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Research paper

The role of emotion regulation difficulties in the relationship between attachment representations and depressive and anxiety symptoms in the postpartum period

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ABSTRACT

Background: Insecure attachment representations have been established as a vulnerability factor for postpartum depressive symptoms. However, there is a lack of studies on the effects of attachment (in)security on postpartum anxiety symptoms, and on the mechanisms through which attachment representations may affect women's postpartum adjustment, namely, emotion regulation difficulties.
Methods: The sample included 450 women in the postpartum period (up to 12 months postpartum), who were recruited both online (advertisements on social media) and in person (study was presented by the researchers during the women's postpartum hospitalization).
Results: Approximately one third of the women with clinically significant symptoms (33.3%) presented comorbid symptoms of anxiety and depression, and these women presented more insecure attachment representations and more emotion regulation difficulties ($p < .001$) than did women without comorbid symptoms ($p < .001$). The relationship between more insecure attachment representations and depressive and anxiety symptoms occurred both directly and indirectly through emotional regulation difficulties.
Limitations: The cross-sectional nature of the study, the use of self-report questionnaires that do not allow the establishment of clinical diagnosis and the self-selected bias in recruitment were study limitations.
Conclusions: The results underline the need for attention to anxiety symptomatology, which is a condition that co-occurs frequently in this period. Interventions that focus on promoting adaptive strategies of emotional regulation are relevant rather than more intensive interventions to change attachment representations.

1. Introduction

Emotional disorders in the postpartum period are an important public health issue due to their multiple negative consequences. Postpartum depression [PPD] is a prevalent clinical condition (13% in several countries) (O'Hara and McCabe, 2013) with short and long-term negative consequences to the mother, the baby, and the mother-baby interaction (Kingston et al., 2012; Woolhouse et al., 2014). Although less investigated, anxiety symptoms are also common in the postpartum period and are often associated with depressive symptoms (Falah-Hassani et al., 2016), reaching 40% in some studies (Austin et al., 2010; Reck et al., 2008). Thus, anxiety symptomatology should also be a target of research.

1.1. Attachment representations and clinically significant symptoms in the postpartum period

According to Attachment Theory (Bowlby, 1969), attachment representations (Hazan and Shaver, 1987; Mikulincer and Shaver, 2007; Pietromonaco and Barret, 2000) arise from the individual's early and repeated experiences with primary caregivers. These attachment representations have an influence on the individual's attention, interpretations and memories, while also guiding the individual's interactions (Pietromonaco and Barret, 2000).

Attachment representations are organized into two orthogonal dimensions: anxiety and avoidance (Brennan et al., 1998). Individuals with high levels of attachment-related anxiety have insecure attachment representations of the self (negative self-worth), whereas

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individuals with high levels of attachment-related avoidance have insecure attachment representations of others (others seen as untrustworthy) (Mikulincer and Shaver, 2007, 2012). Secure attachment representations are associated with positive representations of the self and others (i.e., lower scores in the anxiety and avoidance dimensions) (Mikulincer et al., 2003). Insecure attachment representations of the self and others may constitute vulnerability factors for the development of psychopathological symptoms (Mikulincer and Shaver, 2012).

Research has shown that attachment representations are more prominent under stressful conditions, such as the transition to (new) parenthood (Bifulco et al., 2004; Feeney et al., 2003; Simpson et al., 2003). During the pregnancy and postpartum periods, women tend to focus their attention specifically on attachment topics (e.g., interpersonal changes in the relationship with the partner and the family of origin) (Monk et al., 2008). Secure attachment representations can have a protective effect against the development of postpartum psychopathological symptoms (Safford et al., 2004). In contrast, insecure attachment representations, particularly insecure attachment representations of the self, may constitute one of the main predictors of depressive symptoms in the postpartum period (Bifulco et al., 2004; Ikeda et al., 2014; Robakis et al., 2016; Simpson et al., 2003; Warfa et al., 2014). Although most studies focus only on the effect of attachment representations in postpartum depressive symptoms, a recent study (Croce Nanni and Troisi, 2017) suggests that insecure attachment representations are also associated with a greater risk of postpartum anxiety symptoms. However, this relationship requires further investigation.

1.2. Clinically significant symptoms in the postpartum period and emotion regulation difficulties

The experience of motherhood is associated with several positive and negative emotions, and the emotion regulation strategies used by the women to manage these emotions may influence her well-being in this period (Haga et al., 2012). According to Gratz and Roemer (2004), emotion regulation involves awareness, understanding and acceptance of emotional states. It also involves the use of flexible and situationally appropriate strategies to address negative emotions as well as the ability to engage in goal-directed behaviors and refrain from impulsive behaviors when experiencing negative emotions. The inability to do so constitutes emotional regulation difficulties.

Studies in the general population suggest a positive association between emotion regulation difficulties and anxiety (Kashdan et al., 2008) as well as depressive symptoms (Pickard et al., 2016). Although there is a lack of studies in the perinatal period, Haga et al. (2012) found a significant relationship between some maladaptive cognitive emotion regulation strategies (e.g., self-blame, rumination, catastrophizing) and depressive symptoms, but no evidence exists concerning anxiety symptoms.

1.3. The mediating role of emotion regulation difficulties in the relationship between attachment representations and clinically significant symptoms

Attachment theory has been a foundation for understanding emotion regulation (Mikulincer et al., 2003). In threatening situations, individuals with secure attachment representations use adaptive emotion regulation strategies (proximity seeking) (Mikulincer and Shaver, 2007; Mikulincer et al., 2003; Morris et al., 2007; Shaver and Mikulincer, 2007), whereas individuals with insecure attachment representations tend to present more emotion regulation difficulties (Pickard et al., 2016). Whereas individuals with more insecure representations of others tend to present greater difficulties in accepting negative emotions, individuals with insecure attachment representations of the self tend to have more difficulties in controlling impulsive behavior in the presence of negative emotions and in using more effective emotion regulation strategies (Marganska et al., 2013).

