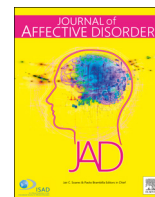




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Research paper

What protects at-risk postpartum women from developing depressive and anxiety symptoms? The role of acceptance-focused processes and self-compassion



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ABSTRACT

Background: Not all women presenting risk factors for postpartum depression (PPD) develop depressive symptoms. Research has shown that acceptance-focused processes (nonjudgmental appraisal of thought content, psychological flexibility) and self-compassion play an important protective role in the development of psychological symptoms. However, considering the perinatal period, little is known about what variables can modify the negative impact of risk.

Methods: The sample consisted of 185 postpartum women at risk of developing PPD (Postpartum Depression Predictors Inventory-Revised > 5.5). Data were collected regarding depressive (Edinburgh Postnatal Depression Scale) and anxiety symptoms (Hospital Anxiety and Depression Scale), psychological flexibility (Acceptance and Action Questionnaire-II), nonjudgmental appraisal of thought content (Postnatal Negative Thoughts Questionnaire) and self-compassion (Self-Compassion Scale-Short Form).

Results: Women not presenting depressive and anxiety symptoms reported significantly higher levels of psychological flexibility, nonjudgmental appraisal of thought content and self-compassion than women presenting depressive and anxiety symptoms. Hierarchical logistic regression showed that women with higher levels of psychological flexibility (OR = 1.06, CI: 1.01–1.12) and nonjudgmental appraisal of thought content (OR = 1.33, CI: 1.15–1.53) had a significantly higher likelihood of not presenting depressive and anxiety symptoms.

Limitations: The limitations of this study were the cross-sectional design, the use of self-report questionnaires and the self-selected bias in recruitment.

Conclusions: This study emphasizes the important role of acceptance-based processes, suggesting that at-risk women who are more accepting of their private events may be more protected from developing psychological symptoms. Preventive interventions should consider the promotion of these processes to improve women's adjustment to this period.

1. Introduction

The transition to (new) parenthood is usually a demanding period for mothers because it entails an adjustment to lifestyle changes and new responsibilities (Slade et al., 2009). There is extensive research suggesting that the perinatal period is a time of increased risk for psychological problems (O'Hara & Wisner, 2014), and postpartum depression (PPD) is the most prevalent clinical condition in this period (rates range from approximately 13% in high-income countries to nearly 20% in developing countries; Fisher et al., 2012; O'Hara & McCabe, 2013). Additionally, the prevalence of postpartum anxiety

disorders is 9.9% (Dennis et al., 2017), and comorbidity frequently occurs: approximately 35–40% of women presenting postpartum depressive symptoms also report comorbid anxiety disorders or symptoms (Farr et al., 2014). Depressive and anxiety symptoms have been shown to have pervasive consequences for the mother, the infant and mother-infant interactions (Field, 2010; Stein et al., 2014). Thus, the timely identification of women at risk of developing postpartum depressive and anxiety symptoms is very important to minimize such detrimental effects.

Over the last 20 years, there has been abundant research investigating the risk factors for PPD (for a review see Beck, 2001;

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Robertson et al., 2004). In a review regarding perinatal mental illness, a previous history of depression, stressful negative life events, poor marital relationship and a lack of social support were the most commonly reported risk factors (O'Hara & Wisner, 2014). However, despite being easily identified by practitioners, many of these risk factors have limited practical application because they refer mostly to contextual factors that are not easily modifiable through psychological interventions. Additionally, little is known about the factors that may reduce the likelihood of postpartum depressive and anxiety symptoms among at-risk women. As not all women presenting the commonly reported risk factors for PPD develop clinically relevant symptoms, it is important to examine which factors can modify the negative impact of risk, thereby buffering the emergence of postpartum depressive and anxiety symptoms and promoting a positive adjustment to this period.

