

Emotion regulation weakens the associations between parental antipathy and neglect and self-harm

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ABSTRACT

Using a representative sample of 7918 Portuguese adolescents ($M_{age} = 15.5$, $SD = 1.7$, 53.3% female gender) and three self-report measures of parental antipathy and neglect, self-harm and its functions, and emotion regulation, this cross-sectional study examined the moderating role of emotion regulation in the links between these negative childhood experiences and self-harm in adolescence. Maternal and paternal antipathy and neglect had the largest effects on self-harm for youth with low levels of emotion regulation. These results emphasize the relevance of promoting emotion regulation across multiple contexts (e.g., school, family, legal system) for the prevention of adolescent self-harm, even in situations with a history of childhood emotional abuse and/or neglect.

Introduction

According to the developmental psychopathology framework (e.g., Cicchetti, 2016), childhood emotional abuse and/or neglect increase the risk for adolescent self-harm (e.g., Peh et al., 2017; Ran et al., 2021; Shahnazdoust, Mikaeili, & Aghajani, 2022), as well as the development of maladaptive emotion regulation strategies (Gruhn & Compas, 2020; Kim & Cicchetti, 2010; O'Mahen, Karl, Moberly, & Fedock, 2015; Titelius et al., 2018). Moreover, emotion regulation has a protective role against self-harm in adolescence (e.g., Asarnow et al., 2021), with adolescents who do not self-harm displaying higher emotion regulation compared to those who self-harm (Guérin-Marion, Martin, Lafontaine, & Bureau, 2020). Taken together, these findings indicate that early emotional abuse and/or neglect hinder the development of adaptive emotion regulation strategies, which in turn increases the risk for self-harm in adolescence. Indeed, the mediating role of limited access to adaptive emotion regulation strategies in the association between childhood emotional abuse and neglect and adolescent self-harm has been explored in a previous study (Titelius et al., 2018). However, some adolescents who have been victims of childhood emotional abuse and/or neglect show adaptive emotion regulation. Thus, it is possible that

adaptive emotion regulation in maltreated or neglected adolescents is protective against the detrimental effects of childhood emotional abuse or neglect, specifically regarding engagement in self-harm. Examining this hypothesis has implications for preventing or reducing self-harm in youth who have been subjected to these negative experiences in childhood, particularly as to whether emotion regulation should be a potential target for intervention. Therefore, this study aims to explore the moderating role of emotion regulation in the links between parental antipathy and neglect and self-harm in adolescence.

Adolescence and self-harm

Adolescence is the developmental period during which several high-risk behaviors often emerge, including self-harm (e.g., Layne et al., 2014). This behavior, also termed nonsuicidal self-injury – which is usually higher in females (e.g., Bresin & Schoenleber, 2015) and tends to decrease across adolescence (Monto, McRee, & Deryck, 2018) – is defined as the direct and purposeful destruction of body tissue without suicidal intent (Thomassin, Shaffer, Madden, & Londino, 2016). Nock and Prinstein (2004) have proposed an explanatory model of self-harm that posits that this behavior serves four different functions grouped into

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automatic reinforcement and social reinforcement – with no gender differences having been found regarding these functions in adolescence (Calvete, Orue, Aizpuru, & Brotherton, 2015). The former (i.e., automatic reinforcement) – the most frequent function in youth's self-harm (Barreto Carvalho, da Motta, Sousa, & Cabral, 2017; Doyle, Sheridan, & Treacy, 2017; Nock & Prinstein, 2004) – translates into reducing negative emotions or inducing pleasant emotional states. The social reinforcement function serves the purpose of influencing interpersonal relationships, by either obtaining something from other people (e.g., attention) or withdrawing from social demands (e.g., avoiding punishment; Nock & Prinstein, 2004). Studies in Portugal, where this study was conducted, have found rates of adolescent self-harm ranging from 24.6% (Equipa Aventura Social, 2022) to 29.5% (Barreto Carvalho et al., 2017).

Childhood emotional abuse and neglect and self-harm

Early experiences are known to have a profound impact on human development, with the developmental psychopathology framework positing that exposure to adverse experiences (e.g., homelessness, exposure to violence, parental death) during one developmental period disrupt normative and further developmental trajectories (e.g., Cicchetti, 2016). Consistent with this framework, negative parenting practices in childhood, such as harsh parenting and rejecting-neglecting parenting, increases the risk for negative outcomes (e.g., self-harm, suicide attempts, deficits in social skills) throughout adolescence (e.g., Donath, Graessel, Baier, Bleich, & Hillemacher, 2014; Pierce, Jones, & Holcombe, 2022; Zhang, Song, & Wang, 2016). The specific forms of negative parenting practices this study focuses on are parental antipathy, a type of caregiver emotional abuse defined as “criticism, hostility or coldness shown by parent figures towards the child” (Bifulco, Brown, & Harris, 1994, p. 1423), and parental neglect, which translates into consistently ignoring children's needs and failing to provide enough emotional warmth, physical care, and/or access to education (Deng, Pan, Tang, Yuan, & Xiao, 2007). Exposure to multiple types of childhood maltreatment (e.g., physical, emotional) – including parental antipathy and neglect – has been extensively found to increase the risk for self-harm in youth (e.g., Kaess et al., 2013; Layne et al., 2014; Peh et al., 2017; Ran et al., 2021; Shahnazdoust et al., 2022; Ying, You, Liu, & Wu, 2021; Zhang et al., 2016).

Emotion regulation, childhood emotional abuse and neglect, and self-harm

The four-branch ability model of emotional intelligence (Mayer & Salovey, 1997; Salovey & Mayer, 1990) posits that this construct comprises four fundamental interrelated emotion-related abilities: perception/expression of emotions, use of emotions to facilitate thinking, understanding of emotions, and management of emotions in oneself and others. This study focuses on a concept that is conceptually related to the fourth branch of this model: emotion regulation. Even though there is no universally accepted definition of emotion regulation, this skill has been defined as the process of initiating, inhibiting, or modulating the occurrence, intensity, or duration of emotions to accomplish individual goals (e.g., affect-related biological or social adaptation; Eisenberg & Spinrad, 2004). In other words, emotion regulation involves the monitoring, evaluation, and modification of emotional responses (Gross, 1998; Gross & Thompson, 2007; Koole, 2009). This skill includes the ability to remain open to a variety of emotions, acknowledge the value of feeling emotions in specific situations, and understand which strategies are most efficient for managing emotions (Gross, 1998). Previous studies using adolescent samples have found no gender differences in emotion regulation (Duarte, Matos, & Marques, 2015) and that this skill tends to be lower between the ages of 12 and 15 compared to the adolescents who are younger (i.e., 10–11) and those who are older (i.e., 16–19) (Cracco, Goossens, & Braet, 2017). One of the most pivotal environments for learning emotion regulation strategies is the family context

