



# The Association Between Self-Critical Rumination and Parenting Stress: The Mediating Role of Mindful Parenting

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## Abstract

Self-critical rumination is a type of rumination focused on the content of self-critical thoughts. Although self-criticism and rumination are two maladaptive psychological processes with a negative effect on parenting, including parenting stress, the role of self-critical rumination on parenting outcomes has never been explored. The aim of this study is to analyze the role of self-critical rumination on parenting stress and examine whether mindful parenting dimensions (listening with full attention, compassion for the child, non-judgmental acceptance of parental functioning, emotional awareness of the child, and self-regulation in parenting) mediate this association. The moderating role of child's age in the direct and indirect effects was also examined. A sample of 265 Portuguese mothers of children/adolescents from the general community completed measures of self-critical rumination, mindful parenting, and parenting stress. Self-critical rumination was negatively associated with all mindful parenting dimensions and positively associated with parenting stress. However, only non-judgmental acceptance of parental functioning and emotional awareness of the child dimensions were significant mediators of the relationship between self-critical rumination and parenting stress. The link between self-critical rumination and parenting stress as well as the indirect effects were not moderated by the child's age. This study identifies an important maladaptive psychological process (self-critical rumination) that explains individual differences in parenting and a mechanism that may account for the link between self-critical rumination and parenting stress, which can both be modified through intervention.

**Keywords** Self-critical rumination · Mindful parenting · Parenting stress · Mothers

## Introduction

Being a parent is one of the most significant and gratifying experiences in an individual's life, although it is also one of the most challenging and demanding. All parents, regardless of their socio-cultural background and mental health, experience some degree of parenting stress at some point in their lives (Crnic and Greenberg 1990; Deater-Deckard 2004). Parenting stress is the stress that arises when parents perceive that the actual demands of parenting exceed their personal and social resources (e.g., knowledge, parenting skills, and social support) to cope with those demands (Abidin 1992) and it can also be described as “a set of

processes that lead to aversive psychological and physiological reactions arising from attempts to adapt to the demands of parenthood” (Deater-Deckard 2004, p. 6). Parenting behaviors and, specifically, parenting stress, can be determined by multiple factors. According to Abidin's (1992) model of parenting stress, the degree to which parents experience stress in the parental role may be related to child, parent, and contextual factors. Child factors include the child's temperament and some behavioral factors (i.e., adaptability, demandingness, mood, and distractibility/hyperactivity). Parent factors include parental characteristics such as parents' personality traits, depression, attachment, and a sense of competence in the parental role. Contextual factors include factors such as the marital relationship, the available social support, parents' health, and the restrictions caused by the parenting role.

Since the formulation of Abidin's (1992) model, several studies have focused on identifying the factors that may predispose parents to experience parenting stress. For instance, research has identified parental variables such as psychopathology (Williford et al. 2007), attachment

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insecurity (Moreira and Canavarro 2016; Moreira et al. 2015), self-criticism (Casalin et al. 2014), and lower self-compassion (Moreira et al. 2015); contextual variables, including single parenthood (Williford et al. 2007), high workload, low social support, negative life events, child caretaking hassles, more children in the family, and high maternal age (Ostberg and Hagekull 2000); and child variables, such as difficult temperament (Oddi et al. 2013), externalizing problems (Stone et al. 2016; Williford et al. 2007), emotion dysregulation and anger proneness (Williford et al. 2007). Another child factor that may influence the levels of parenting stress is the developmental stage of the child. Longitudinal studies have shown that parenting stress can change across time. For instance, parenting stress was shown to decrease across the early childhood period, probably due to a decline in child externalizing problems (Stone et al. 2016; Williford et al. 2007), and to increase across the child's transition to adolescence, probably due to the typical changes in the parent-adolescence relationship that is often characterized by heightened conflict and strain (Putnick et al. 2010). Research has also shown that parenting stress may result from specific stressful circumstances, such as the diagnosis and treatment of a child's chronic health condition (Moreira and Canavarro 2016; Streisand et al. 2005) or behavioral problem (Neece et al. 2012), or from parenting daily hassles, such as everyday tasks related to the caregiving or childrearing responsibilities (Crnic and Greenberg 1990).

Understanding and identifying the factors that may increase the likelihood of parenting stress, particularly modifiable factors, is fundamental to devise more effective screening and intervention strategies that may help parents to better cope with the stresses of parenting. The identification of these factors is also important because this type of stress is one of the strongest risk factors for negative parenting behaviors (e.g., Anthony et al. 2005) and consequent maladaptive development and psychopathology in children (e.g., Deater-Deckard 1998). For instance, parenting stress was found to be strongly associated with children's externalizing problems (Schleider et al. 2015; Stone et al. 2016; Williford et al. 2007), internalizing problems (Rodriguez 2011; Stone et al. 2016), lower quality of life (Moreira et al. 2015), aggressive behavior (Krahé et al. 2015), and decreased coping competence (Moreland et al. 2016).