The adjustment to motherhood is marked by a range of different internal experiences, including negative thoughts and emotions (Hall & Wittkowski, 2006). However, societal ideologies highlight that a normative response to motherhood is the presence of immediate and continuous feelings of happiness and joy (Sutherland, 2010). These expectations of motherhood may lead to women having more difficulties accepting their internal experiences, such as negative thoughts and emotions, when they do not reflect such ideals. As a result, they may learn to cope with these experiences by trying to control or avoid them, engaging in maladaptive strategies such as experiential avoidance, self-criticism and self-judgment, or negative metacognitive appraisals of their internal experiences. Although these strategies reduce unpleasant thoughts and feelings in the short term, they gradually increase unwanted private experiences (Hayes et al., 2006). Avoidance or control of internal experiences has been repeatedly linked to an increased impact of those experiences on one's wellbeing (e.g., Chawla & Ostafin, 2007). On the other hand, a few studies have indicated that the development of acceptance towards internal events is associated with lower levels of psychopathology, namely, depressive and anxiety symptoms (e.g., Fledderus et al., 2013). Thus, acceptance-focused strategies seem to play an important protective role in the development of psychological symptoms. A deeper focus on acceptance-focused strategies has recently emerged with the new developments of cognitive-behavioral therapies (i.e., third-wave cognitive-behavior approaches), such as Acceptance and Commitment Therapy (Hayes et al., 2006), Mindfulness-Based Cognitive Therapy (Segal et al., 2002) and Compassion Focused Therapy (Gilbert, 2010). Despite targeting different concepts, these approaches share several common features, namely the shift from previous assumptions focused on the content of internal experiences (e.g., changing thoughts and emotions), to a focus on the person's relationship to these experiences, fostering the development of acceptance- and compassionate-focused skills, such as psychological flexibility, more nonjudgmental appraisals of thought content and self-compassion.

Psychological flexibility can be seen as a self-regulatory and acceptance-focused process defined as the ability to be aware of the present moment and to willingly accept and experience thoughts and feelings that unfold without trying to control or avoid them while acting in a way that is consistent with one's values (Hayes et al., 2006). A few studies have emphasized its important long-term protective role (Bond et al., 2011; Fledderus et al., 2013; Shallcross et al., 2010). For example, in a community sample of women at risk of developing depression, Shallcross et al., (2010) found that higher levels of psychological flexibility protected women from developing depressive symptoms when facing elevated stress. Concerning the perinatal period, although the literature is scarce and there are no studies with at-risk postpartum women, some evidence shows that higher psychological flexibility is a significant contributor to higher maternal attachment, higher maternal responsiveness and lower depressive and anxiety symptoms (Evans et al., 2012).

Accepting internal cognitive experiences may also be important for women in the postpartum period. Several studies have demonstrated

that negative metacognitive beliefs, such as beliefs about thoughts seen as uncontrollable and dangerous, may be particularly important in the prediction of depression and anxiety (Ryum et al., 2017; Yilmaz et al., 2011). In the postpartum period, this seems to be particularly relevant, and some studies have demonstrated the occurrence of these metacognitive appraisals (Fonseca & Canavarro, 2018; Hall & Wittkowski, 2006; Rodrigues et al., 2017). Likewise, qualitative research has shown that themes of loss of control over thoughts emerge among postpartum women (Beck, 1992). Therefore, it is likely that a more nonjudgmental appraisal of thought content—that is, the ability to accept and experience one's thoughts without judgment of their meaning or attempts at controlling them—could be associated with fewer depressive and anxiety symptoms. However, little is known about the influence of such acceptance-related processes in women's adjustment to this period, particularly among at-risk postpartum women.

Although related to acceptance-based processes, self-compassion may be understood as a conceptually different process. Self-compassion refers to the tendency not only to accept the individual's inner experiences, but also to be kind and compassionate to oneself when confronted with difficulties, as opposed to being self-judgmental, feeling isolated and overidentifying with personal difficulties (Neff, 2003). Self-compassion has been consistently associated with positive psychological outcomes (Akin & Akin, 2015; Barnard & Curry, 2011), and it is considered a potentially important protective factor for mental health. For example, in a nonclinical sample, Raes (2011) found that self-compassion predicted lower levels of depression. In the context of the perinatal period, self-compassion may be particularly relevant because higher levels of self-criticism have been associated with depressive and anxiety symptoms (Vliegen & Luyten, 2009), often accompanied by self-blame and feelings of guilt and shame (Coates et al., 2014; Dunford & Granger, 2017; Gutierrez-Zotes et al., 2016). Although there has been increasing interest in self-compassion, few studies have examined its role during the perinatal period, specifically with postpartum women presenting risk factors for PPD. A positive association has been found between higher levels of self-compassion and lower levels of depressive and anxiety symptoms among perinatal women (Felder et al., 2016; Fonseca & Canavarro, 2018). Moreover, Cohen (2010) found that greater self-compassion during pregnancy predicted significantly fewer depressive symptoms in the postpartum period.