Moreover, several studies conducted in the general population have identified the mediating role of emotion regulation in the relationship between attachment representations and depressive (Malik et al., 2015) and anxiety (Wei et al., 2005) symptoms. The results of a recent study (Marganska et al., 2013) confirm the mediating role of emotion regulation difficulties in the relationship between insecure attachment representations and depressive and anxiety symptoms. In particular, this study shows the role of difficulties related to the non-acceptance of negative emotions, limited access to adaptive emotion regulation strategies and the inability to control impulsive behavior when experiencing negative emotions in explaining the relationship between attachment representations and clinical symptoms. To our knowledge, no studies have investigated this relationship in postpartum women.

1.4. The present study

The postpartum period comprises several physical (e.g., physical recovery after labor and caregiving tasks) and emotional (e.g., conflict between the expected positive emotions and the experienced emotions) (Yim et al., 2015) changes and challenges. Sadness, emotional liability or anxiety symptoms may become frequent, and women's emotion regulation strategies have an impact on their own and their baby's well-being (Haga et al., 2012). Moreover, with regard to the postpartum period, the number of studies of depressive symptoms is considerable higher compared with the number of studies focusing on anxiety symptoms (Ross and McLean, 2006), despite they frequently co-occur. Thus, it is important to examine women's emotion regulation difficulties in the postpartum period and their impact on women's adjustment (depressive and anxiety symptoms) to this period as well as the role of vulnerability factors – namely, attachment representations – in these difficulties.

Therefore, the present study has the following goals: a) to describe and compare attachment representations and emotion regulation difficulties in postpartum women with and without clinically significant depressive and anxiety symptoms; and b) to examine the direct and indirect effects, through emotion regulation difficulties, in the relationship between attachment representations and depressive and anxiety symptoms in the postpartum period.

2. Methods

2.1. Procedure

This study is part of a cross-sectional study examining women's emotional and cognitive experiences during the postpartum period, which was approved by the Ethics Committee of Faculty of Psychology and Educational Sciences. Inclusion criteria to participate in the study were as follows: a) being a woman in the postpartum period (up to 12 months postpartum); and b) being 18 years or older. Sample collection occurred between December, 2016 and March, 2017. Participants were invited to participate in the study both online (through advertisements in social media websites and on websites/forums focusing on pregnancy and childbirth) and in-person (participants were contacted by the research team during their postpartum hospitalization at Maternity Daniel de Matos, Centro Hospitalar e Universitário de Coimbra; to women who agree to participate (n = 107), an email with the weblink to the online survey was sent about one month after their hospitalization.). In both cases, before accessing the survey, participants were given information about the study's goals and the researchers' (e.g., confidentiality, anonymity) and participants' (e.g., voluntary participation) roles, and gave their consent to participate in the study (by answering affirmatively to the question "*Do you agree to participate in this study?*"). Access to the Internet survey (hosted by LimeSurvey®) was secure, and the survey software prevented the same user from completing the survey more than once.

2.2. Participants

The sample was composed of 450 postpartum women with a mean age of 31.14 years old (*SD* = 4.57). Most women were married/cohabiting (86.2%, *n* = 388) and lived in an urban area (74.2%, *n* = 334). Concerning socioeconomic characteristics, the majority of women were currently employed (73.5%, *n* = 325), had completed higher (46.2%, *n* = 208) or secondary education (26.0%, n = 117), and had a household income of 1000€−2000€ (41.1%, *n* = 185). This was the first child for 69.8% (*n* = 314) of the sample. On average, the survey was completed 4.83 months postpartum (*SD* = 3.26), with 68.2% (*n* = 307) completing the survey within the first six months postpartum. In our sample, 35.1% (*n* = 158) of women had prior history of psychopathological problems.

2.3. Measures

Demographic information: The survey inquired about women's age, marital status, professional status, educational level, nature of home location (rural vs. urban), household income, parity (primiparity vs. multiparity), history of psychopathology (yes vs. no) and time since childbirth.

Experiences in Close Relationships – Relationship Structures (ECR-RS; (Moreira et al., 2015): The ECR-RS is a self-report questionnaire that assesses the individual's attachment representations in close relationships in general or in specific close relationships (e.g., mother, father, partner). In the present study, the version that assesses close relationships in general was used. The ECR-RS comprises 9 items, answered on a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The ECR-RS is organized into two subscales: Anxiety (3 items; e.g., "I often discuss my problems and concerns with people") and Avoidance (6 items; e.g., "I'm afraid people can leave me"). Higher scores indicate higher levels of attachment-related anxiety or attachment-related avoidance. In the present study, the Cronbach's alphas were 0.89 for Anxiety and 0.82 for Avoidance.