(Maughan & Cicchetti, 2002). Given this, in line with the developmental psychopathology framework (e.g., Cicchetti, 2016), it is not surprising that abusive and/or neglectful experiences during childhood have been found to be negatively associated with adaptive emotion regulation in adolescence (Gruhn & Compas, 2020; Kim & Cicchetti, 2010; O'Mahen et al., 2015; Peh et al., 2017; Shields & Cicchetti, 2001). Despite this association, not all adolescents who have been subjected to these adverse experiences in childhood have low levels of emotion regulation; thus, it is reasonable to believe that some of these adolescents have come to develop adaptive emotion regulation skills in other contexts (e.g., foster family, school, peer group) and/or following interventions (for an example of successful emotion regulation-based interventions for victims of childhood emotional abuse and/or neglect, as well as other adverse childhood experiences, see Cloitre, Koenen, Cohen, & Han, 2002, and Keeshin, Bryant, & Gargaro, 2021). Moreover, emotional dysregulation – a complex construct encompassing a variety of dimensions (e.g., limited access to adaptive emotion regulation strategies, lack of emotional clarity, nonacceptance of emotional responses; Gratz & Roemer, 2004) and translating into poor emotion regulation – has been found to be positively associated with adolescent self-harm (e.g., Brausch, Clapham, & Littlefield, 2022; Peh et al., 2017; Titelius et al., 2018), with recent dialectical behavior therapy (DBT) interventions targeting emotion regulation in adolescents having been found to reduce this behavior in adolescence (e.g., Asarnow et al., 2021). In line with this, most adolescents report engaging in self-harming behaviors as a way to regulate their emotions (Klonsky, Glenn, Styer, Olino, & Washburn, 2015), with adolescents who do not self-injure showing greater access to adaptive emotion regulation strategies compared to their self-injuring counterparts (Guérin-Marion et al., 2020). Lastly, limited access to adaptive emotion regulation strategies has been found to play a mediating role in the association between childhood emotional abuse and neglect, and adolescent self-harm (Titelius et al., 2018). However, as said above, it is possible that some adolescents who have been maltreated or neglected in childhood have developed adaptive emotion regulation in other contexts, which would decrease their risk for the use of self-injuring behaviors as a dysfunctional way to regulate their emotions.

The present study

Based on the developmental psychopathology framework (e.g., Cicchetti, 2016), childhood emotional abuse and/or neglect hinders the development of adaptive emotion regulation strategies, which in turn increases the risk for adolescent self-harm. Particularly, one study has found that emotion dysregulation mediates the association between childhood emotional abuse and neglect and self-harm in adolescence (Titelius et al., 2018). Despite this, it is possible that some adolescents who have been victims of childhood emotional abuse and/or neglect have high levels of emotion regulation given the exposure to other contexts or experiences that allowed them to learn adaptive strategies. It is reasonable to hypothesize that these adolescents, compared to the group of adolescents who have been subjected to experience of childhood emotional abuse or neglect with low levels of emotion regulation, are less likely to use self-injuring behaviors as a way to regulate their emotions. In other words, it is possible that high emotion regulation in maltreated or neglected youth is protective against the negative effects of childhood emotional abuse or neglect, specifically concerning the engagement in self-harming behaviors. However, no research to our knowledge has examined these hypotheses, which need to be tested to know whether emotion regulation is a possible target for intervention in maltreated or neglected youth when trying to prevent or reduce self-harming behaviors. There is a paucity of research exploring how emotion regulation influences the positive associations between these negative experiences (i.e., childhood emotional abuse and neglect) and self-harm; additionally, most previous studies exploring the associations between these experiences and difficulties in emotion regulation in

adolescence do not make a distinction between childhood emotional abuse and/or neglect perpetrated by the paternal and the maternal figures. Therefore, using a representative sample of adolescents living on nine Portuguese islands, this study primarily aimed to explore how emotion regulation interacts with childhood emotional abuse and/or neglect to reduce the risk for adolescent self-harm and its functions; moreover, the study assessed the two most common forms of these early negative experiences, namely maternal and paternal. The first aim of the study was to characterize the study variables (i.e., parental antipathy and neglect, self-harm, automatic and social reinforcement functions of self-harm, emotion regulation), including the prevalence of self-harm, in the total sample and by gender and specific age group (i.e., 13, 14, 15, 16, 17, 18 or older). We hypothesized that females would exhibit a higher prevalence of self-harm and that there would be no gender differences in any functions of self-harm nor emotion regulation. We also expected that self-harm would be higher in the younger age groups and that emotion regulation would be higher in the older age groups. Secondly, this study aimed to explore the associations between the forms of childhood emotional abuse and neglect examined (i.e., paternal and maternal antipathy, paternal and maternal neglect), emotion regulation, and self-harm and its functions in adolescence. We hypothesized that positive associations would be observed between the parental antipathy and neglect, and self-harm and both functions, and negative associations between the former (i.e., parental antipathy and neglect) and emotion regulation, as well as between the latter and self-harm and both functions. More importantly, this study aimed to examine the moderating role of emotion regulation in the associations between parental (i.e., paternal and maternal) antipathy and neglect, and self-harm and both functions in adolescence. We hypothesized that higher levels of emotion regulation would decrease the strength of these (positive) associations.

Method

Participants

The sample of this study comprises nearly the totality of students enrolled in the Portuguese public education system (*ensino regular público*) living in a specific Portuguese region and is part of a greater research project – described below (in the “Procedure and Ethics” section). A total of 8622 adolescents were initially surveyed, of which 704 were removed because they either did not report their age, were younger than 13 or older than 19 [given the small number of adolescents in both groups ($n = 249$) and as per the definition of adolescence according to the WHO (n.d.)], and/or did not state their school year or were in fourth or fifth grade ($n = 2$). The final sample comprised 7918 adolescents, of which 3697 (46.7%) identify as the male gender and 4218 (53.3%) as the female gender, with ages ranging from 13 to 19 ($M = 15.5$, $SD = 1.7$). Most individuals were in ninth grade (24.9%), seventh grade (22.1%), or eighth grade (21.1%), and had never failed a school year (64.6%) at time of participation. These sociodemographic characteristics of the sample are presented in Table 1. No data were collected regarding participants’ racial/ethnic traits nor socioeconomic status.

Measures

Childhood experience of care and abuse questionnaire

The Childhood Experience of Care and Abuse Questionnaire (CECA-Q; Bifulco, Bernazzani, Moran, & Jacobs, 2005; Portuguese version by Carvalho et al., 2011) – a shorter version of the Childhood Experience of Care and Abuse interview (Bifulco et al., 1994) – assesses recollections of childhood experiences using three dimensions: parental care, physical abuse, and sexual abuse. The parental care dimension – the only one used in this study – is split into two subscales, one related to parental antipathy and hostility (eight items; e.g., “He/she was very difficult to please”, “He/she often picked on me unfairly”), and the other related to parental neglect and indifference/disinterest (nine items; e.g., “He/she

Table 1
Participants’ sociodemographic characteristics (N = 7918).