Most studies on parenting stress have been conducted in the US context. Although there is a dearth of studies in other cultural contexts, particularly in European countries, research on the determinants and correlates of parenting stress in other cultures are also important since the experience of stress in the parental role is influenced by the socio-cultural context in which parents and the parent-child relationship are embedded (Belsky 1984). For instance, in Portugal, although the country is already recovering from

the financial crisis, the austerity policies implemented since 2010, which resulted in a high unemployment rate and in a general impoverishment of a large sector of the population, particularly households with children, characterize a socio-cultural context that may be conducive to the development of higher levels of parenting stress (Ayala-Nunes et al. 2017). Although some studies on parenting stress were developed among Portuguese families (Fonseca et al. 2015; Moreira and Canavarro 2016; Moreira et al. 2015; Pimentel et al. 2011), the existing research is clearly insufficient.

Moreover, although many factors have been identified as predictors of parenting stress, the role of maladaptive psychological processes, such as self-critical rumination, a specific type of rumination focused on the content of self-critical thoughts (i.e., on the flaws, failures, and limitations of the self; Smart et al. 2016), has been scarcely investigated. Self-criticism and rumination are two well-known risk and maintaining factors of several forms of mental health difficulties (e.g., Blatt and Zuroff 1992; Nolen-Hoeksema 2000), particularly in the context of parenting and the transition to parenthood (e.g., DeJong et al. 2016; Priel and Besser 1999; Priel and Besser 2000; Stein et al. 2012; Vliegen and Luyten 2009). With regard to self-criticism, several studies demonstrated that women with higher levels of self-criticism have an increased likelihood of developing post-partum depression and tend to present greater difficulties in parenting (Priel and Besser 1999; Vliegen and Luyten 2009; Vliegen et al. 2010). For instance, Priel and Besser (1999) suggested that self-critical women tend to be particularly self-critical when they become mothers and argued that the demands of the new role and the loss of autonomy may be particularly difficult for them since self-critical individuals tend to define themselves in terms of competence and autonomy (Blatt and Zuroff 1992). Self-critical parents have also been shown to present greater difficulties in the relationship with their children. For instance, Beebe et al. (2007) found that self-criticism had an effect on mother-infant communication in a face-to-face play task. Specifically, self-critical mothers presented lower gaze coordination with infant gaze and lower facial coordination with infant vocal quality, although they also presented heightened touch coordination with infant touch, which suggests that self-critical mothers have difficulty attuning to their child's attentional and affective signals. Additionally, Casalin et al. (2014) found that parents' self-criticism predicted child negative affectivity over time through higher levels of parenting stress. These authors argued that self-critical parents may be more prone to experience parenting stress because they feel that the relationship with their child does not meet their expectations.

Rumination has also been found to have important implications on parenting (DeJong et al. 2016; Psychogiou

and Parry 2014). In an experimental study, Stein et al. (2012) found that induced rumination in mothers with generalized anxiety disorder and major depressive disorder negatively interfered with their responsiveness to the vocalizations of their 10-month-old infants in an observational task. The authors suggested that the negative effects of rumination on mother-child interactions might be explained by an increase in cognitive load and narrow maternal focus. Similarly, O'Mahen et al. (2015) found that dysphoric mothers with higher levels of rumination presented poorer problem-solving effectiveness and poorer confidence regarding their problem-solving in an infant-specific problem-solving task. In a literature review about the role of rumination in postnatal depression, DeJong et al. (2016) concluded that parental rumination predicts postnatal depression and has a negative impact on parent-child interactions and relationship outcomes (e.g., attachment). These authors proposed a cognitive model of rumination in postnatal depression showing that parental rumination is associated with a diminished capacity to accurately and efficiently process infant cues, which consequently leads to lower contingent responsiveness in parent-child interactions.

Taken together, these studies suggest that self-criticism and rumination may be important determinants of negative parental emotions and behaviors. The negative content of self-critical thinking seems to make parents more vulnerable to negative emotions in parenting and directly interfere with parent-child interactions. In turn, rumination seems to capture attention and cognitive resources, making it difficult for parents to notice and engage with the environment, including their child and his/her behaviors and emotions. Based on these previous investigations that separately examined the role of self-criticism and rumination on parenting, it is reasonable to suppose that self-critical rumination might also have a deleterious effect on parenting, increasing the likelihood of parents experiencing parenting stress and decreasing the chances of adopting positive parenting styles.