Difficulties in Emotion Regulation Scale (DERS; (Coutinho et al., 2010): The DERS is a self-report questionnaire comprising 36 items, answered on a 5-point Likert scale (from *1 = Almost Never Applies to Me* to *5 = Almost Always Applies to Me*), and organized into six dimensions: Nonacceptance of emotional responses (Nonacceptance; 6 items, e.g. “When I'm upset, I become angry with myself for feeling that way”); Difficulties engaging in goal directed behavior (Goals; 5 items, e.g. “When I'm upset, I have difficulty focusing on other things”); Impulse control difficulties (Impulse; 6 items, e.g., “When I'm upset, I have difficulty controlling my behaviors”); Lack of emotional awareness (Awareness; 6 items, e.g., “I pay attention to how I feel”); Limited access to emotion regulation strategies (Strategies; 8 items, e.g., “When I'm upset, I believe that I will remain that way for a long time”); and Lack of emotional clarity (Clarity; 5 items, e.g. “I have no idea how I am feeling”). Higher scores indicate more difficulties in using adaptive emotional regulation strategies. In our sample, the Cronbach's alpha values ranged from 0.81 (Awareness) to 0.90 (Strategies).

Edinburgh Postpartum Depression Scale (EPDS; (Areias et al., 1996): The EPDS is a widely used 10-item scale used to screen for postpartum depressive symptoms. It evaluates the presence and intensity of depressive symptoms (e.g. sadness, tearfulness) in the previous seven days, using a 4-point Likert scale. Higher scores are indicative of higher depressive symptoms. In the Portuguese validation studies, a cutoff score higher than 9 was suggested to indicate possible clinically relevant depressive symptoms (Figueiredo, 1997). In our sample, the Cronbach's alpha value for the EPDS was 0.90.

Hospital Anxiety and Depression Scale (HADS; (Pais-Ribeiro et al., 2007): The HADS scale is a 14-item scale, answered on a 4-point scale (0–3) that assesses the presence of anxiety (Anxiety subscale) and depressive (Depression subscale) symptoms in the week prior to completion of the scale. In the present study, only the Anxiety subscale was used. Higher scores were indicative of higher anxiety symptoms. A cutoff score of 11 points or higher is indicative of the presence of clinically relevant anxiety symptoms. In our sample, the Cronbach's alpha value was 0.86.

2.4. Statistical analyses

Statistical analyses were performed using the *Statistical Package for the Social Sciences* (IBM SPSS, version 22.0). Descriptive statistics were computed for the sociodemographic characterization of the sample. Chi-square tests (for categorical variables) and Student's *t tests* (for continuous variables) were performed to examine group differences (women presenting clinically relevant anxiety and/or depressive symptoms and women without clinical psychopathological symptoms) with regard to sociodemographic characteristics. Two MANCOVAs were performed to compare women's attachment representations and women's emotional regulation difficulties, as a function of the presence of clinically depressive and/or anxiety symptoms. When a multivariate effect was found, univariate tests and post-hoc tests were conducted to clarify the nature of the differences found. Sociodemographic variables that differed between groups were introduced as covariates in the model. Moreover, the time since childbirth (early postpartum – 0–6 months vs. late postpartum – 7–12 months) was also introduced in the models as a covariate. Effect-size measures were presented for the comparison analyses (small: $\eta^2 \geq 0.01$; medium: $\eta^2 \geq 0.06$; large: $\eta^2 \geq .14$).

Two mediation models were performed to estimate the direct and indirect effects of the relationship between attachment representations and anxiety and depressive symptoms, through emotional regulation difficulties. The SPSS PROCESS Macro (Hayes, 2013) was used to perform the analyses. First, Pearson bivariate correlations between the study variables and the sociodemographic and clinical characteristics were computed, to identify covariates to be included in the models. Two models were estimated (Model 4 – multiple mediation), with two independent variables (Attachment-related Anxiety and Attachment-related Avoidance), six mediating variables comprising the dimensions of emotion regulation difficulties (Nonacceptance, Goals, Impulse, Awareness, Strategies and Clarity) and two dependent variables (depressive and anxiety symptoms). Sociodemographic and clinical variables significantly correlated with the dependent variables were introduced in the model as covariates. The bootstrapping procedure (a non-parametric resampling procedure; 10,000 samples) was used for model estimation. Confidence Intervals (CI, 95% Bias-Corrected and Accelerated Confidence Intervals) were calculated, and the indirect effect was considered significant if the value of zero was not within the range of the CIs.

3. Results

3.1. Comparing women's attachment representations and emotion regulation difficulties as a function of clinically relevant anxiety and/or depressive symptoms

In our sample, 66% of women (*n* = 297) did not report clinically relevant anxiety or depressive symptoms (No_Symptoms Group), 22.4% (*n* = 101) reported clinically relevant depressive symptoms (Dep_Symptoms Group), 11.3% (*n* = 51) reported clinically relevant depressive and anxiety symptoms (Comorb_Symptoms Group) and only one woman (*0*.2%), who was excluded from comparison analyses, reported clinically relevant anxiety symptoms. No significant differences were found in the proportion of women with clinically relevant anxiety or depressive symptoms as a function of being in the early (0–6 months) or late (7–12 months) postpartum period ($X^2 = 5.90$, $p = .117$, Cramer's $V = 0.114$).

Table 1 presents the descriptive statistics of attachment representations and emotional regulation difficulties as a function of

Table 1
Women's attachment representations and emotional regulation difficulties: Comparison among women presenting no clinical symptoms, women presenting depressive symptoms and women presenting comorbid depressive and anxiety symptoms.

