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The relationship of emotion regulation and negative lability with socioemotional adjustment in institutionalized and non-institutionalized children

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With this study, we aimed to investigate the contribution of emotion regulation and negative lability to socioemotional adjustment in institutionalized and non-institutionalized children. Ninety-two children aged 6 to 10 years (45 placed in residential care after abuse and 47 non-abused, living with their biological families) participated in this study. Emotion Regulation Questionnaire and Strengths and Difficulties Questionnaire were completed by the main caregivers of the institutions and by the elementary teacher, respectively, for the institutionalized and non-institutionalized groups. No differences were observed between institutionalized and non-institutionalized children in emotion regulation, negative lability, and socioemotional adjustment outcomes. Also, no sex and age effects were observed for both groups. Considering the institutionalized children, the length of institutionalization had a significant effect on negative lability, while no effects of the type of maltreatment on emotion regulation and negative lability were observed. Additionally, in institutionalized children, negative lability was negatively associated with peer relationship problems in socioemotional adjustment, whereas in the non-institutionalized children, no significant associations were verified between emotion regulation and negative lability with socioemotional adjustment outcomes. For institutionalized children, emotional lability seems to have a differential impact on specific maladaptive socioemotional outcomes, which emphasizes the importance of analysing these specific risk developmental pathways.

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Statement of contribution

What is already known on this subject

1. Emotion regulation affects socioemotional adjustment in institutionalized children.
2. Institutionalized children are at increased risk to develop socioemotional adjustment problems.

What the present study adds

1. Length of institutionalization had an effect on negative lability in institutionalized children
2. Negative lability is negatively associated with peer relationship problems in institutionalized children.
3. Importance of developing early interventions to promote emotion lability skills for institutionalized children.

Background

Exploring socioemotional adjustment in adaptive and maladaptive development is urgent to understand the emergence of psychopathology. The identification of risk and resilience processes is important for understanding the emergence of socioemotional adjustment problems, as it allows for designing preventive or remediation interventions (Compas et al., 2017; Kraemer, Lowe, & Kupfer, 2005; Luthar, 2006; Masten, 2001; Troy & Mauss, 2011). Accordingly, this study focuses on analysing emotion regulation and emotion lability as potential risk and resilience processes that may contribute to the emergence of socioemotional adjustment problems. Our main goal is to verify whether institutionalized and non-institutionalized children differ in emotion regulation and emotion lability as precursors associated with their socioemotional adjustment.

Socioemotional adjustment refers to the ability to accommodate to a life-altering event or transition leading to a relative degree of harmony between an individual's needs and the requirements of the environment (Madariaga, Arribillaga, & Zulaika, 2014). Socioemotional adjustment reflects both the absence of psychopathology and the presence of individual's competencies to deal with adversity. In line with this, socioemotional adjustment can be identified in the absence of internalizing and externalizing problems, as well as pro-social behaviours. Internalizing problems result from inappropriate or maladaptive control or regulation of the individuals' internal emotional and cognitive state. Externalizing problems refer to a grouping of behavioural problems that are manifested in children's outward behaviour and reflect the child negatively acting on the external environment (Campbell, Shaw, & Gilliom, 2000; Eisenberg et al., 2001). Achenbach (1966, 1991), who developed the concepts of internalizing and externalizing problems, indicated that internalizing symptoms refer to problems of withdrawal, somatic complaints, and anxiety/depression, while externalizing symptoms consist of delinquent and aggressive behaviour. Although they are distinct constructs, internalizing and externalizing problems tend to be positively associated (Willner, Gatzke-Kopp, & Bray, 2016).

Emotion regulation refers to appropriate expression of emotions according to situations, empathy, and emotional self-awareness, whereas negative lability is defined as emotion dysregulation, intense shifts in emotional states, lack of flexibility, mood lability, and dysregulated negative affect (Leaberry, Walerius, Rosen, & Fogleman, 2017; Shields & Cicchetti, 1997). Emotion regulation refers to children's ability to control extreme states of arousal or reactivity in such a way that mutual, reciprocal social interactions become possible (Kim-Spoon, Cicchetti, & Rogosch, 2013). Although emotion regulation and negative lability are related and in dynamic interaction, they are separate constructs, as

self-regulation can be defined as the ability to modulate emotional and behavioural reactivity (Kim-Spoon et al., 2013; Rothbart, Bates, Damon, & Lerner, 2006).

Emotion regulation plays a central role in socioemotional adjustment as it allows initiating, motivating, and organizing adaptive behaviour, as well as reducing stress associated with negative emotions and maladaptive behaviour (Kim-Spoon et al., 2013). Difficulties in emotion regulation often lead to psychopathology, namely to externalizing and internalizing problems in children (Chaplin, Cole, & Zahn-Waxler, 2005; Eisenberg, Spinrad, & Eggum, 2010; Yap, Allen, & Sheeber, 2007).

Emotion lability is characterized as the inability to maintain consistent emotional states over time (Leaberry et al., 2017). Children with greater negative lability show increased sensitivity to affective environmental cues. They are more emotionally and physically reactive to adverse situations (Pietromonaco & Barrett, 2009). Research shows that emotion lability is related to socioemotional problems, such as internalizing problems (Kim-Spoon et al., 2013). Greater negative lability is associated with poorer social competencies (Eisenberg, Carlo, Murphy, & Van Court, 1995) and with higher levels of depressive symptoms (Larson, Raffaelli, Richards, Ham, & Jewell, 1990; Silk, Steinberg, & Morris, 2003). Additionally, children with increased levels of negative emotionality tend to develop more behavioural problems (Bates, Pettit, Dodge, & Ridge, 1998; Eisenberg et al., 1995; Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Kim & Deater-Deckard, 2011).