Sociodemographic characteristics	Sample	
	n	%
Gender		
Male	3697	46.7
Female	4218	53.3
Age group		
13 years	1185	15
14 years	1403	17.7
15 years	1713	21.6
16 years	1385	17.5
17 years	1103	13.9
≥ 18 years	1129	14.3
School year ^a		
6th grade (11 years old)	48	0.6
7th grade (12 years old)	1752	22.1
8th grade (13 years old)	1673	21.1
9th grade (14 years old)	1975	24.9
10th grade (15 years old)	1122	14.2
11th grade (16 years old)	780	9.9
12th grade (17 years old)	568	7.2
Ever failed a school year		
Yes	2593	35.4
No	5734	64.6

^a The ages most commonly associated with each Portuguese school year are presented in parentheses.

neglected my basic needs [e.g., food and clothes]”, “He/she was there if I needed him/her”); each of these is first answered in relation to the maternal figure (17 items) and then in relation to the paternal figure (17 items). This dimension comprises a total of 34 items measured on a Likert scale ranging from 1 to 2 = *Not at all* to 4–5 = *Yes, totally*. Total scores were computed for each subscale by summing the answers to the corresponding items. In the original study (Bifulco et al., 2005), this scale displayed very good internal consistency, with $\alpha = 0.80$ for antipathy and $\alpha = 0.81$ for neglect. The Portuguese version (Carvalho et al., 2011) was found to have good to excellent values of internal consistency, with α ranging from 0.77 for maternal antipathy to 0.95 for maternal neglect. In the present study, this scale presented very good to excellent internal consistency, with α ranging from 0.82 for maternal antipathy to 0.90 for maternal neglect.

Impulse, self-harm and suicide ideation questionnaire for adolescents

The Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A; Barreto Carvalho et al., 2015) measures impulsivity, suicidal ideation, self-harm, other high-risk behaviors (e.g., substance abuse, reckless driving, unprotected sex), as well as two functions of self-harm used by adolescents: the automatic reinforcement function (i.e., to create or alleviate emotional states) and the social function (i.e., to influence social relationships). The questionnaire is composed of 56 items scored on a 4-point Likert scale ranging from 0 = *Never happens to me* to 3 = *Always happens to me*. It is divided into four sections, each representing one subscale or group of subscales: A for impulsivity (eight items; e.g., “I say the first thing that comes to my mind”, “I do things without thinking of the consequences”), B for self-harm (eight items; e.g., “I scratch or pinch some parts of my body on purpose”, “I hurt myself or inflict pain on myself voluntarily, in other words, on purpose”) and other high-risk behaviors (six items; e.g., “I abuse alcohol excessively”, “I drive recklessly [high speed, no consideration for driving rules]”), C for the automatic reinforcement (24 items; e.g., “I hurt myself to be able to feel something”, “I hurt myself to alleviate the negative emotions I feel”) and social functions (seven items; e.g., “I hurt myself to get others’ attention”, “Hurting myself helps others understand my problems”) or

self-harm, and D for suicidal ideation (three items; e.g., “There are times during which I would like to disappear”, “There have been times during which I thought I wanted to die”). After answering section B (i.e., self-harm), participants were instructed to only answer section C (i.e., both functions of self-harm) if they had answered at least 1 = *Sometimes happens to me* in at least one of the items of section B. In the present study, only the subscales related to self-harm (i.e., self-harm and both its functions) were used given that this was the only construct of interest. A total score for each subscale was computed for all participants based on the sums of the corresponding items, with higher scores indicating greater presence of each construct. In the original study (Barreto Carvalho et al., 2015), the subscales showed acceptable to excellent values of internal consistency, ranging from $\alpha = 0.77$ for both impulsivity and the social reinforcement function of self-harm to $\alpha = 0.93$ to the automatic reinforcement function of self-harm. In the present study, excellent values of internal consistency for the different subscales were found, ranging from $\alpha = 0.94$ for self-harm to $\alpha = 0.98$ for the automatic reinforcement function of self-harm.

Situational test of emotional management – brief

The Portuguese version of the Situational Test of Emotional Management – Brief (STEM-B; Allen et al., 2015; Portuguese version by da Motta, Carvalho, Pato, & Castilho, 2021) was used to measure emotion regulation in the form of emotional management ability, a branch of the conceptual model of emotional intelligence by Mayer and Salovey (1997). Based on the original 44-item Situational Test of Emotional Management (STEM; MacCann & Roberts, 2008), STEM-B is comprised of 18 items (e.g., “Simply accept that Joana is gone and the friendship is over”, “Call Joana and invite her to lunch or drink a coffee to catch up”, “Contact Joana and invite her for a chat, but also make friends with the person who replaced her at the office”, “Get to know other people at the office and make new friendships”), each describing a hypothetical emotional situation in which individuals are asked to select from four responses the most effective course of action to manage both the emotions the person is feeling and the problems they face in each specific situation. One response is scored as 1 and the other options as 0, based on the scoring weights determined by the proportion of experts who selected the most appropriate answer in the original validation study. A total score was computed for each participant based on the sum of all items, with higher scores indicating higher levels of emotion regulation. In the original study (Allen et al., 2015), this measure showed a good internal consistency, $\alpha = 0.84$. In this study, the scale displayed an acceptable internal consistency, $\alpha = 0.62$.

Procedure and ethics

This research is part of a greater project aimed to explore individual (e.g., disruptive emotional experiences, coping strategies, emotion regulation) and specific sociocultural variables influencing adolescent substance use in Portugal. This study received approval from the Ethics Committee of a regional Portuguese university and the Portuguese Data Protection Authority (no. 13953/2017). A research protocol was developed using multiple self-report measures and questionnaires, three of which were used for this study. To maximize student participation, this protocol was administered using a paper and pencil format, under the supervision of some members of the research team as well as teachers, to all students across a Portuguese region. Given the length of the protocol and as a way to prevent effects of fatigue on students and maximize response accuracy, the administration of the protocol occurred in two different sessions with a two-week delay in between. All measures used in this study were administered in a single session of data collection (i.e., first session) to prevent any effects of the delay in the findings.

Anonymity and confidentiality of data were ensured, as well as all other international ethical norms and standards regarding research involving human participants (e.g., Declaration of Helsinki). An

informed consent form was signed by all participants above the age of 18 and by the underage participants’ parents/legal guardians, and participation was voluntary. Data were stored online in the form of a dataset, in compliance with European Union’s General Data Protection Regulation (GDPR) guidelines.