	No_Symptoms group (n = 297)	Dep_Symptoms group (n = 101)	Comorb_Symptoms group (n = 51)		
	M (SD)	*M (SD)*	*M (SD)*	*F*	η^2
Attachment representations					
Att-Anx	2.93 (1.66)	4.32 (1.67)	5.40 (1.58)	53.22*	0.20
Att-Avoid	2.74 (1.07)	3.43 (1.27)	3.75 (1.16)	19.99*	0.08
Emotion regulation difficulties					
Strategies	1.51 (0.51)	2.25 (0.74)	3.24 (0.96)	169.78*	0.44
Nonacceptance	1.76 (0.74)	2.30 (0.88)	3.43 (1.06)	87.63*	0.29
Awareness	2.22 (0.74)	2.70 (0.90)	2.94 (0.89)	23.23*	0.10
Impulse	1.50 (0.54)	2.04 (0.81)	2.88 (1.03)	90.65*	0.29
Goals	1.98 (0.74)	2.75 (0.91)	3.48 (0.97)	85.69*	0.28
Clarity	1.45 (0.48)	2.11 (0.71)	2.66 (0.87)	102.89*	0.32

Note. Att-Anx = Attachment-related Anxiety. Att-Avoid = Attachment-related Avoidance. Strategies = Limited access to emotion regulation strategies. Nonacceptance = Non-acceptance of emotional responses. Awareness = Lack of emotional awareness. Impulse = Impulse control difficulties. Goals = Difficulties engaging in goal directed behaviors. Clarity = Lack of emotional clarity. * $p < .001$.

group (No_Symptoms Group, Dep_Symptoms Group, Comorb_Symptoms Group). A significant multivariate group effect was found (Wilks' $\lambda = 0.78$, $F = 29.45$, $p < .001$, $\eta^2 = 0.12$) for both Attachment-related Anxiety and Attachment-related Avoidance. No significant multivariate effect of the time since childbirth was found (Wilks' $\lambda = 0.99$, $F = 2.33$, $p = .100$, $\eta^2 = 0.01$). Post-hoc analyses showed that with regard to Attachment-related Anxiety, significant differences were found between the three groups, with women who presented comorbid symptoms (Comorb_Symptoms Group) showing higher Attachment-related Anxiety than the other groups ($p < .01$). Moreover, with regard to Attachment-related Avoidance, women in the No_Symptoms Group presented lower levels of Attachment-related Avoidance than the remaining two groups ($p < .001$), but no differences were found between women in the Dep_Symptoms Group and women in the Comorb_Symptoms Group.

Considering emotion regulation, a significant multivariate group effect was found (Wilks' $\lambda = 0.50$, $F = 29.96$, $p < .001$, $\eta^2 = 0.26$), with differences found in all dimensions of emotion regulation difficulties. No significant multivariate effect of the time since childbirth was found (Wilks' $\lambda = 0.98$, $F = 1.28$, $p = .263$, $\eta^2 = 0.02$). Post-hoc tests showed that women in the Comorb_Symptoms Group presented the highest levels of emotion regulation difficulties, followed by women in the Dep_Symptoms Group and women in the No_Symptoms Group ($p < .001$). The exception was for the domain lack of emotional awareness (Awareness), in which differences were found only between women in the No_Symptoms Group and women in the remaining groups.

3.2. Direct and indirect effects of attachment representations on postpartum depressive and anxiety symptoms: the mediating role of emotion regulation difficulties

3.2.1. Preliminary analyses

Table 2 presents the correlations between the sociodemographic and study variables. Globally, moderate to high positive correlations were found between attachment representations, emotion regulation difficulties and anxiety and depression symptoms. Moreover, educational level, professional status, household income, marital status, time since childbirth and history of psychopathology were found to be significantly correlated with anxiety and/or depressive symptoms, being introduced as covariates in the models.

3.2.2. Relationship between attachment representations and emotional regulation difficulties

Figs. 1 and 2 present the mediation models estimating the direct and indirect effects (through emotion regulation difficulties) of attachment representations on depressive and anxiety symptoms, respectively.

Our results showed that higher levels of Attachment-related Anxiety were significantly associated with more emotion regulation difficulties in all dimensions, with the exception of the lack of emotional awareness (Awareness) domain. Furthermore, higher levels of Attachment-related Avoidance were positively and significantly associated with all domains of emotion regulation difficulties, except for the Nonacceptance and Goals domains. Attachment representations explained between 12% (lack of emotional awareness-Awareness) and 33% (limited access to emotion regulation strategies-Strategies) of the variance in emotional regulation difficulties (Figs. 1 and 2).

3.2.3. Depressive symptoms: direct and indirect effects of attachment representations

Attachment representations and three dimensions of emotion regulation difficulties (Nonacceptance, Strategies and Clarity) were significantly associated with depressive symptoms, explaining 60% of the variance (see Fig. 1). The total and the direct effects of Attachment-related Anxiety and Attachment-related Avoidance on depressive symptoms were significant, with more insecure attachment representations of the self and of others being associated with higher depressive symptoms. No significant effects of the covariates on depressive symptoms were found (see Fig. 1). Moreover, indirect effects were found in the relationship between Attachment-related Anxiety and Attachment-related Avoidance and depressive symptoms. These indirect effects occurred through the domains of Strategies (Attachment-related Anxiety: $B = 0.35$, 95%IC = [0.17/0.55]; Attachment-related Avoidance: $B = 0.25$, 95%IC = [0.10/0.41]), Clarity (Attachment-related Anxiety: $B = 0.17$, 95%IC = [0.09/0.30]; Attachment-related Avoidance: B = 0.21, 95%IC = [0.08/0.39]) and Nonacceptance (only for Attachment-related Anxiety: $B = 0.16$, 95%IC = [0.09/0.28]). The comparison of the indirect effects showed that the strength of the different indirect effects was not significantly different (data not shown).