One of the most powerful risk factor for the development of emotion regulation impairments and maladjusted behaviours is the exposure to acute and chronic stressful events and adverse experiences (Compas et al., 2017; Evans, Li, & Whipple, 2013; Kushner, 2015). Caregivers play an important coregulating role, as children largely depend on them to regulate their emotions. Children's self-regulation competencies are strongly associated with stable, contingent, sensitive caregiving, whereas children's adverse family experiences are associated with increased emotional dysregulation (Eisenberg et al., 2001, 2004, 2010; Fox & Calkins, 2003). Also, maltreatment experience is associated with children's compromised self-regulation skills, which can in turn promote the emergence of socioemotional and behavioural problems (Aber, Allen, Carlson, & Cicchetti, 1989; Egeland, Yates, Appleyard, & Van Dulmen, 2002; Schatz-Stevens, Cockburn, & Lefever, 2015).

Emotion regulation and socioemotional adjustment are areas of great concern for children living in residential care (Gunnar, Bruce, & Grotevant, 2000; Tottenham et al., 2010). To provide nurturing, supporting and responsive caregiving is often a major challenge in the context of institutional care. Therefore, institutionalized children tend to show difficulties in regulating their emotions (Batki, 2018; Gunnar et al., 2000), namely when dealing with perceived threatening stimuli (Pollak, Vardi, Putzer Bechner, & Curtin, 2005). Empirical evidence suggests that these difficulties partially arise from a bias in processing emotional cues, with individuals with a history of early adversity presenting an enhanced processing of negative valence information (Bick, Luyster, Fox, Zeanah, & Nelson, 2017; Pollak & Sinha, 2002; Williams, Mathews, & MacLeod, 1996).

Evidence shows that institutionalization strongly affects children´s distinct developmental outcomes, such as physical, intellectual, social, emotional, and behavioural domains (Maclean, 2003). Importantly, the length of institutionalization has been associated with greater emotional and behavioural difficulties (Tottenham et al., 2010), with evidence showing that long periods of institutional rearing are associated with children's poorer emotion regulation competencies and more negative lability (Tottenham et al., 2010).

Other aspect that has a differential impact on children's emotion regulation is the type of maltreatment. Research shows that maltreatment and negligence can have a differential impact on children's emotional development. Abusive parents often fail to teach their children effective ways to reduce distress and to regulate emotions, such as anger and sadness, as they tend to ridicule, belittle, or neglect the children in emotional situations (Fay-Stammbach, Hawes, & Meredith, 2017; Shipman et al., 2007). They also show less positive emotions and more negative emotions, providing fewer models of adjusted emotion regulation (Lavi, Manor-Binyaminib, et al., 2019; Milojevich & Haskett, 2018). This often leads to difficulties in emotion regulation in maltreated children. In turn, neglectful parents tend to dismiss children's emotions and to be emotionally unsupportive, which can also lead to deficits in emotion regulation (Spratt et al., 2012). However, few studies focus on the effects of neglectful parenting on children and research on the comparison of the impact of abuse and negligence on children's emotional development is still lacking.

Emotion regulation difficulties have also been widely associated with children's sex. Empirical evidence suggests that girls show greater positive emotion expressions but, also, express more internalizing emotions, such as sadness, fear, sympathy, and shame than boys, who express more externalizing emotions, such as anger, contempt, and disgust (Chaplin & Aldao, 2013). These differences in emotion regulation often lead to different outcomes in socioemotional adjustment. Girls are more likely to exhibit somatic complaints, anxiety and depression symptoms, and less disruptive behaviours and attention problems, when compared to boys (Narusyte, Ropponen, Alexanderson, & Svedberg, 2017).

Emotion regulation is inevitably linked to children's age, as emotional development is strongly related to cognitive development and depends on the emergence, maturation, and interconnection of complex neural circuits (Davidson et al., 2002). By the end of the preschool years, children tend to be able to anticipate, talk about, and use their awareness on their own and others' emotions and feelings to deal with social interactions (Denham et al., 2003; Thompson & Lagattuta, 2006). Their emotional repertoires become more complex, as they include self-conscious emotions, such as shame, guilt, and pride, which allow children to manage demanding interpersonal situations (Lewis, 2000, 2014). Throughout the early childhood years, children develop increasing abilities to regulate their emotions, as they become able to use language to communicate their emotions and feeling, as well as to inhibit the expression of emotions that are inappropriate in specific situations and contexts (Lagattuta & Wellman, 2002; Thompson, 1994).

Altogether, emotional and behavioural problems are among the most frequently reported consequences of abuse and neglect (Aber et al., 1989; Cicchetti & Rogosch, 2001; Kim & Cicchetti, 2004; Schatz-Stevens et al., 2015). Given the negative impact of institutionalization on children's emotion regulation and socioemotional adjustment, residential care is often conceived as a solution that should be avoided (Knorth, Harder, Zandberg, & Kendrick, 2008). Nevertheless, some studies show that residential placement can contribute to positive developmental outcomes in children with emotional and behavioural problems (Cordovil, Crujo, Vilariça, & Da Silva, 2011; James, Zhang, & Landsverk, 2012; Whetten et al., 2014). This contradictory evidence, concerning the impact of residential care on children's development, emphasizes the importance of discussing the impact of institutionalization on children's emotion regulation and its implications to socioemotional adjustment.

