ferrell et al., 2022), including emotion regulation (Paschall et al., 2019), which may translate into difficulties controlling impulses, a significant lack of emotional clarity (Tilstra-Ferrell et al., 2022), and limited access to adaptive emotional regulation strategies during distress (Kahl et al., 2020).

Our results showed a link between sexual abuse experiences and higher levels of ERD in both samples, and also revealed that sexual abuse predicts ERD in the perpetrators of sex crimes sample. In the community sample, this was only verified for impulses, while perpetrators of sex crimes, it affected total strategies, non-acceptance, impulse, goals, and clarity. Research indicates that sexual abuse may lead to ERD (Snow et al., 2021) and impulsive behavior (Gouveia et al., 2022). Repeated ACEs can lower serotonin levels, increasing urgency and sensation-seeking to regulate negative emotions, possibly leading to impulsivity (Patock-Peckham et al., 2020). Research on sexual victimization and subsequent sexual aggression remains inconsistent (Almeida & Costa, 2023). However, the greater number of associations observed between sexual abuse and ERD among perpetrators of sex crimes may be attributable to their higher exposure to ACEs. This cumulative burden of ACEs can amplify the impact of sexual abuse on emotion regulation difficulties (Ford et al., 2013).

Family substance abuse, in the community sample, was positively related to ERD in terms of clarity. In the sample of perpetrators of sex crimes, family substance abuse was positively associated with ERD, strategies, impulse, goals, and clarity. Children with substance-consuming caregivers are more likely to develop ERD (Shadur & Hussong, 2019). According to Social Learning Theory, individuals acquire behaviors by observing and imitating others, particularly those with whom they share strong emotional bonds, such as family members (Bandura, 1969). Therefore, when children witness their parents adopting maladaptive coping strategies to manage negative emotional states, they may adopt similar patterns themselves, often without developing effective strategies to regulate their own emotions (Whiteman et al., 2015).

Our findings point to a link between mental family illness or suicide and ERD, non-acceptance, and goals. For perpetrators of sex crimes, relations also included strategies, impulses, and clarity. Mental family illness or suicide is also a predictor of ERD in the perpetrators of sex crimes sample. Children living with a mentally ill family member often assume caregiving responsibilities themselves (Girard & Almeida, 2025), coupled with the reduced emotional availability of the caregiver to provide essential support, which in turn may negatively impact the child's emotion regulation development (Priel et al., 2019).

Certain relations were verified only within the sample of perpetrators of sex crimes, such as the relationship between physical neglect and ERD, and exposure to domestic violence and ERD. These findings may reflect the fact that individuals in the community sample reported more PCEs than ACEs, and that PCEs may buffer the impact of traumatic events (Cunha et al., 2024; Kallapiran et al., 2025). In contrast, perpetrators of sex crimes often experience multiple forms of ACEs, and the cumulative effects of such victimization may increase the likelihood of delinquent and criminal behaviors (Pires & Almeida, 2023). Consistent with these observations, the Multimodal Self-Regulation Theory posits that childhood trauma can impair the development of adaptive emotion regulation strategies, which may lead individuals to rely on maladaptive coping behaviors, including problematic or deviant sexual behaviors (Stinson et al., 2023).

Our study also identified other predictors of ERD in the community sample, including increasing age, which predicts decreased ERD, aligning with studies (Chaudhary et al., 2023). Ageing may cause changes in cognitive and affective functions (Chaudhary et al., 2023), allowing better understanding and processing of emotions, and more considered problem-solving, rather than impulsive reactions (Sanchis-Sanchis et al., 2020). Education level also predicts lower ERD in the perpetrator of sex crimes sample. Although the literature on education level and emotional regulation is relatively scarce, some studies show that higher levels of education tend to be associated with greater emotional regulation skills, possibly due to greater exposure to demanding contexts that favor the development

of adaptive emotional management strategies (Suberviola, 2025). Experiences of parental divorce predict lower ERD in adulthood in the community sample. A family with both parents does not always support healthy emotional development (Yao, 2023). Although children with separated parents may experience mental health issues, maintaining positive relationships with both parents during adolescence can improve mental health, like those who have never experienced separation (Wu et al., 2023).