3.2.4. Anxiety symptoms: direct and indirect effects of attachment representations

The model predicting women's anxiety symptoms explained 58% of its variance (see Fig. 2). No significant effects of the covariates on depressive symptoms were found (see Fig. 2). The total effects of the relationships between attachment representations and anxiety symptoms were significant. However, although the direct effect of Attachment-related Anxiety on anxiety symptoms was significant, the direct effect of Attachment-related Avoidance on anxiety symptoms was not significant, suggesting that the influence of attachment representations of others occurs only indirectly through emotional regulation difficulties. Specifically, indirect effects in the relationship between Attachment-

Table 2
Correlation between the study variables and the sociodemographic and clinical variables.

	M (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. ECR – Att-Anx	3.54 (1.87)	–									
2. ECR – Att-Avoid	3.02 (1.19)	0.33**	–								
3. EPDS	7.86 (5.41)	0.50**	0.41**	–							
4. HADS	5.36 (4.05)	0.48**	0.35**	0.84**	–						
5. DERS – Strategies	1.88 (0.85)	0.52**	0.33**	0.69**	0.69**	–					
6. DERS – Nonacceptance	2.08 (0.97)	0.43**	0.21**	0.57**	0.56**	0.69**	–				
7. DERS – Awareness	2.40 (0.84)	0.18**	0.32**	0.36**	0.36**	0.29**	0.17**	–			
8. DERS – Impulse	1.78 (0.81)	0.40**	0.22**	0.56**	0.60**	0.76**	0.56**	0.29**	–		
9. DERS – Goals	2.33 (0.95)	0.46**	0.21**	0.55**	0.57**	0.73**	0.55**	0.23**	0.71**	–	
10. DERS – Clarity	1.73 (0.72)	0.40**	0.35**	0.63**	0.60**	0.63**	0.50**	0.60**	0.53**	0.50**	–
11. Age	31.14 (4.57)	−0.08	−0.06	−0.2	−0.03	−0.01	.01	−0.02	−0.03	.04	−0.11*
12. Educational level	–	−0.10*	−0.21**	−0.16**	−0.12*	−0.04	−0.04	−0.11*	−0.07	.06	−0.22**
13. Household income	–	0.15**	−0.15**	−0.20**	−0.18**	−0.10*	−0.09	−0.12*	−0.12*	−0.03	−0.23**
14. Professional status	–	−0.16**	−0.18**	−0.18**	−0.15**	−0.10*	−0.06	−0.06	−0.07	−0.11*	−0.12**
15. Marital status	–	−0.09*	−0.01	−0.10*	−0.07	−0.05	−0.01	−0.05	−0.07	−0.01	−0.11*
16. Residence	–	−0.01	−0.03	0.07	0.07	0.07	0.08	0.04	0.04	0.08	0.03
17. Parity	–	−0.02	−0.01	0.04	0.07	0.00	0.02	0.01	−0.01	−0.00	0.02
18. Time since childbirth	–	0.13**	0.08	0.12*	0.15**	0.16**	0.13**	0.05	0.12*	0.16**	0.12*
19. History of psychopathology	–	0.30***	0.12*	0.25***	0.27***	0.28***	0.13**	0.08	0.24***	0.24***	0.17***

Note. ECR – Att-Anx = Attachment-related Anxiety. ECR – Att-Avoid = Attachment-related Avoidance. EPDS = Depressive Symptoms. HADS = Anxiety Symptoms. DERS – Strategies = Limited access to emotion regulation strategies. DERS – Nonacceptance = Non-acceptance of emotional responses. DERS – Awareness = Lack of emotional awareness. DERS – Impulse = Impulse control difficulties. DERS – Goals = Difficulties engaging in goal directed behaviors. DERS – Clarity = Lack of emotional clarity. Professional Status (dummy coded: 1 = employed; 0 = unemployed/student). Marital status (dummy coded: 1 = married; 0 = single/divorced/widow). Residence (dummy coded: 1 = rural area; 0 = urban area). Parity (dummy coded: 1 = primiparous, 0 = multiparous). Time since childbirth (dummy coded: 1 = late postpartum [7–12 months], 0 = early postpartum [0–6 months]). History of psychopathology (dummy coded: 1 = Yes, 0 = No). * $p < .05$ ** $p < .01$.

related Anxiety and Attachment-related Avoidance and anxiety symptoms were found, and these occurred through the domains of Strategies (Attachment-related Anxiety: $B = 0.24$, 95%IC = [0.10/0.40]; Attachment-related Avoidance: $B = 0.17$, 95%IC = [0.05/0.33]), Clarity (Attachment-related Anxiety: $B = 0.09$, 95%IC = [0.02/0.18]; Attachment-related Avoidance: $B = 0.10$, 95%IC = [0.02/0.23]), and Non-acceptance (only for Attachment-related Anxiety: $B = 0.13$, 95% IC = [0.05/0.22]). The comparison of the strength of the indirect