Although the literature on the topic of acceptance and self-compassion is limited in the perinatal period, there are also some encouraging results from clinical intervention studies that have examined the effect of mindfulness- and compassion-based therapies on the reduction of depressive and anxiety symptoms, with community samples of perinatal women (e.g., Kelman et al., 2018), but also with samples of at-risk women (e.g., Dimidjian et al., 2016). Despite having different goals and not directly addressing the mechanisms of change (i.e., if changes in mindfulness skills or self-compassion are associated with changes in depressive symptoms), these interventions are theorized to target the enhancement of acceptance- and compassion-focused skills and have shown preliminary evidence of efficacy in reducing psychopathological symptoms (Dimidjian et al., 2016; Kelman et al., 2018).

Despite these important contributions, there is still a dearth of studies focusing on acceptance-based processes and self-compassion during the postpartum period. Bearing in mind that at-risk postpartum women are more likely to be the target and benefit from preventive interventions, the aim of the present study was to examine the differences in acceptance-based processes (psychological flexibility and nonjudgmental appraisal of thought content) and self-compassion among at-risk postpartum women presenting and not presenting clinically relevant depressive and anxiety symptoms. A second goal was to examine the added value of acceptance-based processes and self-compassion in the absence of depressive and anxiety symptoms. This knowledge is critical, as it may enable mental health professionals to develop and implement more targeted prevention interventions for

women at risk of developing clinically relevant symptoms. Based on the literature reviewed, we hypothesized that at-risk women not presenting depressive and anxiety symptoms would have significantly higher levels of psychological flexibility and nonjudgmental appraisal of thought content as well as self-compassion and that these variables would be associated with a decreased likelihood of presenting clinically relevant symptoms.

2. Methods

2.1. Participants

The study sample comprised 185 postpartum women at risk of developing PPD (women who scored above the cutoff of 5.5 on the Postpartum Predictors Inventory-Revised [PDPI-R]), with a mean age of 32.58 years (*SD* = 4.90, range: 19–43). Most women were married/living with a partner (*n* = 156; 84.3%), were employed (*n* = 151; 81.6%), had completed higher education (*n* = 127; 68.6%) and had a medium socioeconomic status (*n* = 156; 84.3%). This was the first child for 67.6% (*n* = 125) of the women, and at the time of data collection, their infants were between one and four months old (*M* = 1.99; *SD* = 0.87). **Table 1** summarizes the sociodemographic and clinical characteristics of the participants.

Although all 185 women presented risk factors for PPD, more than half (56.2%; *n* = 104) reported no clinically relevant depressive and anxiety symptoms. Women not presenting and presenting depressive and anxiety symptoms did not significantly differ in any of the socio-demographic variables. However, women presenting depressive and anxiety symptoms were more likely to report a prior history of psychiatric/psychological problems and a prior history of psychiatric/psychological treatment.

2.2. Procedure

This study refers to the first moment of assessment of a larger pilot

trial conducted to examine the efficacy of a web-based preventive intervention for women at risk of developing PPD (Blind for Review). The inclusion criteria to participate in the study were as follows: a) being a woman in the early postpartum period (up to three months); b) being at least 18 years old; c) presenting risk factors for PPD (score above 5.5 on the PDPI-R); and d) having internet access. Participants were excluded if they had a current diagnosis of psychiatric disorder and if either the mother or the baby had a serious medical condition.

Participants' enrollment occurred between June and December 2017. Participants were invited to take part in the study both online (through advertisements on Facebook) and in person (participants were contacted by the research team during their postpartum hospitalization at Blind for Review). In both cases, informed consent was obtained from all participants after a detailed explanation of the study's goals and the researchers' (e.g., confidentiality, anonymity) and participants' (e.g., voluntary participation) roles.