Under Portuguese legislation, residential care is one of the measures for the support and protection of children and young people at risk. Despite its negative impact on

children's development, residential care offers an ecological approach to clearly understand the effects of institutionalization on children's developmental outcomes (Soares et al., 2019). The main legal reason for being removed from biological family and moving to residential care is negligence (71.7%), followed by other situations, such as temporary lack of family support, child disruptive behaviours, and abandonment by the biological family (12.3%), psychological maltreatment (9.6%), physical abuse (3.8%), and sexual abuse (2.6%) (Instituto da Segurança Social, 2018). In 2018, 810 of 2,719,644 Portuguese children aged between zero and 11 years (3%) were living in residential care (Instituto da Segurança Social, 2018).

Research shows that the early exposure to adverse family environments poses considerable risk for maladaptation across diverse domains of development, namely in the emotional dimension (Kim & Cicchetti, 2010). However, to date, research on the effects of emotion regulation and emotion lability on socioemotional adjustment in institutionalized children is scarce. To address this gap, we aim to compare how emotion regulation and emotion lability, as simultaneously predictors, contribute to children's socioemotional outcomes. In line with this, we aim to:

1. contrast institutionalized and non-institutionalized Portuguese children regarding emotion regulation, negative lability, and socioemotional adjustment competencies. We expect institutionalized children to present lower emotion regulation, greater negative lability, and more maladaptive socioemotional outcomes than non-institutionalized children (Batki, 2018; Gunnar et al., 2000);
2. explore the effect of children's sex and age on emotion regulation, negative lability, and socioemotional adjustment. We expect to find a sex effect on emotion regulation, negative lability, and socioemotional adjustment outcomes in the institutionalized and non-institutionalized group, with boys experiencing more socioemotional adjustment problems and girls more emotion regulation symptoms (Chaplin & Aldao, 2013; Narusyte et al., 2017; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Regarding age, we expect to find an age effect on emotion regulation, emotion lability, and socioemotional adjustment with older children presenting less difficulties in all domains compared with younger children in both groups, due to the increased maturity of older children in cognitive, social, and emotional domains;
3. examine the effect of length of institutionalization and type of maltreatment previous to institutionalization on emotion regulation, negative lability, and socioemotional adjustment. We expect to find an effect of length of institutionalization and type of maltreatment on emotion regulation, negative lability, and socioemotional adjustment, with those institutionalized for longer lengths and those with history of negligence presenting greater difficulties (Egeland et al., 2002; Fay-Stammbach et al., 2017; Lin, Cermak, Coster, & Miller, 2005; Schatz-Stevens et al., 2015; Shipman et al., 2007; Soares, Barbosa Ducharne, Palacios González, & Pacheco, 2017; Tottenham et al., 2010);
4. investigate the associations between emotion regulation and negative lability with socioemotional adjustment. In line with studies showing that difficulties in emotion regulation and greater negativity lability often lead to psychopathology (Chaplin et al., 2005; Eisenberg et al., 2010; Yap et al., 2007), we expect lower emotion regulation and greater negative lability to predict maladaptive socioemotional outcomes in both groups.

Materials and methods

Participants

One hundred Caucasian Portuguese children – 50 institutionalized and 50 non-institutionalized – were recruited to participate. Institutionalized children (n = 45–23 boys and 22 girls) were referred by the Child Protective Services, after having suffered abuse from their parents, and institutionalized, due to Court order. They were selected on the basis of a list of the Ministry of Social Affairs of the Portuguese residential care institutions in four cities in Northern Portugal. Children with developmental delays were excluded. Additionally, five children were removed from the sample, as they were adopted or returned to their biological families, during the period the data collection was being conducted. Twenty-four children (57%) were living in residential care for more than one year, while the remaining 18 (43%) have been institutionalized for less than one year (we did not have access to this information for the remaining children). All of them have been removed from their biological parents, due to abuse or neglect experiences – two have suffered emotional abuse (4%), and 23 have been victims of neglect (46%), four of physical and emotional abuse (8%), and 16 of physical maltreatment and neglect (32%).

The non-institutionalized group (n = 47–24 boys and 23 girls) lived with their biological family and did not present a history of abuse or neglect. These children have been recruited in public schools in the Porto metropolitan area, and with the assistance of their teachers, we were able to establish that they did not suffer from abuse or neglect experiences and did not present developmental delays. Three children were excluded from the sample, as they changed to other school or their parents did not give consent to their participation in the study.

The two groups were matched in age (institutionalized: M = 8.2, SD = 1; non-institutionalized: M = 8.4, SD = 1) and sex. Despite the effort to match the two groups according to parents' education (i.e., number of years parents attended school and parents' school level), which can be used as an indicator of socio-economic status (SES) (Lerner, Johnson, Wang, Ferris, & Hershberg, 2015), institutionalized (M = 4.93, SD = 3) and non-institutionalized children's parent education (M = 7.4, SD = 3) was significantly different, t (90) = −3.93, p < .001.

Measures

Socio-demographic information

The demographics of children and families were obtained through a questionnaire. For non-institutionalized children, the elementary teacher completed the questionnaire, and for institutionalized children, it was the main caretakers of the institutions. Additional information about the institutionalization process, contacts with the biological family, social support network, and children's medical history (illness/physical problems) was included in the questionnaire.