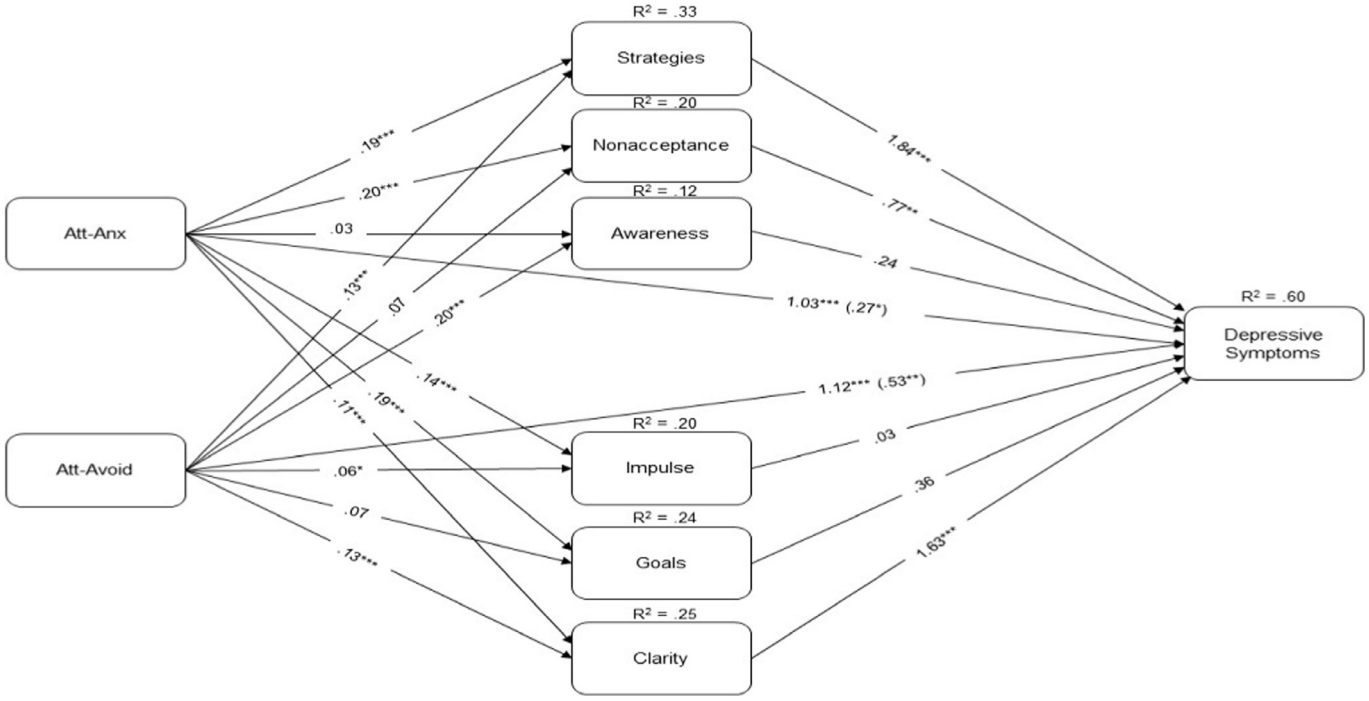

Fig. 1. Direct and indirect effects of the relationship between attachment representations and depressive symptoms, through the emotion regulation difficulties domains. Note: Path values represent unstandardized regression coefficients. In the arrows linking attachment representations (Att-Anx and Att-Avoid) and depressive symptoms, the value outside the parentheses represents the total effect of the attachment representations dimension on depressive symptoms. The value in the parentheses represents the direct effect, from the bootstrapping analyses, of the dimension of attachment representations on depressive symptoms, after inclusion of the mediators. Att-Anx = Attachment-related Anxiety. Att-Avoid = Attachment-related Avoidance. Nonacceptance = Non-acceptance of emotional responses. Awareness = Lack of emotional awareness. Impulse = Impulse control difficulties. Goals = Difficulties engaging in goal directed behaviors. Clarity = Lack of emotional clarity. Estimates of the covariates introduced in the model (Professional status: $B = -0.51$, $p = .227$; Marital status: $B = -0.43$, $p = .38$; Educational level: $B = -0.25$, $p = .257$; Income: $B = -0.09$, $p = .697$; Psychopathological history: $B = 0.49$, $p = .189$). * $p < .05$, ** $p < .01$, *** $p < .001$.