Women who gave their consent to participate in the study were screened for risk factors of PPD. In the case of in-person recruitment, PPD risk was assessed via telephone four weeks after the first contact during the puerperium. Approximately two weeks after the risk assessment, women presenting risk factors were sent an email with a link to an online survey containing the study assessment protocol. Participants recruited online completed the risk assessment in an online survey, and those presenting risk factors for PPD received an email two weeks later with a link to the same study protocol provided to the participants recruited in person. 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. Ethical approval was obtained from the Ethics Committee of the Blind for Review and of the Blind for Review.

In total, 501 women were eligible and gave their consent to participate in the study. Of these, 40 women (7.98%) did not complete the risk assessment, and 276 (55.09%) did not present risk factors for PPD. No significant differences regarding the presence of depressive and anxiety symptoms were found relative to the type of recruitment.

Table 1
Sociodemographic and clinical characteristics of the study groups (N = 185).

	Women not presenting depressive and anxiety symptoms (<i>n</i> = 104) <i>M</i> (<i>SD</i>) / <i>n</i> (%)	Women presenting depressive and anxiety symptoms (<i>n</i> = 81) <i>M</i> (<i>SD</i>) / <i>n</i> (%)	<i>t</i> / χ^2	Cohen's <i>d</i> / Cramer's <i>V</i>
Age	32.63 (4.97)	32.52 (4.84)	0.16	0.02
Marital status			1.78	.10
Married/co-habiting	85 (81.7)	71 (87.7)		
Single	11 (10.6)	7 (8.6)		
Separated/divorced	4 (3.8)	1 (1.2)		
In a relationship (without living together)	4 (3.8)	2 (2.5)		
Employment status			3.10	.13
Employed	84 (80.8)	67 (82.7)		
Not currently working	20 (19.2)	14 (17.3)		
Educational level			0.27	.04
Middle school	6 (5.8)	5 (6.2)		
High school	25 (24.0)	22 (27.2)		
Higher education	73 (70.2)	54 (66.7)		
Socioeconomic level			0.61	.06
Low	17 (16.3)	10 (12.3)		
Medium	87 (83.7)	71 (87.7)		
Residence			0.04	.01
Urban	77 (74.0)	61 (75.3)		
Rural	27 (26.0)	20 (24.7)		
History of psychiatric/psychological problems			7.37**	.20
Yes	42 (40.4)	49 (60.5)		
No	62 (59.6)	32 (39.5)		
History of psychiatric/psychological treatment			5.05*	.17
Yes	32 (30.8)	38 (46.9)		
No	72 (69.2)	43 (53.1)		

Note. * *p* < .05; ** *p* < .01

3. Measures

3.1. Sociodemographic and clinical information

Information regarding participants' sociodemographic (e.g., age, marital status, educational level, employment status) and clinical (e.g., prior history and treatment of psychopathological problems) characteristics was gathered through a self-report questionnaire developed by the authors.

3.2. Risk factors for postpartum depression

To identify women presenting risk factors for PPD, the postnatal version of the PDPI-R (Beck, 2002; Portuguese version [PV]: Alves et al., 2018;) was used. The factors assessed include marital status, socioeconomic status, self-esteem, prenatal depression, prenatal anxiety, pregnancy intention (unwanted/unplanned), history of depression, social support, marital satisfaction, life stress, child care stress, infant temperament and maternity blues. The questionnaire is composed of 39 items answered on a dichotomous scale (yes vs. no, except for the first two items, in which participants report their marital status and socioeconomic status). The total score on the PDPI-R ranges between 0 and 39, with higher scores indicating a higher risk of developing PPD. The psychometric properties of the PDPI-R are well established (Beck, 2002), and it is considered a useful screening tool in both clinical and research contexts. The Portuguese version of the PDPI-R has demonstrated acceptable reliability, and a cut-off score of 5.5 was recommended to indicate the presence of PPD risk (Alves et al., 2018).