Although parenting stress, self-criticism, and rumination have been identified as risk factors for negative parenting behaviors, much less is known about the role of specific parenting styles and attitudes on parenting stress and how they relate with self-critical rumination. For instance, a mindful approach to parenting has been described as a privileged way to decrease parenting stress (Bögels et al. 2014; Bögels and Restifo 2014), but more research is needed to confirm and better understand this relationship and its associations with self-critical rumination. Mindful parenting is a parental orientation characterized by greater mindful awareness in parent-child interactions (Bögels and Restifo 2014; Kabat-Zinn and Kabat-Zinn 1997). Duncan et al. (2009) proposed a theoretical model of mindful

parenting, according to which this parental approach results from the development of five parenting qualities: listening with full attention to the child, adopting an attitude of non-judgmental acceptance toward the self and the child, developing emotional awareness of the self and the child, exerting self-regulation in the parenting relationship, and directing compassion toward the self as a parent and toward the child. However, these five dimensions did not receive empirical support. Studies developed in other populations, including the Dutch (de Bruin et al. 2014) and Portuguese (Moreira and Canavarro 2017) populations, aimed at exploring the factor structure of the Interpersonal Mindfulness in Parenting scale (IM-P), the measure that was developed to assess the five theoretical dimensions, have found factor solutions different from the original but very similar to each other. Specifically, the Portuguese version assesses the capacity of listening with full attention to the child (i.e., the extent to which parents direct complete attention to the child and are fully present during parent-child interactions), an attitude of compassion toward the child (i.e., an attitude of kindness, sensitivity and responsiveness to the child's needs), a non-judgmental acceptance of parental functioning (i.e., an attitude of acceptance of the self as a parent and the challenges of parenting), self-regulation in parenting (i.e., parents' ability to regulate their own emotions and behaviors in the parent-child relationship), and the emotional awareness of the child (i.e., the capacity to notice and correctly identify the child's emotions).

Developing mindful awareness in parenting may be an effective way to reduce parenting stress (Bögels et al. 2010). For instance, the Mindful Parenting Course developed by Bögels and Restifo (2014) was effective in decreasing the parenting stress of parents referred to secondary mental health care (Bögels et al. 2014). A similar effect was found in a mindful parenting program for mothers of infants with high levels of stress (Mindful with your baby training; Potharst et al. 2017). In other studies, mindful parenting was associated with lower levels of parenting stress (Beer et al. 2013; Gouveia et al. 2016). For instance, Gouveia et al. (2016) demonstrated that higher levels of dispositional mindfulness and self-compassion were linked to lower levels of parenting stress through higher levels of mindful parenting. Although recent research has identified some predictors of mindful parenting, including dispositional mindfulness (Gouveia et al. 2016; Parent et al. 2016), self-compassion (Gouveia et al. 2016), and attachment orientations (Moreira and Canavarro 2015; Moreira et al. 2016), to the best of our knowledge, its associations with self-criticism, rumination, or self-critical rumination has never been investigated.

Based on Abidin's (1992) model of parenting stress, the goal of the current study is to examine the role of two parent

factors on parenting stress—self-critical rumination and mindful parenting—in a sample of Portuguese mothers of children aged between 1 and 18 years old. Specifically, in this study we aim to explore whether self-critical rumination is associated with parenting stress and explore whether mindful parenting dimensions mediate this association. Because our sample is composed of mothers of children of different ages and since parenting stress may vary according to the child's age (e.g., Stone et al. 2016), we also aim to examine whether the direct and indirect effects of self-critical rumination on parenting stress are moderated by the child's age. Therefore, a moderated mediation model was estimated. Based on previous studies, we expect to find a significant positive relationship between self-critical rumination and parenting stress. In addition, considering that mindful parenting is associated with greater self-compassion (Moreira et al. 2016) and decreases parents' likelihood of experiencing parenting stress (Gouveia et al. 2016), we expect mindful parenting dimensions to be significant mediators of the link between self-critical rumination and parenting stress.

## Method

### Participants

The sample included 265 Portuguese mothers of children and adolescents aged between 1 and 18 years old. As presented in Table 1, most mothers were married or living with a partner (84.9%), had completed higher education (85.3%), and were employed (87.2%). The majority of mothers lived in an urban area (76.2%) and was from all regions of Portugal, particularly from the Lisbon Metropolitan Area and the Northern and Central Portugal. Almost half of the mothers ( $n = 128$ , 48.3%) mothers had more than 1 child. All mothers were instructed to focus on one of their children when answering the IM-P questionnaire. The mean age of the child (51.5% boys) who the parents focused on while completing the IM-P was 5.96 years ( $SD = 4.33$ , range = 1–18); 230 (86.8) were aged between 1 and 12 years old and 35 (13.2%) were aged between 13 and 18 years old.