Data analysis

Data were analyzed using SPSS Statistics version 27. Descriptive statistics (e.g., means, standard deviations) were computed for all variables, as well as inferential statistics (independent samples *t*-tests, ANOVAs, chi-square tests, Pearson correlations, and regression analyses). More specifically, Pearson correlations were conducted to examine the associations between all variables; lastly, moderated regression analyses, controlling for gender and age, were conducted in the PROCESS macro in SPSS (Hayes, 2013), using 1000 bootstrap samples, which computes bias-corrected and accelerated confidence intervals (Field, 2017), and using each subscale of the CECA.Q (i.e., maternal antipathy, paternal antipathy, maternal neglect, paternal neglect) as the explanatory variables, each dimension of the ISSIQ-A (i.e., self-harm, social and automatic reinforcement functions of self-harm) as the outcome variables, and emotion regulation as the moderating variable, to explore if the latter (i.e., emotion regulation) significantly moderates the association between each of the former subscales of the CECA.Q and each of the ISSIQ-A subscales. As proposed by Preacher, Curran, and Bauer (2006), simple slopes from significant interactions were probed at 1 SD below and above the mean of emotion regulation. Gender was coded as 0 = male and 1 = female. Adolescents who answered between 1 = *Sometimes happens to me* and 3 = *Always happens to me* at least once in any item measuring self-harm were considered to display this behavior. Despite all adolescents being instructed to only answer the functions of self-harm subscales (i.e., automatic reinforcement and social reinforcement) if they had answered 1 = *Sometimes happens to me* in at least one of the items of the previous section (i.e., self-harm), all analyses using these subscales were conducted in the subgroup of adolescents who effectively showed self-harm to ensure that all data in these subscales derived from participants who were eligible to answer them. Correlation coefficients lower than 0.20 were considered weak, those between 0.20 and 0.50 were considered moderate, and those >0.50 were considered strong (Ferguson, 2009). The level of significance used for all analyses was $p < .05$.

Missing data

Given the high frequency of missing values for both the automatic and social reinforcement functions of self-harm (58.3%), two independent samples *t*-tests were used to compare the groups of adolescents with complete cases to those with missing to examine whether missingness was due to the absence of self-harm. Indeed, those with missing data reported greater absence of self-harm than those with complete cases, $t(3594.44) = -30.87, p < .001$, which justifies the high percentage of missing data for both functions of self-harm; in other words, a large portion of those who did not answer any or some items pertaining to these subscales likely did so because they had not engaged in any self-injuring behaviors, as per the measure’s instructions (see the description of ISSIQ-A above). Additionally, considering the percentage of missing data for all CECA.Q subscales (approximately 27%), two 2×2 chi-square tests were conducted to explore whether the pattern of missingness of each parental subscale (i.e., antipathy and neglect) was related with the pattern of missingness of the corresponding parental subscale in each pair. These tests revealed that the patterns of missing data were associated, $\chi^2(1) = 5117.76, p < .001$ for antipathy and $\chi^2(1) = 4944.55, p < .001$ for neglect. Considering that the patterns of missingness of both functions of self-harm and all CECA.Q subscales are related to measured variables, the data can be considered to be Missing at Random (MAR) (Little & Rubin, 2002). Thus, the maximum likelihood (ML) estimation was used to handle these missing data given this

method is more likely to produce unbiased estimates compared to more conventional methods (e.g., listwise, pairwise) under MAR (Baraldi & Enders, 2010). For self-harm and emotion regulation, the percentages of missing cases were approximately 8% and so these missing data were ignored given that percentages lower than 10% are not likely to produce biased estimates (Bennett, 2001).

Results

Descriptives and correlations

The means and standard deviations for each variable studied, including the prevalence of self-harm and the statistics for mean comparisons, are presented in Table 2. Based on the midpoints of the CECA.Q subscales (i.e., 24 for paternal and maternal antipathy, 27 for paternal and maternal neglect), the descriptives of both (i.e., paternal, maternal) types of parental antipathy and parental neglect indicate that the sample mostly showed low to moderate levels of these experiences. Lastly, nearly one third ($n = 1815$; 28%) reported having had self-harmed at least once, with the automatic reinforcement function of self-harm (weighted $M = 0.63$) showing relatively higher levels than the social reinforcement function (weighted $M = 0.51$).

Males showed significantly higher levels of maternal and paternal antipathy and neglect, the automatic reinforcement function of self-harm, and the social reinforcement function of self-harm than females; on the other hand, females displayed higher levels of emotion regulation than males. There were statistically significant differences between age groups with regard to maternal and paternal antipathy, maternal neglect, prevalence of self-harm, the automatic reinforcement function of self-harm, the social reinforcement function of self-harm, and emotion regulation. Given the characteristics of the age groups examined (e.g., homogeneity of variances, equal samples sizes), post-hoc Tukey tests were used, which revealed that the adolescents who are 18 or older reported lower maternal antipathy than those who are 14

and 15; those who are 14-year-old reported higher maternal neglect than those who are 17 and 18 or older; adolescents who are 18 or older showed higher emotion regulation than 14-year-olds, with the former age group having displayed a higher prevalence of self-harm than the other age groups.

Statistically significant associations ($p < .001$) were found between all pairs of variables studied. More specifically, maternal and paternal antipathy were found to be positively and moderately associated with the subscales of ISSIQ-A, as well as negatively and moderately associated with emotion regulation. Additionally, maternal and paternal neglect were found to be positively and weakly and moderately associated with the subscales of ISSIQ-A, as well as negatively and moderately associated with emotion regulation. Lastly, negative moderate associations were found between emotion regulation and the dimensions of ISSIQ-A. All correlation coefficients are presented in Table 3.

Moderation analyses

In each moderated regression, preliminary analyses revealed that all assumptions for this analysis were met, including linearity, normality of residuals, non-multicollinearity (i.e., all correlations below 0.90, all VIF values lower than 10, and all tolerance values higher than 0.2), homogeneity of variances (i.e., random array of dots around zero on the scatterplots of standardized residuals), independence of errors (i.e., all Durbin-Watson values between one and three). Several moderated regression analyses were performed in the PROCESS macro for SPSS (Hayes, 2013) using 1000 bootstrap samples to examine if emotion regulation acts as a moderating variable in the associations between each subscale of the CECA.Q (i.e., maternal antipathy, paternal antipathy, maternal neglect, paternal neglect) and each of the dimensions of the ISSIQ-A (i.e., self-harm, social and automatic reinforcement functions of self-harm). Considering the subscales of the CECA.Q and emotion regulation were significantly correlated, the interaction terms were computed after mean-centering the explanatory variables (Aiken &

Table 2
Descriptives of maternal and paternal antipathy and neglect, self-harm and its functions, and emotion regulation by gender and age group.