Emotion regulation and negative lability

For assessing children's emotion regulation competencies, the Portuguese version of the Emotion Regulation Checklist (ERC) (Shields & Cicchetti, 1997) was completed by the elementary teacher, for the non-institutionalized children, and by the main caretaker, for the institutionalized children.

ERC is an instrument for the hetero-evaluation of the children's abilities to manage emotional experiences. The ERC comprises 24 items measured on a 4-point Likert scale (1 = never; 4 = almost always). Two subscales derive from it: emotion regulation (8 items) and emotion lability/negativity (16 items). The emotion regulation scale includes items, such as 'can recover quickly from episodes of upset or distress (e.g., 'is easily frustrated' or 'can modulate excitement in emotionally arousing situations'). The emotion lability/negativity scale comprises items such as 'exhibits wide mood swings (e.g., 'child's emotional state is difficult to anticipate because she/he moves quickly from positive to negative moods' and 'transitions well from one activity to another').

To obtain each subscale score, the sum of the corresponding items was computed. The emotion regulation subscale consists of items assessing adaptive regulation, including socially appropriate emotional displays, empathy, equanimity, emotional self-awareness, and emotional understanding. High scores in this subscale indicate that the child is able to modulate one's emotional arousal such that an optimal level of engagement with one's environment is fostered. The emotion lability/negativity subscale is composed of items assessing arousal, reactivity, flexibility, emotional intensity, expression of negative emotions, and mood lability. High scores in this subscale indicate that the child tends to exhibit rapid and exaggerated emotional reactions and mood changes. Both construct validity and discriminant validity have been demonstrated for the ERC (Shields & Cicchetti, 1998). In the current study, the Cronbach's alpha yield consistency results for emotion regulation subscale ($\alpha = .71$) and negative lability ($\alpha = .88$).

Socioemotional adjustment

To assess socioemotional adjustment, the Portuguese version of the Strengths and Difficulties Questionnaire (SDQ) (Fleitlich, Loureiro, Fonseca, & Gaspar, 2004; Goodman, 1997) was completed by the elementary teacher, for the non-institutionalized children, and by the main caretaker, for the institutionalized children. SDQ is a short behavioural screening questionnaire used for children aged between 4 and 17 years. It includes 25 items, measured on a 3-point Likert scale (0 = not true; 2 = certainly true), organized in five subscales, with five items each: emotional problems (e.g., 'Many worries, often seems worried'), conduct problems (e.g., 'Steals from home, school or elsewhere'), hyperactivity and inattention (e.g., 'Restless, overactive, cannot stay still for long'), peer relationship problems (e.g., 'Picked on or bullied by other children'), and pro-social behaviours (e.g., 'Has at least one good friend'). The score of each subscale is calculated by the sum of the corresponding five items. Additionally, the sum of the previous four subscales scores (excluding pro-social behaviours scale) allows generating a total difficulties outcome that corresponds to the scale total score and yields a result suggesting the risk of developing a mental health disorder. This questionnaire also includes an impact supplement comprising five questions examining the chronicity, social impairment, and distress related to a reported problem, which, for the purposes of this study, was not considered in the analysis. We did not consider this supplement, as in this study we are only focused on the nature of the socioemotional problems exhibited by the children, and not on their chronicity and impact on the children's functioning in specific contexts.

It has been determined the construct validity and discriminant validity of SDQ making it a useful brief measure for assessing adjustment of children and adolescents and psychopathology (Goodman, 2001). In this study, the following results for Cronbach's alpha were obtained: emotional problems ($\alpha = .77$), conduct problems ($\alpha = .74$), hyperactivity and inattention ($\alpha = .83$), peer relationship problems ($\alpha = .57$), pro-social

behaviours (α = .81), and total difficulties score (α = .85). These results are consistent with existing studies on the psychometric properties of the SDQ (Stone et al., 2015; Stone, Otten, Engels, Vermulst, & Janssens, 2010).

Procedure

This study was reviewed and approved by the Ethics Committee of the last authors' affiliation institution. For both groups, the first author, as a researcher, made telephone contacts with the directors of the institutions and the schools in order to present the study objectives and procedures. Afterwards, those interested in participating were sent additional information about the study by email. With the support of the institutions and the school staff, children's parents signed the informed consent in accordance with the Declaration of Helsinki. Those who accepted participating allowed children's teachers or caregivers to answer the questionnaires.

Caregivers filled the questionnaires for the institutionalized children, while teachers completed the questionnaires for the non-institutionalized children. In the institutionalized group, we selected caregivers as informants, as they were the persons with whom the children tend to have a closer relationship and the families were unavailable or do not have any contact with the children. Additionally, due to legal constraints, the contact with the children's teachers was difficult, as it depended on the mediation of the institution caretaker. In the non-institutionalized group, we asked teachers to fill the questionnaires. We selected teachers with the intent to homogenize the informants, as they tend to have a close relationship with the children. Questionnaires were presented in a paper-and-pencil version. Answering the questionnaires lasted around 20 minutes. Active consent from parents and all the procedures in this study underwent in accordance with the General Data Protection Regulation (GDPR) guidelines.

Given that the emotion regulation, negative lability, and socioemotional adjustment information referring to institutionalized and non-institutionalized children were drawn on different informants, results will be presented in two studies considering the two groups: Study 1 – institutionalized children; and Study 2 – non-institutionalized children.