3.3. Depressive symptoms

The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987; PV: Areias et al., 1996) was used to assess the presence of depressive symptoms, reflecting a woman's experience in the last seven days. EPDS screens for depressive symptoms specifically during the perinatal period and is a widely used 10-item screening scale for postpartum depression. The items are rated with a four-point response scale (ranging from 0 to 3). A score of 10 or higher allows the identification of women who present clinically relevant depressive symptoms (Figueiredo, 1997). In Portuguese validation studies, good internal consistency was found. In our sample, the Cronbach's alpha was 0.87.

3.4. Anxiety symptoms

The Hospital Anxiety and Depression Scale – Anxiety Subscale (HADS-A; Zigmond & Snaith, 1983; PV: Pais-Ribeiro et al., 2007) was used to assess anxiety symptoms. This widely used seven-item instrument employs a four-point (ranging from 0 to 3) response scale that assesses the presence of anxiety symptoms in the week prior to completion. Higher scores denote higher anxiety symptoms. A cut-off score of 11 points or higher is indicative of the presence of clinically relevant anxiety symptoms. The Portuguese validation studies of the HADS confirmed that the Portuguese version is reliable and valid for assessing and screening anxiety symptoms. In our sample, the Cronbach's alpha was 0.83.

3.5. Acceptance-based processes

Psychological flexibility was assessed with the Portuguese version of the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011; PV: Pinto-Gouveia et al., 2012). Women were asked to rate each of the seven items (e.g., “I worry about not being able to control my worries and feelings”) on a seven-point response scale (1 = *always true*; 7 = *never true*). Higher scores are reflective of greater psychological flexibility. In Portuguese validation studies, good internal consistency was found. In our sample, the Cronbach's alpha was 0.91.

To assess women's nonjudgmental appraisal of thought content, the Appraisal of Cognition, Emotion, and Situation dimension (ACES) of the Postnatal Negative Thoughts Questionnaire (PNTQ; Hall & Papageorgiou, 2005; PV: Rodrigues et al., 2017) was used. The ACES comprises nine items (e.g., “My negative thoughts are uncontrollable”) scored on a four-point response scale. Higher scores indicate less frequent experiences of judgment and appraisal of negative postpartum thoughts. The Portuguese version of the PNTQ scale presents good psychometric qualities. In our sample, the Cronbach's alpha was 0.85.

3.6. Self-compassion

The Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011; PV: Castilho et al., 2015) was used to assess women's self-compassion levels. The SCS-SF is a self-report measure comprising 12 items (e.g., “When I'm going through a very hard time, I give myself the caring and tenderness I need”), answered on a five-point response scale (ranging from 1 to 5), and it measures six components of self-compassion (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification). After negative items are reverse coded, it is possible to obtain a global measure of self-compassion by estimating the mean of the 12 items, with higher scores indicating higher self-compassion. The Portuguese version of the SCS-SF has demonstrated good psychometric qualities. In our sample, the Cronbach's alpha was 0.90.

4. Data analysis

Data were analyzed using the *Statistical Package for Social Sciences* (IBM SPSS, version 23.0). Descriptive statistics and comparison tests (*t* tests and chi-squared tests) were computed for sample characterization. Based on the EPDS and HADS cutoff scores (EPDS ≥ 10 ; HADS ≥ 11), women were assigned to two groups, women presenting no clinically relevant depressive and anxiety symptoms and women presenting clinically relevant depressive and/or anxiety symptoms; *t* tests were used to compare the study variables as a function of the absence/presence of clinically relevant symptoms. Pearson correlations were computed to measure the associations between the study variables. The effect sizes were presented for all analyses (small effects: Cohen's $d \geq 0.20$, Cramer's $V \geq 0.01$, $r \geq 0.10$; medium effects: Cohen's $d \geq 0.50$, Cramer's $V \geq 0.03$, $r \geq 0.30$; large effects: Cohen's $d \geq 0.80$, Cramer's $V \geq 0.05$, $r \geq 0.50$; (Cohen, 1992).