	Maternal antipathy	Paternal antipathy	Maternal neglect	Paternal neglect	Self-harm		Automatic reinforcement	Social reinforcement	Emotion regulation
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>n (%)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Total sample	17.9 (4.6)	18.4 (4.9)	18.2 (5.8)	19.9 (6.3)	1.5 (3.5)	1815 (28)	15.2 (14.8)	3.6 (4.6)	8.7 (3)
Gender	$t = 10.44^{***}$	$t = 8.88^{***}$	$t = 12.90^{***}$	$t = 8.01^{***}$		$\chi^2 = 1.27$	$t = 5.92^{***}$	$t = 7.67^{***}$	$t = -17.29^{***}$
Male	18.6 (4.7)	19 (4.9)	19.3 (6)	20.6 (6.3)	1.7 (3.9)	790 (27.3)	17.8 (16.6)	4.6 (5.2)	8.1 (3.1)
Female	17.3 (4.5)	17.8 (4.8)	17.2 (5.5)	19.3 (6.3)	1.3 (3.1)	1024 (28.6)	13.2 (12.9)	2.8 (4)	9.3 (2.8)
Age group	$F = 2.66^*$	$F = 2.40$	$F = 3.76^{**}$	$F = 1.35$		$\chi^2 = 24.76^{***}$	$F = 0.66$	$F = 0.44$	$F = 3.38^{**}$
13 years	17.9 (4.9)	18.1 (5)	18.3 (6)	19.5 (6.4)	1.4 (3.3)	248 (26.7)	14.5 (13.8)	3.4 (4.1)	8.7 (2.8)
14 years	18.1 (4.5)	18.6 (4.9)	18.7 (6)	20 (6.3)	1.7 (3.5)	364 (32.5)	15.1 (14.3)	3.6 (4.5)	8.5 (3)
15 years	18.1 (4.6)	18.4 (4.8)	18.5 (5.7)	19.9 (6.2)	1.7 (3.7)	400 (28.4)	15.8 (15.5)	3.8 (4.9)	8.8 (3)
16 years	18 (4.6)	18.7 (4.8)	18 (5.6)	20.1 (6.2)	1.6 (3.7)	339 (29.4)	16 (15.6)	3.7 (5)	8.6 (3.1)
17 years	17.8 (4.5)	18.1 (4.7)	17.8 (5.7)	19.7 (6.2)	1.3 (3.3)	238 (26.4)	15.2 (14.6)	3.3 (4.5)	8.8 (3.1)
≥ 18 years	17.5 (4.5)	18.2 (4.8)	17.7 (5.6)	20.1 (6.4)	1.2 (3.2)	226 (23.3)	13.9 (14.6)	3.4 (4.7)	8.9 (3.1)

Note. Automatic reinforcement = Automatic reinforcement function of self-harm; Social reinforcement = Social reinforcement function of self-harm. Maternal and paternal antipathy, as well as maternal and paternal neglect, were measured using the Childhood Experience of Care and Abuse Questionnaire (CECA.Q; Bifulco et al., 2005; Portuguese version by Carvalho et al., 2011). Self-harm and both functions were measured using the Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A; Barreto Carvalho et al., 2015). Emotion regulation was measured using the Situational Test of Emotional Management – Brief (STEM-B; Allen et al., 2015; Portuguese version by da Motta et al., 2021).

* $p < .05$.
 ** $p < .01$.
 *** $p < .001$.

Table 3

Pearson correlations between maternal and paternal antipathy, maternal and paternal neglect, self-harm, automatic and social reinforcement functions of self-harm, and emotion regulation.

	1	2	3	4	5	6	7	8
1. Maternal antipathy	–							
2. Paternal antipathy	0.73***	–						
3. Maternal neglect	0.67***	0.54***	–					
4. Paternal neglect	0.56***	0.67***	0.77***	–				
5. Self-harm	0.26***	0.23***	0.25***	0.20***	–			
6. Automatic reinforcement	0.25***	0.23***	0.22***	0.17***	0.81***	–		
7. Social reinforcement	0.26***	0.22***	0.27***	0.17***	0.80***	0.91***	–	
8. Emotion regulation	–0.25***	–0.22***	–0.33***	–0.29***	–0.25***	–0.35***	–0.39***	–

Note. Automatic reinforcement = Automatic reinforcement function of self-harm; Social reinforcement = Social reinforcement function of self-harm. Maternal and paternal antipathy, as well as maternal and paternal neglect, were measured using the Childhood Experience of Care and Abuse Questionnaire (CECA-Q; Bifulco et al., 2005; Portuguese version by Carvalho et al., 2011). Self-harm and both functions were measured using the Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A; Barreto Carvalho et al., 2015). Emotion regulation was measured using the Situational Test of Emotional Management – Brief (STEM-B; Allen et al., 2015; Portuguese version by da Motta et al., 2021).

*** $p < .001$.

West, 1991). The results of these regression models are summarized in Table 4.

There were significant main effects of maternal and paternal antipathy, as well as maternal and paternal neglect, on self-harm and both its functions. In each regression model, there were also significant main effects of emotion regulation on self-harm and both its functions. Significant interaction effects were found between maternal and paternal antipathy, and emotion regulation in the regression models using self-harm and its social reinforcement function as the outcome variables. Furthermore, a significant interaction effect was found between maternal antipathy and emotion regulation in the model using the automatic reinforcement function of self-harm as the outcome variable. Additionally, significant interaction effects were found between maternal and paternal neglect, and emotion regulation in the model using self-harm as the outcome variable. No other significant interaction effects were found.

Simple slopes tests were used to interpret the associations and are presented in the Fig. 1. For adolescents who showed lower than average levels of emotion regulation, maternal and paternal antipathy had a greater effect on self-harm ($B = 0.19$, 95% CI [0.16, 0.22], $p < .001$ and $B = 0.17$, 95% CI [0.15, 0.20], $p < .001$, respectively), social reinforcement function of self-harm ($B = 0.22$, 95% CI [0.17, 0.27], $p < .001$ and $B = 0.19$, 95% CI [0.14, 0.24], $p < .001$, respectively), compared to those who displayed average levels of emotion regulation (maternal and paternal antipathy on self-harm: $B = 0.14$, 95% CI [0.12, 0.16], $p < .001$ and $B = 0.12$, 95% CI [0.10, 0.14], $p < .001$, respectively; maternal and paternal antipathy on social reinforcement function of self-harm: $B = 0.17$, 95% CI [0.14, 0.21], $p < .001$ and $B = 0.15$, 95% CI [0.11, 0.19], $p < .001$, respectively), and higher than average levels of emotion regulation (maternal and paternal antipathy on self-harm: $B = 0.09$, 95% CI [0.05, 0.12], $p < .001$ and $B = 0.07$, 95% CI [0.04, 0.09], $p < .001$, respectively; maternal and paternal antipathy on social reinforcement function of self-harm: $B = 0.13$, 95% CI [0.07, 0.18], $p < .001$ and $B = 0.11$, 95% CI [0.05, 0.16], $p < .001$, respectively). At low levels of emotion regulation, maternal antipathy also had a greater effect on automatic reinforcement function of self-harm ($B = 0.75$, 95% CI [0.57, 0.93], $p < .001$), compared to at average ($B = 0.61$, 95% CI [0.49, 0.74], $p < .001$) and higher than average levels of emotion regulation ($B = 0.47$, 95% CI [0.28, 0.65], $p < .001$). In line with this, adolescents who exhibited lower than average levels of emotion regulation, maternal and paternal neglect had a greater effect on self-harm ($B = 0.12$, 95% CI [0.10, 0.14], $p < .001$ and $B = 0.08$, 95% CI [0.06, 0.10], $p < .001$, respectively), compared to those who had average (maternal and paternal neglect on self-harm: $B = 0.09$, 95% CI [0.08, 0.11], $p < .001$ and $B = 0.06$, 95% CI [0.05, 0.08], $p < .001$, respectively), and higher than average levels of emotion regulation (maternal and paternal neglect on self-harm: $B = 0.07$, 95% CI [0.04, 0.09], $p < .001$ and $B =$

0.04, 95% CI [0.02, 0.07], $p < .001$, respectively).