### Procedure

The sample was recruited online through a data collection website (LimeSurvey®). The participants were invited to participate in a study on parenting issues through social networks, including parenting forums and Facebook pages. A Facebook page was specifically created for the study and several advertisements were posted on that page as well as on other Facebook pages and social networks, explaining the main goals of the study, presenting the study's inclusion

**Table 1** Mothers' sociodemographic characteristics

	<i>N</i> = 265
Mothers' age (years) <i>M</i> (SD); range	37.03 (5.32); 23–54
Number of children <i>M</i> (SD); range	1.58 (0.68); 1–5
Marital status <i>n</i> (%)	
Living with a partner	225 (84.9%)
Not living with a partner	40 (15.1%)
Education <i>n</i> (%)	
Basic or secondary education	39 (14.7%)
Higher education	226 (85.3%)
Employment status <i>n</i> (%)	
Employed	231 (87.2%)
Unemployed, housewives, or retired	34 (12.8%)
Household monthly income <i>n</i> (%)	
Less than 2500€	204 (77%)
2500€ or above	60 (22.6%)
Area of residence <i>n</i> (%)	
Urban	202 (76.2%)
Rural	63 (23.8%)
Regions of Portugal <i>n</i> (%)	
Northern Portugal	65 (24.5%)
Central Portugal	63 (23.8%)
Lisbon Metropolitan Area	86 (32.5%)
Alentejo	41 (15.5%)
Azores	5 (1.9%)
Madeira	5 (1.9%)
Children's sex <i>n</i> (%)	
Boys	172 (51.5%)
Girls	162 (48.5%)
Children' age (years) <i>M</i> (SD); range	5.96 (4.33); 1–18

Regions of Portugal were defined according to the Portuguese Nomenclature of Territorial Units for Statistics II (NUTS - II)

criteria, and containing the web link to the survey hosted in LimeSurvey®. The survey link was also shared through email. The only inclusion criterion was being aged between 18 and 65 years old and having at least one child aged between 1 and 18 years old. The first page of the online protocol provided a description of the study objectives, the inclusion criterion, and the ethical issues underpinning the study. The participants were informed that their participation in the study was voluntary and anonymous and that no identifying information would be collected. Only those who agreed to the study conditions and provided their informed consent completed the assessment protocol. In total, 339 parents participated in the study. Of these parents, five fathers were excluded due to their low number, and 69 mothers were excluded because they did not complete one or more of the study questionnaires.

## Measures

### Self-critical rumination

The Portuguese version of the Self-Critical Rumination Scale (SCRS; Moreira and Maia 2017; Smart et al. 2016) was used to assess self-critical rumination. This scale contains 10 items (e.g., “My attention is often focused on aspects of myself that I’m ashamed of”) rated on a 4-point Likert scale, ranging from 1 (*not at all*) to 4 (*very much*). The scale has a unidimensional structure, and the total score is the mean of the 10 items, with higher scores indicating higher levels of self-critical rumination. The original version presented internal consistency (Cronbach’s  $\alpha = .92$ ) and test-retest reliability ( $r = .86$ ) and exhibited construct and incremental validity in a sample of undergraduate students from the USA (Smart et al. 2016). The Portuguese version confirmed the original unidimensional structure and also exhibited adequate reliability (Cronbach’s  $\alpha = .93$ ) and construct validity in a sample of adults from the general community (Moreira and Maia 2017).

### Mindful parenting

The Portuguese version of the Interpersonal Mindfulness in Parenting Scale (IM-P; Duncan 2007; Moreira and Canavarro 2017) was used to assess mindful parenting dimensions. The Portuguese version (Moreira and Canavarro 2017) contains 29 items scored on a 5-point Likert scale, ranging from 1 (*never true*) to 5 (*always true*). The items are distributed across the following subscales: (1) Listening with Full Attention (LFA; e.g., “I pay close attention to my child when we are spending time together”), (2) Compassion for the Child (CC; e.g., “I try to be understanding and patient with my child when he/she is having a hard time”), (3) Non-Judgmental Acceptance of Parental Functioning (NJAPF; e.g., “When I do something as a parent that I regret, I try to give myself a break”), (4) Self-Regulation in Parenting (SRP; e.g., “In difficult situations with my child, I pause without immediately reacting”), and (5) Emotional Awareness of the Child (EAC; e.g., “I can tell what my child is feeling even if he/she does not say anything”). The subscale scores are the sum of the items, and higher scores indicate higher levels of the mindful parenting dimensions. If the parents had more than one child, they were instructed to focus on one of their children when answering the questionnaire. The sociodemographic characteristics of the child who the parents focused on while completing the IM-P are presented in Table 1. The IM-P scores have shown reliability and construct validity in American and Dutch samples (de Bruin et al. 2014; Duncan 2007). The Portuguese version (Moreira and Canavarro 2017) demonstrated reliability and convergent and known-groups validity

among three different samples of parents from the general community.