Concerning the group differences, our results showed that the perpetrators of sex crimes sample showed higher levels of ACEs, emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, parental divorce, exposure to domestic violence, family substance abuse, and family imprisonment. This aligns with studies claiming that perpetrators of sex crimes experience more ACEs than the community (Kahn et al., 2021), since they often grow up in violent, unstable homes lacking family structure, which may influence the development of abusive sexual behavior (Davids et al., 2015). The community sample showed higher PCEs than the perpetrators of sex crimes sample. The literature is scarce on this, with only one Portuguese study researching the PCEs in perpetrators of sex crimes, finding no differences between them and the community (Almeida & Costa, 2023). Another Portuguese study of prisoners convicted of different crimes found that they experienced fewer PCEs than the community (Almeida et al., 2024b).

The sample of perpetrators of sex crimes showed greater non-acceptance and awareness than the community sample. However, the community sample revealed a higher ERD in the total score, which partially contrasts with prior findings indicating that perpetrators of sex crimes typically display greater ERD scores than the community participants (Pazhooyan et al., 2024). One possible explanation for the higher difficulty levels of ERD in the total score among the community sample may be for the fact that perpetrators of sex crimes in the prison context may benefit from structured interventions, which can be conducive to interventions like the Growing Pro-Social program (Brazão et al., 2018). Social desirability biases may also have influenced self-reports in the perpetrators of sex crimes group (Tan & Grace, 2008). Furthermore, in the prison context, emotional functioning may be shaped by institutional norms that may emphasize emotional restraint and behavioral control. Research indicates that incarcerated individuals may reinterpret or minimize emotional experiences, rather than engage in genuinely adaptive emotion regulation processes. Their perception of emotion regulation may not reflect genuinely adaptive emotional strategies, but rather manifestations of distorted positivity (Choi et al., 2024). Consequently, incarcerated individuals may report fewer difficulties in emotion regulation, not because they regulate emotions more effectively, but because institutionalization reshapes the perception of ERD.

#### 4.1. Limitations

This study identifies some limitations that must be addressed. Firstly, the community sample is larger than the sample of perpetrators of sex crimes, reducing the representativeness of the results obtained when comparing these groups. Furthermore, this study only included male perpetrators of sex crimes, and we recommend that future studies increase the size of the sample and include female perpetrators of sex crimes. We also did not conduct separate analyses for different types of perpetrators of sex crimes. Given the substantial heterogeneity of committed sexual crimes and the different relationships between victims and offenders, this aggregation of perpetrators of sex crime samples may limit the generalization of the results. Future research should include subgroup analyses to better understand differences among perpetrators of sex crime types. Some ACE subscales showed relatively low Cronbach's alpha coefficients, raising concerns about the internal consistency and reliability of the specific associations reported. Also, the fact that we conducted a relatively large number of bivariate correlational analyses may increase the risk of type I error. Therefore, the findings should be interpreted with caution. It should be noted that, although significant, some regression model results and relationships were small, limiting the robustness of the conclusions drawn from these analyses. This suggests that other important variables (e.g., socioeconomic status, perceived social support, employment status, and psychological intervention) may affect the results and should be assessed in future studies. Consequently, although the identified predictors help explain ERD, their explanatory power is limited, and the models offer only a partial account of the factors influencing emotional regulation. Another limitation is that the two groups were assessed using different data collection modes, which may introduce mode-related biases, such as differences in perceived anonymity or privacy, potentially affecting the reporting of sensitive or stigmatized information. Additionally, as the ACEs and PCEs questions are retrospective, forgetfulness may have influenced some results. The use of dichotomous scoring for both ACEs and BCEs may have reduced the information available, limiting the variability and sensitivity of these measures. Finally, given the sensitive nature of the self-report instruments, social desirability could have influenced results. Participants' reluctance to disclose negative experiences could have influenced the results (Lamers-Winkelmann et al., 2012), and social desirability may have affected the PCEs and ERD outcomes, particularly within the perpetrators of sex crimes sample, as offenders tend to respond according to societal norms (Tan & Grace, 2008). These limitations highlight the need for cautious interpretation and suggest directions for methodological improvements in future research.