Statistical data analyses

Statistical analysis was performed using IBM SPSS Statistics 22. An alpha level of 0.05 was used. Given that our data were not normally distributed (Shapiro–Wilk, $p < .05$), we performed the non-parametric tests. However, as suggested by Fife-Schaw (2006), we also computed the equivalent parametric tests. Given that the pattern of results remained unchanged, we decided to present the results of the parametric tests because these are more robust and the probability of committing type I error decreases (Fife-Schaw, 2006).

Descriptive analyses were computed for both groups. Pearson's correlation analyses were performed to verify the association between emotion regulation, negative lability, and SDQ subscales for institutionalized and non-institutionalized groups. A multivariate analysis of covariance (MANCOVA) was calculated to verify whether institutionalized and non-institutionalized children differed regarding emotion regulation, negative lability and SDQ subscales, controlling for sex and age. Then, for the institutionalized group, a MANCOVA analysis was computed to verify whether length of institutionalization (less than 15 months: $N = 19$; or more than 15 months: $N = 23$) and these periods of prolonged institutionalization were selected as suggested by Tottenham et al. (2010) and type of maltreatment (negligence: $N = 23$, physical and emotional/psychological

maltreatment and negligence: $N = 20$; no information was available for 2 children regarding their history of maltreatment) had an effect on emotion regulation, negative lability, and SDQ subscales. Post-hoc paired comparisons were performed with the Bonferroni adjustment for multiple comparisons.

Afterwards, a multivariate multiple regression analysis was performed to investigate whether emotion regulation and negative lability competencies were predicting socioemotional adjustment in institutionalized and non-institutionalized children. Our dependent variables were the subscale scores derived from the SDQ – total difficulties, emotional problems, conduct problems, hyperactivity and inattention, peer relationship problems, and pro-social behaviours – since it has been suggested that the subscales present good convergent and discriminatory validity when used to predict behavioural disorders in youth (Goodman, Lamping, & Ploubidis, 2010). Because we had two independent variables (emotion regulation and negative lability, entered separately in the regression model for each group) predicting multiple outcomes (all the SDQ subscales), we performed the multivariate multiple regression, as suggested elsewhere (Hidalgo & Goodman, 2013; Pallant, 2013), and by doing so, we aimed at reducing the risk for committing statistical type I error (Field, 2013). The Levene test revealed equality of variance for all variables in both groups ($p > .05$). The multicollinearity assumption was met: No correlation was observed between the independent variables in the institutionalized group. In the non-institutionalized group, although the independent variables were significantly correlated ($r = -.5$), they were not highly correlated ($r < .9$) (Pallant, 2013).

Table 1. Pearson's correlation between predictors and outcome variables for institutionalized and non-institutionalized groups

	1	2	3	4	5	6	7	8
Institutionalized								
1. Emotion regulation	1							
2. Negative lability	−.22	1						
3. Total difficulties	.18	−.25	1					
4. Emotional problems	.03	−.22	.60**	1				
5. Conduct problems	.23	−.07	.69**	.10	1			
6. Hyperactivity and inattention	.20	−.14	.79***	.16	.53**	1		
7. Peer relationship problems	.008	−.32*	.69**	.61**	.20	.31*	1	
8. Pro-social behaviours	−.15	.13	−.45**	.04	−.46**	−.52**	−.19	1
Non-institutionalized								
1. Emotion regulation	1							
2. Negative lability	−.52***	1						
3. Total difficulties	−.07	.20	1					
4. Emotional problems	−.04	.12	.63**	1				
5. Conduct problems	.006	.14	.67**	.04	1			
6. Hyperactivity and inattention	−.05	.13	.80**	.20	.60***	1		
7. Peer relationship problems	−.10	.21	.53**	.32*	.42**	.16	1	
8. Pro-social behaviours	.11	−.19	−.24	.17	−.58***	−.18	−.51***	1

Note. $^{*}p > .05.$; $^{**}p > .01.$; $^{***}p > .001.$

Results

Study 1 – Institutionalized children

Emotion regulation, negative lability and socioemotional adjustment

Pearson's correlation analysis revealed no significant correlation between emotion regulation and negative lability, but significant correlations were observed between all socioemotional adjustment outcomes (Table 1). In particular, all SDQ subscales were positively related to total difficulties, except the pro-social behaviours subscale, which was negatively correlated with total difficulties. Of note, the peer relationship problems subscale was negatively correlated with negative lability.

MANCOVA revealed no differences between institutionalized and non-institutionalized children on emotion regulation, negative lability, and socioemotional adjustment outcomes without, $F(8, 82) = 1.17$, $p = .33$, $\eta_p^2 = .102$, and after controlling for sex and age, $F(8, 80) = 1.16$, $p = .34$, $\eta_p^2 = .104$.

Additionally, the MANCOVA indicated a significant effect of the length of institutionalization (less than 15 months or more than 15 months living in the institution), $F(8, 32) = 2.46$, $p < .05$, $\eta_p^2 = .38$. Bonferroni post-hoc test revealed that children who have been institutionalized longer lengths presented greater negative lability than those institutionalized shorter length ($p = .02$, $\eta_p^2 = .14$). No significant effects were observed regarding emotion regulation and socioemotional adjustment outcomes (Table 2). The type of maltreatment suffered previously to institutionalization (negligence or physical and emotional/psychological maltreatment and negligence) did not have an effect on emotion regulation, negative lability, and the socioemotional adjustment outcomes, $F(8, 32) = .86$, $p = .56$, $\eta_p^2 = .18$.