### Parenting stress

The Portuguese version of the Parental Stress Scale (PSS; Berry and Jones 1995; Mixão et al. 2010) was used to assess the distress associated with the parental role. The questionnaire has 18 items (e.g., “Caring for my child(ren) sometimes takes more time and energy than I have to give”) answered on a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). The total score is calculated as the sum of the items, with higher scores indicating higher parenting stress. Both the original and the Portuguese versions present adequate psychometric properties, including adequate reliability (Cronbach’s  $\alpha > .80$ ) and construct validity in samples of parents mostly from the general community.

### Data Analyses

The data analyses were conducted using the Statistical Package for the Social Sciences (SPSS, version 22.0; IBM SPSS, Chicago, IL). Descriptive statistics were computed for all sociodemographic and study variables. Pearson correlations between study variables were computed. To identify possible covariates that should be introduced into the mediation model, correlations between sociodemographic variables and the mediator and dependent variables were also computed. Cohen’s (1988) guidelines were used to describe and interpret the effect sizes of correlations (i.e., weak for correlations close to .10, moderate for those near .30, and strong for correlations at .50 or higher). A moderated mediation model (model 15 in Hayes 2013) was tested with the PROCESS macro for SPSS (Hayes 2013). In this model, self-critical rumination was the independent variable, mindful parenting dimensions were the mediators, parenting stress was the dependent variable, and child’s age was the moderator. In the current study, the moderator was hypothesized to affect the direct and indirect effects (i.e., the path linking self-critical rumination and parenting stress and the paths linking mindful parenting dimensions and parenting stress). Therefore, six interactions were estimated (age  $\times$  self-critical rumination, and age  $\times$  each of the five mindful parenting dimensions). In the absence of a significant interaction, the model was reestimated after the removal of the nonsignificant interactions, which resulted in the estimation of a multiple mediation model (Model 4). A bootstrapping procedure using 10000 resamples was used to assess the indirect effect. This procedure creates 95% bias-corrected and accelerated confidence intervals (95% BCaCIs) of the indirect effects,

**Table 2** Descriptive statistics and correlations among study variables

Study variables	$\alpha$	$M(SD)$ ; range	1	2	3	4	5	6
1. Self-critical rumination	.93	2.09 (0.75); 1–4	–					
2. Listening with full attention	.79	18.75 (2.50); 12–25	–.32**	–				
3. Emotional awareness of the child	.70	11.56 (1.82); 6–15	–.26**	.32**	–			
4. Compassion for the child	.84	25.85 (2.96); 16–30	–.29**	.54**	.55**	–		
5. Self-regulation in parenting	.83	26.67 (4.27); 15–39	–.36**	.50**	.36**	.57**	–	
6. Non-judgmental acceptance of parental functioning	.81	23.02 (4.51); 11–34	–.60**	.37**	.21**	.40**	.58**	–
7. Parenting stress	.81	34.78 (7.78); 19–58	.28**	–.33**	–.42**	–.43**	–.39**	–.42**

\*\* $p < .01$

which are considered significant when zero is not contained within the lower and upper CIs.

## Results

Descriptive statistics and correlations are presented in Table 2. Self-critical rumination was significantly and negatively correlated with all mindful parenting dimensions and significantly and positively correlated with parenting stress (all correlations were moderate, with the exception of the correlation between self-critical rumination and non-judgmental acceptance of parental functioning, which was a strong correlation). All the dimensions of mindful parenting were significantly and negatively correlated with parenting stress (these correlations were moderate and moderate-to-strong).

Prior to mediation analyses, correlations between sociodemographic variables and the dimensions of mindful parenting and parenting stress were analyzed to determine whether any variable should be introduced in the model as a covariate. As presented in Table 3, significant correlations were found between listening with full attention and the child's age, the number of children, and the employment status; emotional awareness of the child and the child's sex; compassion for the child and the number of children; self-regulation in parenting and the child's sex and the number of children; and non-judgmental acceptance of parental functioning and the child's sex and the mother's education. No significant correlations were found between sociodemographic variables and parenting stress. Therefore, the child's sex, number of children, employment status, and education were introduced as covariates into the regression models predicting mindful parenting dimensions. Child's age was not introduced as a covariate because it was a moderator in the model.