To test which variables were associated with a higher likelihood of reporting (vs. not reporting) depressive and/or anxiety symptoms, a hierarchical logistic regression was performed. Clinical variables (history and treatment of psychiatric/psychological problems) were entered in the first step of the model as covariates, acceptance-based processes (psychological flexibility, nonjudgmental appraisal of thoughts' content) were entered in the second step of the model, and self-compassion was entered in the third step. To estimate multicollinearity, the tolerance and VIF values were analyzed; the tolerance values were all higher than 0.1, and the VIF values were lower than 10 (Field, 2009). Therefore, because severe multicollinearity was not present in our model, the predictors were included together. The goodness of fit of the overall model was evaluated using the likelihood ratio tests. Cox and Snell's R^2 and Nagelkerke's adjusted R^2 were used as indicators of effect sizes, and the statistical significance of individual predictors was evaluated by calculating the Wald statistic and the odds ratio (OR) with a 95% confidence interval (CI).

5. Results

5.1. Group differences and correlations among the study variables

Acceptance-based processes and self-compassion were compared between women not presenting (vs. presenting) depressive and anxiety symptoms (see Table 2). Women not presenting clinically relevant

Table 2
Descriptive statistics, comparison analyses and correlations among study variables.

Study variables	Women not presenting depressive and anxiety symptoms (n = 104)	Women presenting depressive and anxiety symptoms (n = 81)	t	Cohen's d	1	2	3	4	5
	M (SD)	M (SD)							
1. Psychological flexibility	39.37 (8.27)	30.25 (7.96)	7.56***	1.12	–				
2. Nonjudgmental appraisal of thought content	25.28 (2.20)	21.25 (4.31)	8.26***	1.18	.56***				
3. Self-compassion	42.85 (8.60)	34.47 (7.23)	7.04***	1.05	.69***	.55***	–		
4. Depression	–	–	–	–	–0.62***	–0.68***	–0.59***	–	
5. Anxiety	–	–	–	–	–0.60***	–0.64***	–0.66***	.78***	–

Note. ***p < .001

depressive and anxiety symptoms reported significantly higher levels in all the study variables. Moreover, large, significant and positive associations were found between psychological flexibility, nonjudgmental appraisal of thought content and self-compassion. Additionally, significant and negative associations were found between depressive and anxiety symptoms and the remaining study variables.

5.2. Study variables associated with not presenting depressive and anxiety symptoms

Following comparison analyses, we examined our second goal about the added value of acceptance-based processes and self-compassion, adjusting for prior history of psychiatric/psychological problems and treatment, in the absence of depressive and anxiety symptoms among women presenting risk factors for PPD (see Table 3).

The overall model was significantly better (–2 Log-Likelihood = 177.66) than the baseline model in which only the constant was included (–2 Log-Likelihood = 245.96), indicating that the predictive value of the model increased with the introduction of the set of the study variables. The final model was significantly reliable ($\chi^2_{(5)} = 75.94, p < .001$; Cox & Snell $R^2 = 0.34$; Nagelkerke $R^2 = 0.45$) and correctly predicted 80% of the cases. According to the model, at-risk postpartum women with higher levels of psychological flexibility and higher levels of nonjudgmental appraisal of thought content had a significantly higher likelihood of not presenting depressive and anxiety symptoms, even when we controlled for history of psychiatric/psychological problems and treatment. The introduction of self-compassion in the third step of the model was only marginally significantly associated with the absence of depressive and anxiety symptoms (Table 3).

6. Discussion

The present study provides some preliminary findings that

contribute to a richer understanding of the potential protective role of acceptance-based processes, namely, psychological flexibility and nonjudgmental appraisal of thought content, in the development of depressive and anxiety symptoms among at-risk postpartum women. Although the screening of psychosocial risk factors is important to identify women and prevent the negative consequences of PPD, the majority of our at-risk sample did not present depressive and anxiety symptoms in the expected period of increased risk of incidence (the first three months postpartum; Gavin et al., 2005). This result suggests that it is also important to learn more about what may protect women in the presence of risk in order to better inform perinatal preventive interventions.