Discussion

In light of the developmental psychopathology framework (e.g., Cicchetti, 2016), childhood emotional abuse and/or neglect has been found to be positively associated with limited access to adaptive emotion regulation strategies, which in turn increases the risk for adolescent self-harm. Indeed, emotion dysregulation has been found to mediate the associations between these negative experiences and self-harm in adolescence. However, it is possible that some adolescents who have been subjected to these experiences develop adaptive emotion regulation in other contexts (e.g., foster family, school, peer group, interventions), which likely put them at decreased risk for the engagement in self-harm compared to maltreated or neglected youth with low emotion regulation. However, little is known about how emotion regulation interacts with childhood emotional abuse and/or neglect to prevent or reduce the risk for self-injuring behaviors; moreover, the distinction between childhood emotional abuse and/or neglect perpetrated by the paternal and the maternal figures has only been scarcely considered in previous research examining the associations between these experiences and difficulties in emotion regulation in adolescence. To address these gaps, using a representative sample of students living on nine Portuguese islands, this study aimed to examine the moderating role of emotion regulation in the associations between parental (i.e., maternal and paternal) antipathy and neglect, and self-harm and its functions in adolescence. Emotion regulation decreased the strength of the (positive) associations between both maternal and paternal antipathy, and self-harm, as well as its social reinforcement function. Similarly, this skill weakened the (positive) links between maternal antipathy and the automatic reinforcement function of self-harm. Lastly, emotion regulation also decreased the strengths of the (positive) relationships between both maternal and paternal neglect, and self-harm.

Low to moderate mean levels of parental antipathy and neglect were found in this sample. In addition, high rates of self-harm were found – in line with prior studies using Portuguese adolescent samples (Barreto Carvalho et al., 2017; Equipa Aventura Social, 2022) – with the automatic reinforcement function showing relatively higher levels compared to the social reinforcement function, aligned with previous research (Barreto Carvalho et al., 2017; Doyle et al., 2017; Nock & Prinstein, 2004). Regarding gender differences, compared to the female adolescents, males showed higher levels of both functions of self-harm and lower emotion regulation, not in line with previous research that found no gender differences in these variables (e.g., Calvete et al., 2015; Duarte et al., 2015), as well as a higher prevalence of all the forms of childhood emotional abuse and neglect explored. No gender differences were found in self-harm, with previous studies having found that

Table 4

Moderated regressions of self-harm and automatic and social reinforcement functions of self-harm on maternal antipathy, paternal antipathy, maternal neglect, paternal neglect, and emotion regulation, controlling for gender and age.

Regression models	B	95% CI		t	p	F	p	R ²
		LL	UL					
DV: Self-harm						98.53	< 0.001	0.096
Maternal antipathy	1.10	0.12	0.16	12.80	< 0.001			
Emotion regulation (ER)	-0.21	-0.24	-0.17	-12.58	< 0.001			
Maternal antipathy × ER	-0.15	-0.02	-0.01	-5.16	< 0.001			
ΔR ² = 0.005						26.62	< 0.001	
DV: Self-harm						89.57	< 0.001	0.088
Paternal antipathy	0.90	0.10	0.14	11.34	< 0.001			
Emotion regulation (ER)	-0.22	-0.26	-0.19	-13.42	< 0.001			
Paternal antipathy × ER	-0.14	-0.03	-0.01	-5.10	< 0.001			
ΔR ² = 0.005						25.96	< 0.001	
DV: Self-harm						82.68	< 0.001	0.082
Maternal neglect	0.73	0.08	0.11	10.21	< 0.001			
Emotion regulation (ER)	-0.21	-0.25	-0.18	-12.58	< 0.001			
Maternal neglect × ER	-0.08	-0.02	-0.01	-3.35	< 0.001			
ΔR ² = 0.002						11.24	< 0.001	
DV: Self-harm						69.24	< 0.001	0.070
Paternal neglect	0.48	0.05	0.08	7.68	< 0.001			
Emotion regulation (ER)	-0.23	-0.26	-0.19	-13.66	< 0.001			
Paternal neglect × ER	-0.05	-0.01	-0.01	-2.52	0.012			
ΔR ² = 0.001						6.37	0.012	
DV: Automatic reinforcement						35.34	< 0.001	0.138
Maternal antipathy	4.47	3.07	5.87	6.27	< 0.001			
Emotion regulation (ER)	-1.30	-1.57	-1.03	-9.38	< 0.001			
Maternal antipathy × ER	-0.32	-0.08	-0.01	-1.98	0.049			
ΔR ² = 0.002						4.09	0.049	
DV: Automatic reinforcement						34.62	< 0.001	0.137
Paternal antipathy	4.30	2.96	5.64	6.29	< 0.001			
Emotion regulation (ER)	-1.34	-1.62	-1.07	-9.59	< 0.001			
Paternal antipathy × ER	-0.14	-0.59	0.31	-0.60	0.547			
ΔR ² = 0.001						0.36	0.547	
DV: Automatic reinforcement						31.29	< 0.001	0.124
Maternal neglect	2.81	1.64	3.98	4.72	< 0.001			
Emotion regulation (ER)	-1.32	-1.59	-1.04	-9.33	< 0.001			
Maternal neglect × ER	-0.09	-0.46	0.29	-0.44	0.659			
ΔR ² = 0.001						0.19	0.659	
DV: Automatic reinforcement						28.46	< 0.001	0.115
Paternal neglect	1.91	0.82	2.99	3.45	< 0.001			
Emotion regulation (ER)	-1.38	-1.66	-1.10	-9.61	< 0.001			
Paternal neglect × ER	0.15	-0.21	0.52	0.81	0.416			
ΔR ² = 0.001						0.66	0.416	
DV: Social reinforcement						47.21	< 0.001	0.176
Maternal antipathy	1.43	1.01	1.85	6.58	< 0.001			
Emotion regulation (ER)	-0.45	-0.54	-0.37	-10.81	< 0.001			
Maternal antipathy × ER	-0.10	-0.12	-0.02	-2.31	0.022			
ΔR ² = 0.002						6.01	0.022	
DV: Social reinforcement						44.84	< 0.001	0.170
Paternal antipathy	1.16	0.75	1.56	5.53	< 0.001			
Emotion regulation (ER)	-0.49	-0.57	-0.41	-11.44	< 0.001			
Paternal antipathy × ER	-0.09	-0.11	-0.03	-2.23	0.025			
ΔR ² = 0.002						5.90	0.025	
DV: Social reinforcement						49.60	< 0.001	0.102
Maternal neglect	1.11	0.76	1.47	6.18	< 0.001			
Emotion regulation (ER)	-0.48	-0.53	-0.36	-10.50	< 0.001			
Maternal neglect × ER	-0.02	-0.14	0.09	-0.39	0.700			
ΔR ² = 0.001						0.15	0.700	
DV: Social reinforcement						39.54	< 0.001	0.153
Paternal neglect	0.52	0.19	0.85	3.07	0.002			
Emotion regulation (ER)	-0.50	-0.59	-0.41	-11.41	< 0.001			
Paternal neglect × ER	0.02	-0.10	0.13	0.28	0.779			
ΔR ² = 0.001						0.08	0.779	