Table 2. Mean (M) and standard deviation (SD) results regarding length of institutionalization (less than 15 months or more than 15 months) and type of maltreatment (negligence, physical and emotional/psychological maltreatment, and negligent and maltreatment) in the institutionalized group

	Length of institutionalization		Type of maltreatment		
	<15* *M* (*SD*)	>15† *M* (*SD*)	N *M* (*SD*)	P/EM *M* (*SD*)	N/M *M* (*SD*)
Socioemotional adjustment					
Total difficulties	10.68 (5.89)	13.30 (6.45)	11.91 (6.37)	15.75 (5.44)	11.38 (6.16)
Emotional problems	2.37 (1.61)	3 (2.24)	2.43 (2.04)	3.25 (2.63)	2.94 (1.73)
Conduct problems	1.26 (1.79)	2.48 (2.43)	2.13 (2.18)	3 (2.45)	1.56 (2.34)
Hyperactivity and inattention	5.05 (3.09)	5.65 (2.72)	5.22 (3–04)	7 (.82)	5 (2.97)
Peer relationship problems	2.05 (1.47)	2.17 (2.12)	2.13 (2.05)	2.50 (1.29)	1.94 (1.65)
Pro-social behaviours	7.26 (2.40)	6.09 (2.31)	6.78 (2.29)	4.25 (2.22)	7.06 (2.32)
Emotion regulation					
Emotion regulation	22.89 (3.73)	23.30 (3.29)	23.74 (3.81)	22.25 (4.11)	22.94 (3.36)
Negative lability	27.11 (6.53)	31.30 (6.58)	29.17 (7.08)	21.25 (3.86)	31.88 (5.14)

Note. N, negligence; P/EM, physical and emotional/psychological maltreatment; N/M, negligent and maltreatment.

$p > .05$.

*<1 – less than 15 months; †>15 – more than 15 months.

Table 3. Multiple regression analysis: emotion regulation and negative lability as predictors of socioemotional adjustment

	Institutionalized						Non-institutionalized					
	Regression values			Parameters values			Regression values			Parameters values		
	$F(1, 43)$	R^2	p	β	t	p	$F(1, 44)$	R^2	p	β	t	p
Emotion regulation												
Total difficulties	1.45	.03	.24	.31	1.20	.24	.22	.01	.64	−.11	−.47	.64
Emotional problems	.03	.00	.86	.02	.18	.86	.06	.00	.81	−.02	−.25	.81
Conduct problems	2.29	.05	.14	.14	1.51	.14	.00	.00	.97	.00	.04	.97
Hyperactivity and inattention	1.80	.04	.19	.16	1.34	.19	.09	.00	.76	−.03	−.31	.76
Peer relationship problems	.00	.00	.96	.00	.05	.96	.48	.01	.49	−.04	−.69	.49
Pro-social behaviours	.97	.02	.33	−.10	−.99	.33	.58	.01	.45	.07	.76	.45
Negative lability												
Total difficulties	2.83	.06	.10	−.23	−1.68	.10	1.87	.04	.18	.16	1.37	.18
Emotional problems	2.16	.05	.15	−.06	−1.47	.15	.65	.01	.43	.04	.80	.43
Conduct problems	.20	.01	.66	−.02	−.45	.66	.85	.02	.36	.03	.92	.36
Hyperactivity and inattention	.83	.02	.37	−.06	−.91	.37	.69	.02	.41	.05	.83	.41
Peer relationship problems	4.80	.10	.03*	−.09	−2.19	.03*	1.94	.04	.17	.04	1.39	.17
Pro-social behaviours	.69	.02	.41	.04	.83	.41	1.63	.04	.21	−.06	−1.28	.21

Note. *$p < .05$.

Associations between emotion regulation and negative lability with socioemotional adjustment
The multivariate multiple regression analysis results are depicted in Table 3.

The analysis revealed that emotion regulation was not associated with any socioemotional adjustment outcomes. Negative lability was associated with peer relationship problems, $F(1, 43) = 4.80, p < .05, \eta_p^2 = .10$, predicting negatively the relationship with peers in the institutionalized children ($R^2 = .10, p = .03$). No further associations were found with the other socioemotional adjustment outcomes.

Study 2 – Non-institutionalized children

Characterization of emotion regulation, negative lability, and socioemotional adjustment
Pearson's correlation analysis showed a significant negative correlation between emotion regulation and negative lability, $r = -.52, p < .001$. Significant associations were also observed between all socioemotional adjustment outcomes (Table 1). All SDQ subscales were related to total difficulties except the pro-social behaviours subscale. However, the pro-social behaviours subscale was negatively correlated with conduct problems and peer relationship problems subscales.

Associations between emotion regulation and negative lability with socioemotional adjustment
In the non-institutionalized children group, neither emotion regulation nor negative lability was significantly associated with socioemotional adjustment outcomes (Table 3).

Discussion

In the present study, we analysed how emotion regulation and negative lability contributed to socioemotional adjustment outcomes in a Portuguese sample of institutionalized and non-institutionalized children. Socioemotional adjustment problems have been vastly addressed and characterized in children living in residential care (Compas et al., 2017; Evans et al., 2013; Kushner, 2015). Nevertheless, little attention has been devoted to the dimensions that may be contributing to socioemotional adjustment, in particular those linked to emotional regulation and negative lability. These dimensions may convey important information with relevant clinical implications, especially when contrasting developmental pathways between institutionalized and non-institutionalized children.