First, we examined the moderation of the child's age in the direct and indirect effects. The interaction between self-critical rumination and child's age was not significant ( $b = -.08$ ,  $p = .630$ ), which means that the link between self-

**Table 3** Correlations among sociodemographic and the mediator and dependent variables

	LFA	EAC	CC	SRP	NJAPF	PS
Child's age	–.14*	.03	–.00	–.08	–.06	–.03
Child's sex	.07	.15*	.09	.15*	.13*	–.11
Mother's age	–.11	–.08	–.01	–.08	.02	–.02
Mother's number of children	–.18**	–.02	–.13*	–.19**	–.09	.07
Mother's employment status	–.18**	–.08	–.05	–.01	.03	.01
Mother's education	.01	.06	.12	.05	.16*	–.10
Mother's marital status	.00	.11	.03	.01	.06	–.10
Household monthly income	–.11	–.06	–.00	–.08	.01	.07

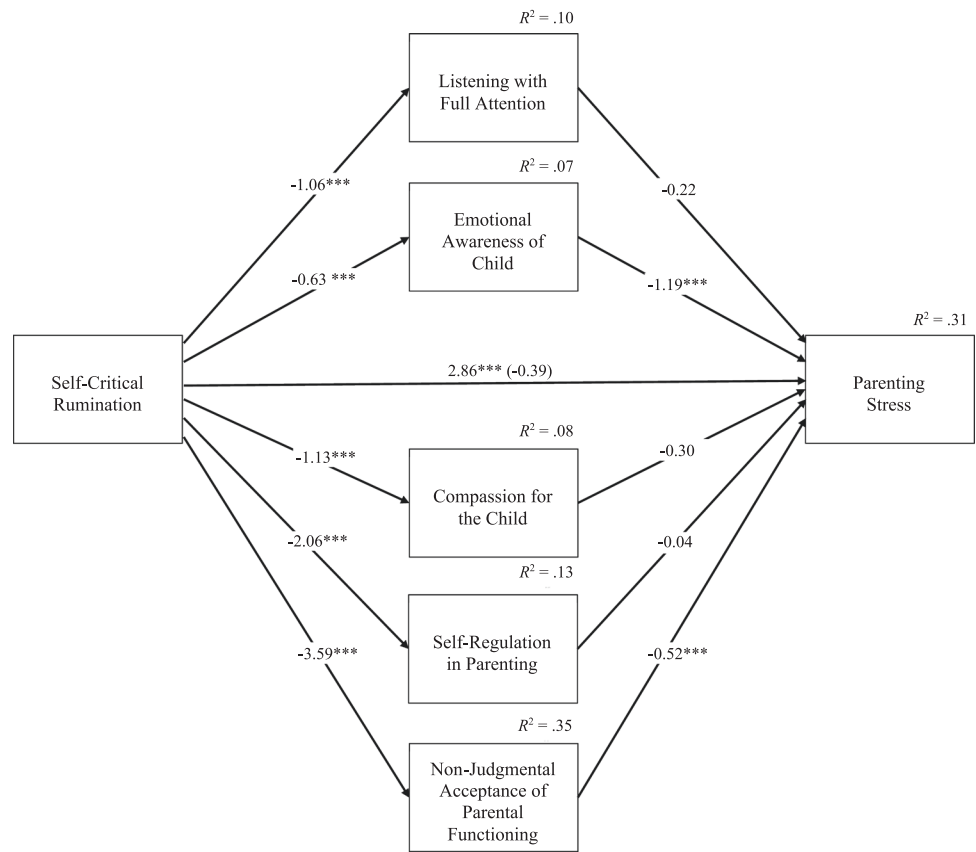
\* $p < .05$ ; \*\* $p < .01$

LFA listening with full attention, EAC emotional awareness of the child, CC compassion for the child, SRP self-regulation in parenting, NJAPF nonjudgmental acceptance of parental functioning, PSS parenting stress. Child's sex: 0 = male, 1 = female; Employment status: 0 = unemployed, 1 = employed; Education: 0 = basic and secondary education, 1 = higher education; Marital status: 0 = not living with a partner, 1 = living with a partner; Household monthly income: 0 = less than 2500€, 1 = 2500€ or above

critical rumination and parenting stress is independent of the child's age [i.e., it was not significant at low ( $b = -.31$ ,  $p = .747$ ), average ( $b = -.66$ ,  $p = .347$ ), and high ( $b = -1.00$ ,  $p = .331$ ) levels of child's age]. In addition, none of the interactions between age and each of the mindful parenting dimensions were significant (age  $\times$  LFA:  $b = .01$ ,  $p = .268$ ; age  $\times$  EAC:  $b = .04$ ,  $p = .673$ ; age  $\times$  CC:  $b = -.08$ ,  $p = .102$ ; age  $\times$  SRP:  $b = -.01$ ,  $p = .826$ ; age  $\times$  NJAPF:  $b = -.00$ ,  $p = .948$ ), which means that the indirect effects were not moderated by child's age. Because no moderation effect was found, a multiple mediation model without child's age as moderator was tested, including child's age as a covariate.