Note. DV = Dependent variable; Automatic reinforcement = Automatic reinforcement function of self-harm; Social reinforcement = Social reinforcement function of self-harm. Self-harm and both functions were measured using the Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A; Barreto Carvalho et al., 2015). Maternal and paternal antipathy, as well as maternal and paternal neglect, were measured using the Childhood Experience of Care and Abuse Questionnaire (CECA-Q; Bifulco et al., 2005; Portuguese version by Carvalho et al., 2011). Emotion regulation was measured using the Situational Test of Emotional Management – Brief (STEM-B; Allen et al., 2015; Portuguese version by da Motta et al., 2021). LL = lower limit; UL = upper limit.

females display higher levels (e.g., Bresin & Schoenleber, 2015). Older adolescents showed lower self-harm and higher emotion regulation, in line with previous studies (Cracco et al., 2017; Monto et al., 2018), whereas younger adolescents showed higher exposure to maternal

antipathy and neglect.

As initially hypothesized, positive associations between parental (i. e., maternal and paternal) antipathy and neglect, and self-harm and its functions were found, corroborating previous research (e.g., Kaess et al.,

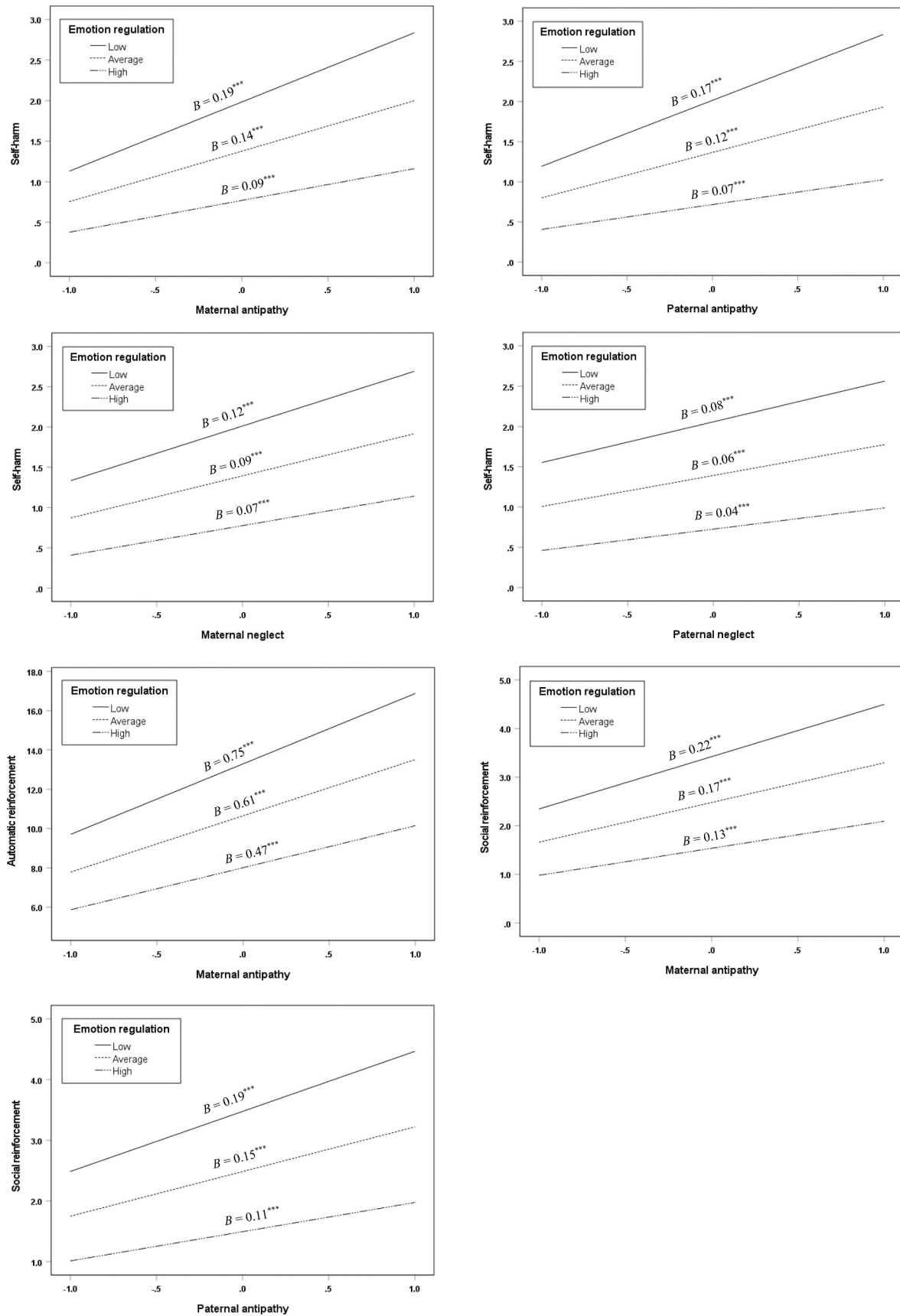


Fig. 1. Simple slopes of the moderated regressions of self-harm and automatic and social reinforcement functions of self-harm on maternal antipathy, paternal antipathy, maternal neglect, paternal neglect, and emotion regulation, controlling for gender and age.

Note. Simple slopes were probed at 1 SD below and above the mean of emotion regulation.

*** $p < .001$.

2013; Layne et al., 2014; Peh et al., 2017; Shahnazdoust et al., 2022; Ying et al., 2021). Also as hypothesized, parental antipathy and neglect were negatively associated with emotion regulation, in line with previous studies (Gruhn & Compas, 2020; O'Mahen et al., 2015; Titelius et al., 2018). Indeed, abusive and/or neglectful families hinder the learning of adaptive emotion regulation strategies (Kim & Cicchetti, 2010; Peh et al., 2017; Shields & Cicchetti, 2001). Lastly, as initially hypothesized, negative associations between emotion regulation and self-harm and both functions were found in this study, as prior research had found (Brausch et al., 2022; Guérin-Marion et al., 2020; Peh et al., 2017; Titelius et al., 2018); indeed, self-injuring behaviors may be used by adolescents to regulate their emotions (i.e., automatic reinforcement function) (Nock & Prinstein, 2004).