Emotion regulation, negative lability, and socioemotional adjustment in institutionalized and non-institutionalized children

Our results revealed that institutionalized and non-institutionalized children did not differ regarding socioemotional adjustment, as well as regarding emotion regulation and negative lability. Children living in residential care have been repeatedly exposed to adverse emotional experiences, which possibly lead them to develop protective emotion regulation strategies to reduce the negative impact of these experiences on them (Clyman, 2003; Cordovil et al., 2011), protecting them from developing psychopathology. Additionally, these children probably found in the institution a secure relational context, which promote their resilience (Knorth et al., 2008).

Another explanation for these results can be advanced, as different informant sources were used in each group to characterize children's emotion regulation, negative lability, and socioemotional adjustment. In the institutionalized group, we considered the perception of the children's caregivers, while in the non-institutionalized group, teachers' perception was considered. These informants observe and interact with children in different contexts where children tend to exhibit different behaviours. Caregivers and teachers probably value distinct behaviours, given the impact these have in the way children respond to the specific demands of each context. For instance, teachers may highlight attentional difficulties that have a negative impact on learning and academic performance, while caregivers may tend to emphasize difficulties related to mood swings, anxiety or depressive symptoms, and/or somatic complains that can be more salient in familial interactive dynamics.

Additionally, the results of the SDQ scales are all in the non-clinical range for both groups, except for the peer relationship problems scale, in the institutionalized group. Therefore, the absence of emotional or behavioural problems with clinical relevance can be another explanation for the absence of an association between emotion regulation and negative lability with socioemotional adjustment outcomes.

Contrary to expected (Achenbach, Howell, Quay, & Conners, 1991; Crockenberg, Leerkes, & Barrig Jo, 2008; Olson et al., 2005), no sex and age effects were observed on emotion regulation, negative lability, and socioemotional adjustment in both groups. These results were probably because of children's proximal age range (6/7 to 10 years). Previous evidence showed that from ages 7 to 10, emotion regulation has consistent mediating effects between early adverse experiences and psychopathological symptomatology (Kim-Spoon et al., 2013). In this sense, it may be that, in school-age children, emotion regulation plays a consistent longitudinal moderator role between environment and behaviour. However, the absence of sex and age effects can also be due to the fact that we considered different informants, as explained previously. Since the informants have distinct interactive experiences with children, it may impact their perceptions on their emotional and behavioural reactivity. Also, differences in emotion regulation, negative lability, and socioemotional adjustment are possibly more related to other variables, such as the length of institutionalized, as our results show, as well as to the quality of the relationships in residential care, than with the children' gender.

Considering the institutionalized group, we verified that the length of institutionalization had an effect on negative lability competencies. That is, children who were institutionalized longer lengths presented greater emotional lability. This seems consistent with other evidence showing that prolonged institutional rearing profoundly affects children´s developmental outcomes (Maclean, 2003; Tottenham et al., 2010). Our results indicate that this is particularly relevant for negative lability competencies, suggesting that longer lengths of institutionalization seem to contribute to children's maladaptive coping strategies and increase negative affect (Compas et al., 2017). This pattern of emotion lability may promote the maintenance of maladaptive self-regulation strategies, such as shifts in emotional states or intense negative emotional responses when dealing with frustration, in children institutionalized for longer lengths (Egeland et al., 2002). Thus, the longer the children are in residential care, the more they are at risk for emotion dysregulation and, consequently, of loosing the opportunity to develop adaptive socioemotional competencies. It seems that prolonged institutional rearing may sustain children's inability to efficiently regulate their emotional states, leading them to display more emotional reactive responses (Leaberry et al., 2017; Wiik et al., 2011).

Interestingly, no effect was observed in regard to the type of maltreatment suffered previously to institutionalization. Indeed, a large body of evidence has showed that children with history of negligence or maltreatment are at greater risk for impairments in their emotion regulation and socioemotional competencies (Callaghan & Tottenham, 2016). Our results may be due to the reduced number of children constituting each group.

Associations between emotion regulation and negative lability with socioemotional adjustment

Concerning emotion regulation and negative lability, the latter abilities seem to be contributing differently, although weakly, to socioemotional adjustment, partially supporting our initial expectations. Specifically, our results showed that, in institutionalized children, negative lability was significantly predicting peer relationship problems. In non-institutionalized children, emotion regulation abilities and negative lability were not predicting any socioemotional adjustment outcomes.

In what concerns the results observed in the institutionalized group, and contrary to what was expected, negative lability is negatively associated with peer relationship problems. Evidence shows that the ability to effectively regulate emotion promotes adjusted social functioning (Denham et al., 2003; Eisenberg et al., 1995; Lavi, Manor-Binyaminib, et al., 2019; Saarni, 1999) and that emotion lability is related to socioemotional problems, such as internalizing and externalizing problems (Bates et al., 1998; Eisenberg et al., 1995, 2004; Kim & Deater-Deckard, 2011; Kim-Spoon et al., 2013; Larson et al., 1990; Silk et al., 2003), poorer social competencies (Eisenberg et al., 1995) and aggressive behaviours (Crockenberg et al., 2008; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Trentacosta, Hyde, Shaw, & Cheong, 2009). Nevertheless, an explanation can be advanced for these results. As children with greater negative lability exhibit an increased reactivity to affective environmental cues (Kim-Spoon et al., 2013), they possibly are more sensitive to the others' emotions and feelings, leading them to be more available to take others' perspective and show greater empathy, sympathy, compassion, and altruistic responding in their social interactions. Additionally, when looking closely at the items that constitute the Peer Relationship Problems scale, we observed that institutionalized children scored mainly on the items related to presenting less withdrawal behaviours, being more liked by their peers, being less teased or bullied, and tending to get along with children of the same age than with older children and adults. These items are not directly linked to the problems in the interaction with peers that are usually described in other studies. In fact, most studies focus on peer relationships problems reflected in children's involvement in aggressive and negative behaviours (e.g., Crockenberg et al., 2008; McLaughlin et al., 2011; Trentacosta et al., 2009), and not on being withdrawn, teased, victim of bullying, or getting along better with adults or older children than with the children of the same age.