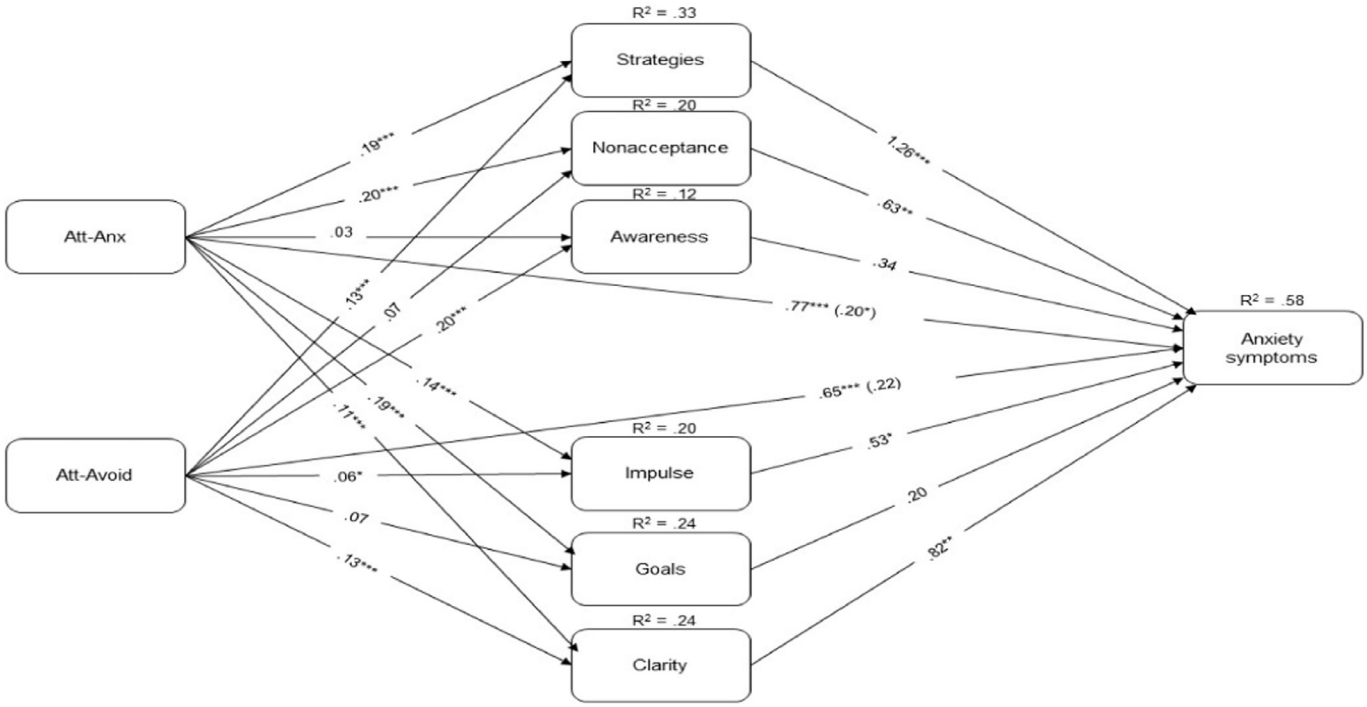

Fig. 2. Direct and indirect effects of the relationship between attachment representations and anxiety symptoms, through the emotion regulation difficulties domains. Note: Path values represent unstandardized regression coefficients. In the arrows linking attachment representations (Att-Anx and Att-Avoid) and anxiety symptoms, the value outside the parentheses represents the total effect of the attachment representations dimension on anxiety symptoms. The value in the parentheses represents the direct effect, from the bootstrapping analyses, of the dimension of attachment representations on anxiety symptoms, after inclusion of the mediators. Att-Anx = Attachment-related Anxiety. Att-Avoid = Attachment-related Avoidance. Nonacceptance = Non-acceptance of emotional responses. Awareness = Lack of emotional awareness. Impulse = Impulse control difficulties. Goals = Difficulties engaging in goal directed behaviors. Clarity = Lack of emotional clarity. Estimates of the covariates introduced in the model (Professional status: $B = -0.29$, $p = .356$; Educational level: $B = -0.04$, $p = .976$; Income: $B = -0.15$, $p = .367$; Psychopathological history: $B = 0.49$, $p = .086$). * $p < .05$, ** $p < .01$, *** $p < .001$.

effects showed that no differences in the indirect effects were found (data not shown).

4. Discussion

The results of this study are particularly innovative for elucidating the relationships among attachment representations, emotion regulation difficulties, and depressive and anxiety symptoms in the postpartum period.

First, our results suggest comorbidity between depressive and anxiety symptoms in the postpartum period, congruent with previous studies (Austin et al., 2010; Falah-Hassani et al., 2016), showing the importance of not neglecting the existence of anxiety symptomatology both in the early and late postpartum period. Sleep deprivation and stress associated with the infant's birth may be considered important factors in explaining this comorbidity, which was found to be more frequent in the postpartum period than in other life periods (Hendrick et al., 2000). Moreover, this study presents innovative results, by showing that women in the postpartum period with comorbid depressive and anxiety symptoms have more insecure attachment representations, particularly about the self, and present more emotion regulation difficulties compared to women who report only clinically significant depressive symptomatology and women without clinically significant symptoms. These results seem to suggest that depressive and anxiety postpartum symptoms may have common vulnerability factors (Hankin et al., 2005; Mineka et al., 1998; Croce Nanni and Troisi, 2017). Second, our results highlight the relationship between more insecure attachment representations and emotion regulation difficulties in the postpartum period. On the one hand, women with more insecure attachment representations of the self have a greater tendency to ruminate on their negative emotions (Mikulincer and Shaver, 2007), which may compromise their ability to perceive their emotions clearly or to accept them (because the postpartum period is socially understood as a period of positive emotions) (Milgrom et al., 1999) and to employ emotion regulation strategies to address them in a flexible way (Shaver and Mikulincer, 2007). Moreover, these women's higher tendency to depend and rely on others (Mikulincer and Shaver, 2007) may hinder the use of goal-directed behaviors in the face of these negative emotions, and may increase the use of impulsive behaviors in response to these emotions, to draw the attention of others. In contrast, because women with more insecure attachment representations of others seek to distance themselves emotionally from stressful events (Shaver and Mikulincer, 2007), they may have greater difficulty in being aware of or perceiving their emotions clearly. The avoidance strategies they tend to use to address stressful events may make it difficult to account for and effectively address the thoughts underlying their emotions, which may translate into employing rigid and maladaptive emotional regulation strategies.

Third, our results suggest that more insecure attachment representations are associated with higher levels of anxiety and depression postpartum symptoms, both directly and indirectly, through emotion regulation difficulties. Concerning the direct nature of these relationships, our results are congruent with prior studies (Croce Nanni and Troisi, 2017; Robakis et al., 2016) showing that women with more insecure attachment representations of the self present higher levels of anxiety and depressive symptoms. In the postpartum period, women with more insecure attachment representations of the self may perceive themselves as less competent in the parental role and may negatively evaluate their ability to provide care for the baby autonomously, which may be associated with a higher need for support (Simpson et al., 2003) and greater hypervigilance to support responses from their social network (Mikulincer and Shaver, 2007). As such, their negative evaluation

of their self-worth as mothers and the chronic activation of hyperactivation strategies (e.g., chronic hypervigilance regarding the availability of their support sources) may contribute to increased levels of depressive and anxiety symptoms (Colonnesi et al., 2011; Kashdan et al., 2008; Mikulincer and Shaver, 2007; Nolte et al., 2011; Simpson et al., 2003). Furthermore, women's more insecure attachment representations of others were directly associated with the presence of higher depressive symptoms but not with higher anxiety symptoms. These results were also found in studies conducted with the general population (Hankin et al., 2005; Nielsen et al., 2017). This may be due to the fact that individuals with more insecure representations of others tend to inhibit the attention given to threats and devalue them (Edelstein and Gillath, 2008) and to underestimate the distress caused by stressful events (Mikulincer et al., 2003; Nielsen et al., 2017), which may explain the absence of direct effects on anxiety symptoms.