Emotion regulation was a negative moderator in the links between maternal antipathy and the automatic reinforcement function of self-harm. It was also a negative moderator in the associations between all forms of childhood emotional abuse and neglect examined (i.e., maternal and paternal antipathy and neglect) and self-harm, decreasing the strength of these (positive) associations. Indeed, adolescents with a history of exposure to maltreatment and/or neglect are more likely to use maladaptive emotion regulation strategies such as self-harm (e.g., Peh et al., 2017). Moreover, this skill also moderated the associations between parental antipathy and the social reinforcement function of self-harm. In line with this, the exposure to adverse childhood experiences is associated with deficits in social skills; on the other hand, the use of adaptive emotion regulation strategies is essential for several human developmental domains namely social functioning and interpersonal relationship quality (Pierce et al., 2022), so adolescents subjected to these negative experiences with high levels of emotion regulation will likely have a lower proneness to using self-harm to influence their social environment. Lastly, emotion regulation was not a moderator in the associations between parental (i.e., maternal and paternal) neglect and the social reinforcement function of self-harm, nor in the relationships between paternal antipathy and parental neglect, and the automatic reinforcement function of self-harm. It is possible that adolescents who were subjected to these forms of childhood emotional abuse and/or neglect use other forms of maladaptive emotion regulation strategies besides self-harm which were not measured (e.g., substance use, rumination); we believe that emotion regulation would moderate the associations between these negative experiences and the use of these strategies, and future research should confirm this hypothesis.

As far as similarities and differences in the gender (i.e., maternal and paternal figure) of the perpetrator of parental antipathy and neglect are concerned, all results of the moderations were the same (i.e., significant for self-harm and non-significant for both its functions) for both forms of the latter (i.e., maternal and paternal neglect), which indicates that they have similar characteristics regarding the protective role of emotion regulation against self-harm and both its functions. On the other hand, emotion regulation only weakened the positive association between maternal (but not paternal) antipathy and the automatic reinforcement function of self-harm, which may be explained by the traditional gender roles, according to which women are believed and expected to have a higher tendency and ability to express their emotions (e.g., Shields, Garner, Leone, & Hadley, 2006). Thus, high levels of emotion regulation may have a more protective effect against the use of self-harm to regulate one's emotions in an interpersonal context with someone who we expect to have similarly high levels of this skill – in this case, the maternal figure.

The findings emphasize the relevance of emotion regulation in preventing and reducing self-harm in adolescence – in line with previous studies examining the effectiveness of DBT interventions targeting emotion regulation (e.g., Asarnow et al., 2021) – even in situations with a history of childhood emotional abuse and/or neglect. In terms of theoretical implications for the developmental psychopathology framework, according to which adversity during one developmental period disrupts its normative trajectory and further development

trajectories (e.g., Cicchetti, 2016), these findings highlight the buffering effect of psychosocial variables such as emotion regulation on the negative impact that childhood adversity such as parental antipathy and/or neglect has on adolescents' developmental trajectories such as the engagement in self-injuring behaviors.

In terms of practical implications, the prevention of adolescent self-harm should target emotion regulation/management, as well as the other dimensions (i.e., emotional perception and expression, emotional facilitation of thought, emotional understanding) encompassing the wider construct of emotional intelligence as conceptualized by Mayer and Salovey (1997), having as the ultimate goal the creation of emotionally intelligent environments for adolescents, including educational settings, the family environment, and the legal system. Given the importance of emotional intelligence in school settings (e.g., Keefer, Parker, & Saklofske, 2018) and its positive outcomes (e.g., academic performance [Sanchez-Álvarez, Martos, & Extremera, 2020]), adaptive emotion regulation skills and other components of emotional intelligence should be a priority in educational curricula across multiple school years. These skills – as well as maladaptive emotion regulation strategies such as self-harm – should also be contemplated in training programs aimed at school staff (e.g., teachers) to enhance their emotional intelligence, so that they are able to provide more adaptive responses in the face of youth's intense emotional situations in the school setting and have a mediating role between the students and the school's counseling services. This approach would allow these services to conduct periodical psychological assessments of youth's mental health, with a particular focus on their emotional intelligence. This will ultimately contribute to the prevention and identification of situations of at-risk youth (e.g., self-injuring adolescents) in the school context. Additionally, given that the family environment is crucial for the learning of emotion regulation skills (Maughan & Cicchetti, 2002) and that emotional intelligence more broadly is beneficial within the family environment (e.g., Chen, Yan, & Chen, 2018), families of at-risk youth should be referred by schools, other institutions that work with young people, or other community services (e.g., healthcare) to participate in positive parenting interventions and programs should target emotion regulation skills – alongside other components of emotional intelligence. Supporting this idea, previous research shows that some parenting practices, such as responsiveness, positively predict and are predicted by adolescents' adaptive emotion regulation whereas others, such as psychological control, negatively predict and are predicted by this skill (Otterpohl & Wild, 2015). Lastly, particularly in situations of childhood emotional abuse and/or neglect – identified by schools, other institutions that work with youth, other community services (e.g., healthcare), and the neighborhood – the participation of the perpetrators of these crimes in the previously mentioned positive parenting interventions and programs – especially given that they often do not show motivation to change (e.g., Hall, Sears, & Walton, 2020) – should be legally determined by local and national child and youth protection systems.

Limitations and suggestions for future studies

This study has some limitations, namely its cross-sectional design, which does not allow for the accurate determination of predictive relationships between variables over time; the use of self-report instruments, including one retrospective measure (i.e., CECA.Q), with the possible effects of social desirability on results being known (Grimm, 2010; Krumpal, 2013); the use of a measure of childhood emotional abuse and neglect that does not take into account different, less common, household compositions besides having a paternal and a maternal figure (e.g., single-parent, same-sex parents, reconstituted); and the use of a lengthy research protocol which, even though adolescent participation was split into two different moments, may have induced participant fatigue. Future research should use longitudinal designs to explore the moderating role of emotion regulation in the predictive relationships

between parental antipathy and neglect and self-harm in adolescents over time. Moreover, future research should also explore the moderating role of other psychosocial variables (e.g., resilience, coping, school satisfaction) in the relationships between childhood emotional abuse and/or neglect and self-harm in adolescence. Lastly, the associations between other forms of childhood maltreatment (e.g., physical abuse, sexual abuse) – as well as other adverse childhood experiences (e.g., parental violence, bullying) – and self-harm in adolescence, using emotion regulation as a moderator, should be explored.

Conclusion

Prior studies had found that childhood emotional abuse and/or neglect is positively associated with self-harm in adolescence, which in turn is negatively linked with emotion regulation. Using a representative sample of adolescents living in Portugal, this research shed light on the associations between parental antipathy and neglect, and adolescent self-harm by examining the moderating role of emotion regulation. This skill was found to decrease the (positive) associations between parental antipathy and neglect, and self-harm, and its social reinforcement function; it also decreased the (positive) association between maternal antipathy and the automatic reinforcement function of self-harm. These results emphasize the relevance of promoting emotion regulation across multiple contexts (e.g., school, family, legal system) – aiming to create emotionally intelligent environments – for the prevention of adolescent self-harm, even in situations with a history of childhood emotional abuse and/or neglect.

Ethical approval

This study was approved by the Ethics Committee of the University of the Azores and the Portuguese Data Protection Authority (no. 13953/2017). All international ethical norms and standards regarding research involving human participants, namely the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards, were complied with throughout the study.

Informed consent

Informed consent was obtained from all individual participants above the age of 18 and by the underage participants' parents or legal guardians.

Data sharing and declaration

This manuscript's data will not be deposited.

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Declaration of Competing Interest

None.

Data availability

The data that has been used is confidential.

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