On the contrary, our results indicate that emotion regulation and negative lability in the non-institutionalized children did not produce an impact on socioemotional adjustment, contrasting with the institutionalized group, where these effects seem to be more specific. In the non-institutionalized group, we observed that emotion regulation and negative lability are associated, but they are not related to socioemotional adjustment.

Interestingly, no significant associations were observed between emotion regulation and negative lability with emotional problems SDQ outcome in institutionalized and non-institutionalized groups. This may be due to our reduced sample size or given the fact that distinct informants for both groups were enrolled in this study, as previously referred.

Importantly, our results support the hypothesis that prolonged residential care impairs children opportunity to learn efficient self-regulation strategies. They present more emotion lability and, consequently, increased probability of displaying difficulties in interacting with peers, reflected in withdrawal behaviours or avoiding social contacts (Leaberry et al., 2017; Wiik et al., 2011). Regarding non-institutionalized children, emotion regulation and negative lability competencies were associated but not predicting any socioemotional outcome, suggesting that, together, they may have an impact on their adjustment.

Limitations and future studies

We are aware that this study has some limitations. The first is the reduced number of children in each group. Future studies should focus on a larger sample to deeply understand how emotion regulation and negative lability contribute to socioemotional adjustment in children with early adverse experiences. Also, the choice of distinct informants for each group may not reflect equivalent perceptions on the child's behaviour. Of note, gathering information from multiple informants is relevant to achieve a more accurate and holistic evaluation of children's behaviour and adjustment, and to cross the perceptions of parents or substitutes with the perceptions of the children's teachers. Comparing these perceptions will allow for exploring children's functioning in various contexts. However, future studies should focus on the comparison of the same informants' perceptions for both groups. Additionally, as we found that institutionalized children who exhibit higher levels of negative lability tend to deal with less problems with their peers, it could be interesting to assess the level of these children's empathy as a mediator or moderator of the relationship between negative lability and peer relationship problems. This analysis may shed some light on the potential adaptive effect of negative lability in residential care contexts. Our results should be interpreted with caution, although being in line with previous evidence on the subject. Therefore, it is recommended that future investigations replicate our study. Furthermore, as this study presents the inevitable limitations of cross-sectional studies, longitudinal design should be included in future research.

Conclusion

Some results of this study are not in line with previous evidence, thus requiring a careful discussion of their theoretical and practical implications. Specifically, we did not found differences between institutionalized and non-institutionalized children in emotion regulation, negative lability, and socioemotional adjustment outcomes. We also verified that, in institutionalized children, negative lability was negatively associated with peer relationship problems. These results may reflect that residential placement can positively contribute to adjusted developmental outcomes in children with emotional and behavioural problems, as verified in other studies (Knorth et al., 2008). However, we emphasize the relevance of these findings in designing interventions to promote institutionalized children's development and socioemotional adjustment, namely in what respects to the relationship with their peers. These interventions should focus on specific social and emotional skills, such as the accurate reading of social and emotional cues in complex interactions, pro-social behaviours (i.e., empathy; giving compliments; helping behaviours), and coherent emotional expression according to social situations demands. Therefore, and in line with these results, deconstructing the belief of emotional lability as

leading to social acceptance and modelling adaptive forms of emotional expression and regulation in social situations, as an alternative to highly intense negative emotional expression, may play a key role in the promotion of institutionalized children socioemotional adjustment.

This study is an important contribution to understanding the emotional processes underlying children's socioemotional adjustment. It also allowed clarifying the specific characteristics of institutionalized children emotional functioning and the way these characteristics impact their socioemotional adjustment. Detailing how distinct aspects of emotion regulation competencies impact socioemotional adjustment may be a valuable tool for early diagnoses of psychopathology. Instruments assessing socioemotional adjustment, such as ERC, and specific instruments developed for clinical practice, such as Child Behavior Checklist or projective techniques, can play a key role in the assessment of institutionalized children. These assessment tools allow for an early identification of emotional and social problems, as well as of children's competencies for dealing with adversity.

In sum, contrasting groups at risk may inform professional about variations that may underlie the emergence and symptom severity of psychopathological disorders. This information could be important for establishing early diagnoses and, hence, implementing early interventional programmes, thus contributing to better prognostic outcomes, particularly for the institutionalized children.

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Conflict of interest

The authors have no conflict of interest to declare.

Authors contribution

Mariana Lopes Sousa, PhD (Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Writing – original draft; Writing – review & editing) Sara Figueiredo Cruz (Data curation; Formal analysis; Methodology; Writing – original draft; Writing – review & editing) Orlanda Rodrigues Cruz (Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Supervision; Writing – original draft; Writing – review & editing).

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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