Consistent with previous studies (Evans et al., 2012; Felder et al., 2016; Hall & Wittkowski, 2006), our results showed that women presenting no depressive and anxiety symptoms reported significantly higher levels of psychological flexibility, nonjudgmental appraisal of thought content and self-compassion when compared with women presenting depressive and anxiety symptoms. We also found a significant negative association between these variables and depressive and anxiety symptoms. Although similar, our results add to the literature on this topic because this is, to our knowledge, the first study to focus on a sample of at-risk women that clearly identifies differences among these mechanisms. Thus, these findings corroborate our hypothesis that a more accepting and self-compassionate attitude towards private events in the postpartum period for women presenting a risk for PPD is associated with lower levels of depressive and anxiety symptoms.

Our results showed that at-risk women presenting higher levels of psychological flexibility and nonjudgmental appraisal of thought content had a decreased likelihood of presenting clinically relevant psychological symptoms. These findings are in line with previous results in the general population (Bond et al., 2011; Fledderus et al., 2013) and highlight the importance of promoting acceptance-based processes

Table 3
Hierarchical logistic regression of the variables associated with not presenting depressive and anxiety symptoms.

	Step 1 $R^2 = 0.04$ (Cox & Snell); 0.05 (Nagelkerke) Model $\chi^2_{(2)} = 7.64^*$			Step 2 $R^2 = 0.33$ (Cox & Snell); 0.44 (Nagelkerke) Model $\chi^2_{(4)} = 73.12^{***}$			Step 3 $R^2 = 0.34$ (Cox & Snell); 0.45 (Nagelkerke) Model $\chi^2_{(5)} = 75.94^{***}$		
	B(SE)	p	OR [95% IC]	B (SE)	p	OR [95% IC]	B(SE)	p	OR [95% IC]
<i>Clinic covariates</i>									
History of psychiatric/psychological problems	–0.68 (0.42)	.107	0.51 [0.22–1.16]	0.06 (0.51)	.903	1.07 [0.39–2.92]	0.11 (0.52)	.836	1.11 [0.40–3.06]
History of psychiatric/psychological treatment	–0.20 (0.43)	.635	0.82 [0.35–1.89]	–0.18 (0.52)	.734	0.84 [0.30–2.32]	–0.14 (0.52)	.786	0.87 [0.31–2.41]
<i>Acceptance-based processes</i>									
Psychological flexibility				0.08 (0.03)	.001	1.09 [1.04–1.14]	0.06 (0.03)	.027	1.06 [1.01–1.12]
Nonjudgmental appraisal of thought content				0.31 (0.07)	<0.001	1.37 [1.19–1.58]	0.28 (0.07)	.000	1.33 [1.15–1.53]
Self-compassion							0.05 (0.03)	.098	1.05 [0.99–1.12]

Note. Dependent variable: 0 = Presence of depressive and anxiety symptoms, 1 = Absence of depressive and anxiety symptoms; History of psychiatric/psychological problems 0 = No, 1 = Yes; History of psychiatric/psychological treatment 0 = No, 1 = Yes

* p < .05; *** p < .001

among at-risk women in the perinatal period. Indeed, this is a period characterized by incongruences between the expectations and realities of motherhood (Beck, 2002; Choi et al., 2005), strongly influenced by the ideology of the perfect motherhood, which can lead to greater difficulty in accepting unwanted internal events, to a fusion with evaluative thoughts (e.g., rumination; DeJong et al., 2016) and to subsequent attempts to suppress or avoid these events (e.g., experiential avoidance, self-distraction; Fonseca et al., 2018; Gutierrez-Zotes et al., 2016). Our results also suggest that women at risk of developing PPD who are more accepting of their private unpleasant and negative events (such as thoughts, emotions and physical sensations) may be better protected from developing clinically relevant psychological symptoms. Moreover, our results highlight the importance of a more accepting and nonjudgmental stance towards the content of thoughts. Although scarcely explored in the perinatal period, it has been shown that it is not the simple occurrence of negative thoughts but the appraisal of these thoughts that maintains and exacerbates depressive symptoms (Fonseca & Canavarro, 2018). Therefore, it is possible that when an at-risk mother appraises her intrusive negative thoughts or feelings, which are common during the postpartum period, as a normal part of her experience without judgment, control or avoidance, such appraisal results in lower levels of depressive and anxiety symptoms.