#### 5. Conclusion

Despite its limitations, this study enhances understanding of the relationship between ACEs, PCEs, and their impact on ERD in adulthood, contributing to the fields of Psychology and Criminology. This study highlights the highest prevalence of ACEs in perpetrators of sex crimes and the highest scores of PCEs in the community sample, which may be linked with differences in criminal behavior observed between the groups used in this study (Toth & Cicchetti, 2013). Research indicates that individuals reporting childhood trauma also tend to report greater ERD (Holton et al., 2016) and may exhibit maladaptive coping strategies like problematic

sexual behavior (Stinson et al., 2023). Such behaviors may be learned and normalized through observation or victimization during childhood (Hedén et al., 2023), fostering beliefs that condone these actions (Silva et al., 2024). Our findings, using a sample of perpetrators of sex crimes and a community sample, support existing evidence of a link between the variables and align with prior research.

### 5.1. Implications for practice

Early experiences are vital, so a preventive approach with families is essential. Campaigns should raise awareness of the impact of childhood experiences on adult behavior. Psychoeducation strategies can help caregivers understand the positive impact a stable emotional environment can have on children's healthy development, thereby reducing ACEs and improving emotional regulation, leading to fewer problematic behaviors, including sexual ones.

Regarding ERD, it is crucial to incorporate strategies into intervention programs that help individuals manage emotions effectively. This ability is crucial for mitigating the impacts of adversity and enhancing quality of life. This approach could also be valuable in interventions aimed at individuals who have committed sexual offenses. It would enable us to explore how ACEs have influenced these individuals' emotional and behavioral development. Drawing on cognitive-behavioral intervention models (Wisman et al., 2023), ERD can be identified and modified to promote emotional and behavioral transformations. These findings emphasize the importance of adopting a holistic view that considers the negative effects of ACEs and the protective role of PCEs across development. Understanding these factors is crucial for preventing recidivism by recognizing that ACEs can influence sexual crime-related behavior, while PCEs can protect against the adverse effects of ACEs.

Research suggests that interventions for perpetrators of sex crimes should include trauma-informed approaches (Dhillon et al., 2025), which have proven effective in reducing trauma symptoms, correcting cognitive distortions, reducing risky behaviors, and fostering greater empathy (Rodriguez, 2025). Additionally, cognitive-behavioral therapy (Levenson, 2014) has demonstrated significant potential in decreasing sexual crime recidivism and improving emotional regulation, self-control, and social skills among offenders in forensic settings (Rocha & Valença, 2023).

### CRedit authorship contribution statement

**Sofia Faisca Nunes:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation. **Barbara Mestre Albuquerque:** Writing – review & editing, Formal analysis. **Telma Catarina Almeida:** Writing – review & editing, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

### Ethics approval

The present research was approved by the Ethics Committee of the Egas Moniz School of Health and Science. All procedures were conducted in accordance with the ethical standards of the Institutional Ethics Committee and the Declaration of Helsinki.

### Funding

This work was supported by FCT - Fundação para a Ciência e Tecnologia, I.P. by project reference UID/4585/2025 and DOI identifier doi:10.54499/UID/04585/2025.

### Declaration of competing interest

The authors report there are no competing interests to declare.

### Acknowledgments

The authors would like to express their sincere gratitude to all the participants who voluntarily provided information for this study, the DGRSP-MJ, and the national prisons that consented to participate.

### Data availability

Data will be made available on request.

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