As presented in Fig. 1, significant negative associations were found between self-critical rumination and all the dimensions of mindful parenting. With regard to the links

**Fig. 1** Statistical diagram of the multiple mediation model for the association between self-critical rumination and parenting stress through mindful parenting dimensions. Note. Path values represent unstandardized regression coefficients. In the arrows linking self-critical rumination and parenting stress, the value outside the parentheses represents the total effect of self-critical rumination on parenting stress. The value in parentheses represents the direct effect of self-critical rumination on parenting stress after the inclusion of the mediators. \*\*  $p < .01$ ; \*\*\*  $p < .001$



**Table 4** Indirect effects of self-critical rumination on parenting stress through mindful parenting dimensions

Indirect effects	Point estimate	SE	95%BCaCI Lower/Upper
SCR → Emotional awareness of the child → PS	0.73	0.25	0.32/1.33
SCR → Non-judgmental acceptance of parental functioning → PS	1.86	0.56	0.83/2.99
SCR → Listening with full attention → PS	0.25	0.23	-0.18/0.73
SCR → Compassion for the child → PS	0.33	0.21	-0.03/0.80
SCR → Self-regulation in parenting → PS	0.08	0.30	-0.50/0.68

SCR self-critical rumination, PS parenting stress, SE standard error, 95%BCaCI 95% bias-corrected and accelerated confidence interval

between mindful parenting dimensions and parenting stress, although all dimensions were significantly correlated with parenting stress (see Table 2), only the Emotional Awareness of the Child and the Non-Judgmental Acceptance of Parental Functioning were significantly associated with parenting stress in the mediation model. Regarding the total and direct effects of self-critical rumination on parenting stress, while the total effect was significant, the direct effect was not. As presented in Table 4, the link between self-critical rumination and parenting stress was only mediated by the Emotional Awareness of the Child and the Non-Judgmental Acceptance of Parental Functioning.

### Discussion

In this study, we aimed to understand whether a ruminative and self-critical style of thinking could make mothers more vulnerable to parenting stress and whether this link could be mediated by mindful parenting. Higher levels of mothers' self-critical rumination were associated with higher levels of parenting stress through two dimensions of mindful parenting, non-judgmental acceptance of parental functioning and emotional awareness of the child. Although the total effect of self-critical rumination on parenting stress was significant, the direct effect was not, which emphasizes the relevance of considering the role of these mediators. In

addition, the child's age did not moderate the direct and indirect effects, which suggests that the association between self-critical rumination and parenting stress is not significant in any age level and the mediation occurs regardless of the child's age.

The indirect effect of self-critical rumination on parenting stress through the non-judgmental acceptance of parenting functioning dimension suggests that mothers who tend to engage in ruminative self-devaluing thoughts also tend to criticize themselves as parents, consequently experiencing higher levels of stress. Self-critical mothers are probably less able to accept their mistakes, limitations and shortcomings as parents and may feel that they continuously fail to meet their self-defined high standards in the relationship with their children, which may predispose them to feel less satisfied and fulfilled in their parental role. This finding is consistent with the results and conclusions of previous studies (Priel and Besser 1999, 2000) suggesting that self-critical women can be particularly self-critical when they become mothers, consequently developing postpartum depression. Priel and Besser (1999) have also suggested that self-critical parents, who define themselves in terms of competence and are excessively focused on self-worth, self-evaluation, and achievement (Blatt et al. 1976; Blatt and Zuroff 1992), may struggle with the loss of autonomy and interference with achievement goals associated with having a child. Although this hypothesis could explain why self-critical mothers have higher levels of parenting stress, our results suggest that it is not the self-critical rumination per se that has an impact on mothers' levels of stress, but instead is its effect on the view they have of themselves as mothers that makes them more vulnerable to parenting stress.