In addition, our results showed the important role of emotion regulation difficulties in explaining the relationship between attachment insecurity and postpartum adjustment, by showing that more insecure attachment representations of the self and others were associated with a greater lack of emotional clarity, greater non-acceptance of negative emotional responses (only for more insecure representations of the self), and more limited access to strategies of emotional regulation that are perceived to be effective which, in turn, translate into higher levels of postpartum depressive and anxiety symptomatology. Despite being innovative results in the context of the perinatal period, these results were mostly similar to the preliminary findings of one study (Marganska et al., 2013) conducted in a sample of university students, suggesting that these mechanisms may act similarly across different life contexts. It is also interesting to note that the mechanisms explaining clinically relevant depressive and anxiety symptoms appear to be similar. On the one hand, women with more insecure attachment representations of the self may have less confidence in their ability to regulate their emotions (Mikulincer and Shaver, 2007), which may translate into limited access to emotional coping strategies that are perceived as effective. Moreover, because these women experience intense suffering themselves (Mikulincer et al., 2003), they may find it difficult to accept negative emotions and, consequently, may perceive them with less clarity. A lack of acceptance of the emotions and limited access to these strategies can increase the use of rumination and catastrophization as predominant strategies (Haga et al., 2012; Mikulincer et al., 2003) among these women, heightening their perception of incompetence in the face of threatening situations in the context of parenting or in other contexts, and contributing to the development and maintenance of anxiety and depressive symptoms. On the other hand, women with more insecure attachment representations of others tend to avoid and distance themselves from stress-inducing events (Gross and John, 2003) and may find it more difficult to perceive what they are feeling and to give meaning to their feelings (lack of emotional clarity) when they experience them. In addition, these women often fail to recognize negative emotions related to attachment issues (Mikulincer et al., 2003). Consequently, with the birth of a child (stress-inducing situation), these women may not be able to realistically perceive the situation, because they have always attempted to avoid negative stressors and emotions and may have difficulties identifying effective strategies for emotional regulation. Paradoxically, the fact that these women do not clearly perceive their emotions and cannot employ effective strategies to regulate their emotions can lead to an increase in negative thoughts and rumination (Wenzlaff and Wegner, 2000), contributing to the development or maintenance of depressive and anxiety symptoms.

Despite the relevant findings of this study, some limitations should be acknowledged. First, the cross-sectional nature of the study did not allow the establishment of causal relationships between the study variables, although the proposed model was grounded on empirical and theoretical frameworks. Future studies should replicate these results through longitudinal studies that facilitate the determination of the direction of the relationship between the study variables and the understanding of how these relationships are established throughout the women's first postpartum year. Second, our sample was composed mostly of married, highly educated and employed women. Although our sample presents a sociodemographic profile similar to other studies comprising women in the postpartum period, our results may not be generalizable to the entire perinatal population. In addition, because part of the sample was recruited online (through social media advertisements), there may be some self-selection bias (i.e., the questionnaires may have been completed by the women most interested in this topic) which may also compromise the generalization of findings. Third, although the large variability in time since childbirth in our sample was determined by the clinical consensus that postpartum depressive symptoms can occur up to 12 months postpartum, there are different circumstances in the early and postpartum period that may occur, and this variability may bias our results. To try to minimize such biases, the potential effect of time since childbirth (early vs. late postpartum) was controlled for in the analyses. Finally, we relied on self-report questionnaires to assess the study variables. These questionnaires do not allow, for example, clinical diagnosis of anxiety and depressive disorders. Future studies should include additional assessment tools (e.g., structured interviews) to establish clinical diagnoses and should be conducted in a sample of women with a clinical diagnosis of PPD and/or anxiety disorders, to replicate the study findings.

The innovative findings of the study allow us to reflect on some clinical implications. On the one hand, the results of this study highlight that health professionals should not focus only on assessing postpartum depressive symptoms; anxiety symptoms in the postpartum period may also co-occur and should be assessed and considered targets of preventive and treatment interventions. On the other hand, emotional regulation was found to be a mechanism through which insecure attachment representations act as vulnerability factors for postpartum maladjustment. Therefore, instead of focusing on more intensive interventions aimed at challenging women's insecure attachment representations, it may be useful to focus on short-term and briefer interventions that aim to address a more proximal factor of influence on women's adjustment: emotion regulation. A comprehensive assessment of women's emotional regulation difficulties in the postpartum period will allow the identification of women who may be at higher-risk for postpartum psychological difficulties. Moreover, preventive interventions should address this topic (e.g., providing psychoeducation about negative emotions that may arise during the postpartum period, helping women to identify emotions and promoting adaptive strategies to address these emotions).

Conflicts of interest

The authors have no conflicts of interest to declare.

Authors' contributions

Ana Fonseca and Maria Cristina Canavarro designed and conceptualized the study. Rita Marques was responsible for conducting the data collection and for the integrity of the data. Rita Marques and Ana Fonseca undertook the statistical analysis. Rita Marques and Fabiana Monteiro managed the literature searches and wrote the first draft of the manuscript. All authors critically contributed to and approved the final manuscript.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2018.05.013.

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