We also found that the emotional awareness of the child dimension (i.e., being able to notice and correctly identify their child's emotions) mediated the association between self-critical rumination and parenting stress. Mothers who tend to ruminate on self-critical thoughts are probably less capable of noticing their child's emotions since their attention is usually focused on the negative aspects of themselves and not on their child and the interactions with him/her. Rumination consumes cognitive resources, leading parents to have difficulty in redirecting their attention to the environment and interfering with their ability to notice their child's emotional expressions (Beebe et al. 2007; DeJong et al. 2016). Our results are consistent with the information processing model of rumination proposed by DeJong et al. (2016) and with previous investigations showing that rumination can affect mothers' ability to process infant cues, resulting in less responsive and sensitive parenting behavior (Beebe et al. 2007; Stein et al. 2012). Our hypothesis is also supported by previous investigations showing that rumination is associated with attentional

biases and attentional inflexibility. For instance, the association between depression and a greater attentional bias toward negative information was found to be stronger in individuals who habitually ruminate (Donaldson et al. 2007) and, in a laboratory task, ruminative individuals showed impairments in inhibition when processing negative information, as well as impaired set shifting as reflected in a larger shift cost (De Lissnyder et al. 2010).

Gilbert's (2009a) evolutionary model of emotion regulation systems also helps explain why self-critical rumination may predispose parents to be less able to adopt a mindful approach in parenting. This conceptualization suggests that a ruminative self-critical style of thinking maintains an activated threat system since self-critical dialogues and rumination are perceived as (internal) threats (Gilbert 2010), making it very difficult for parents to implement a mindful and compassionate way of parenting that calls for the activation of the soothing system. Metacognitive Therapy (Wells 2000) also explains that rumination constantly stimulates the threat system since the individual's attention is permanently focused on the self and threats to the self. This constant stimulation creates a difficult to break internal feedback loop between the content and focus of thoughts (in this case, self-critical thoughts) and the threat system, which maintains the sense of threat. Therefore, we can argue that self-critical rumination maintains activation of mothers' threat systems, which reduces their ability to notice their child's emotions, as they are overly focused on the self, and to adopt an attitude of acceptance toward themselves as parents, thereby leading them to perceive higher levels of parenting stress.

The associations between mindful parenting, particularly the two previously discussed dimensions, and parenting stress are consistent with the efficacy studies of mindful parenting interventions in which a decrease in parenting stress was observed (Bögels et al. 2014; Potharst et al. 2017) and with previous studies suggesting that this parenting style may help parents to better cope with the demands and stresses of parenting (Beer et al. 2013; Gouveia et al. 2016). Mindful parents are probably better at accessing the soothing system of affect regulation (Gilbert 2009b; Moreira et al. 2016); therefore, they may manage stress more effectively, particularly the stress that arises in the parent-child relationship, as suggested by our results.

## Limitations

This study has some limitations that should be mentioned. First, this study has a cross-sectional design, which does not allow for the establishment of causal inferences and does not exclude the possibility of alternative models. For instance, it may be possible that lower levels of mindful parenting predispose parents to experience higher levels of



self-critical rumination. It is also possible that experiencing stress in the parental role lead parents to be more self-critical and, consequently, less mindful in parenting. Future longitudinal studies are needed to better understand the directionality and associations between these variables. Second, the sample was entirely composed of women, which limits the generalizability of the results to men. Third, most of the mothers were married or living with a partner, had completed higher education, and lived in urban areas, which may compromise the generalizability of the results to mothers with different sociodemographic characteristics. Fourth, the sample was recruited online, which may have led to self-selection bias and therefore compromises the representativeness of the sample. Fifth, the validity of results can be compromised because only self-report instruments were used to assess study variables, which can be influenced by social desirability and do not reliably reflect participants' feelings or thoughts.

Despite the limitations, this study provides a novel contribution to the study of parenting stress and mindful parenting by identifying an important maladaptive psychological process (i.e., self-critical rumination) that seems to explain individual differences in parenting and can be modified in therapy. It would be interesting to explore in future studies if helping mothers reduce self-critical rumination, in addition to developing a mindful and compassionate approach in parenting, could help them decrease their parenting stress. Additionally, although it can be hypothesized that developing mindful awareness can help parents learn how to disengage from self-critical ruminative thoughts by redirecting attention (as it was shown that mindfulness training reduces maladaptive rumination; e.g., Heeren and Philippot 2011; Teasdale et al. 1995), future studies testing the effects of mindfulness training and, specifically, mindful parenting programs, on self-critical rumination and parenting stress are needed to confirm these hypotheses. It would be also interesting to explore whether Compassion-Focused Therapy (CFT; Gilbert 2010) could be another way to help self-critical mothers. This approach proposes that the stimulation of the soothing system of affect regulation (the natural regulator of the threat system) can help the individual develop adaptive emotion regulation strategies that can modify the processing loop maintained by self-critical rumination. Future studies are needed to explore whether the development of self-compassion could contribute to decreasing parental self-critical rumination and parenting stress.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Ethics Committee of the Faculty of Psychology and Education Sciences of the University of Coimbra approved the study.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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