Our results also showed that the added value of self-compassion, after considering acceptance-based processes, was only marginally significantly associated with a decreased likelihood of reporting depressive and anxiety symptoms. The significant addition of psychological flexibility and nonjudgmental appraisal of thought content in our study suggests that acceptance-based processes may play a more central role during this period. Indeed, as stated before, the social idealization of motherhood can hinder the acceptance of negative private thoughts and emotions during this period and lead to maladaptive avoidance strategies, which have a significant impact on the psychological adjustment of postpartum women (Gutierrez-Zotes et al., 2016). Nevertheless, in our study, self-compassion was significantly associated with both psychological flexibility and nonjudgmental appraisal of thought content, which is in line with findings that show that people with greater self-compassion are less likely to suppress unwanted thoughts and emotions (Neff, 2003). Additionally, it has been suggested that self-compassion may be an important mechanism through which a more nonjudgmental attitude towards thought content relates to depressive symptoms (Fonseca & Canavarro, 2018). Future studies should be conducted to clarify these associations and the role of self-compassion for postpartum women.

Our findings also give strength to the importance of prior history and treatment of psychiatric/psychological problems when considering the risk of PPD, as previously reported (e.g., Milgrom et al., 2008). Indeed, although all women in our sample displayed risk factors assessed by the PDPI-R, the group of women presenting depressive and anxiety symptoms were more likely to report a past history of psychiatric/psychological problems and treatment. Although important, our results also suggest that other factors should be considered with regard to the psychological adjustment of these women. In line with comprehensive models of depression (Beck, 1987), it is possible that these women may have had previous vulnerabilities (e.g., dysfunctional beliefs, pervasive thinking styles), which emphasizes the need to shift the focus on assessment from demographic, contextual or pregnancy-related risk factors to other vulnerability factors grounded in existing theories of depression.

This study has some limitations that should be noted. First, because of the cross-sectional design and the convenience sample, causal associations cannot be identified, and caution is needed in interpreting and generalizing these findings. Longitudinal studies should therefore be conducted to confirm the associations reported herein. Second, this study was part of a wider research project, and other specific variables that were not collected, such as coping strategies or resilience characteristics, could add significant inputs for our findings. Thus, these

results must be viewed as preliminary and are in need of replication and extension. Third, variables were assessed only with self-report instruments, which do not allow the establishment of a clinical diagnosis of PPD.

Despite these limitations, the present study provides important insights that may help to further develop research on this topic. To our knowledge, this is the first study in the postpartum period that examines these variables simultaneously using a sample of at-risk postpartum women. This is particularly relevant because there is evidence that selective preventive interventions (that target at-risk women) may be more effective (Dennis & Dowswell, 2013), and identifying protective factors that can be fostered in the presence of risk can prevent the development of psychopathological symptoms. Thus, our study also adds to the literature on protective factors in the postpartum period by providing evidence that acceptance-based processes and self-compassion levels differ between at-risk women presenting depressive and anxiety symptoms and those not presenting such symptoms and that acceptance-based processes may have a particularly important role in the development of these symptoms. Our results suggest that a tendency to be more accepting and nonjudgmental of internal experiences might be beneficial and that promoting this tendency could be an important feature of perinatal psychological prevention interventions. In this context, third-wave cognitive-behavior approaches target acceptance-based processes, and a few studies have highlighted their importance and effectiveness in the perinatal period (Dimidjian et al., 2016; Kelman et al., 2018; Perez-Blasco et al., 2013). Ultimately, the promotion of these processes may lead not only to a reduction in depressive and anxiety symptoms but also to a better long-term adjustment to this period, as these processes are known to improve maternal well-being and self-efficacy (Perez-Blasco et al., 2013) and may increase positive interactions with the self, the baby and significant others.

Authors' contributions

Fabiana Monteiro, Ana Fonseca, Marco Pereira and Maria Cristina Canavarro designed and conceptualized the study. Fabiana Monteiro and Stephanie Alves were responsible for conducting the data collection and for the integrity of the data. Fabiana Monteiro, Ana Fonseca and Marco Pereira undertook the statistical analysis. 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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Conflicts of interest

The authors have no conflicts of interest to declare.

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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.2018.12.124](https://doi.org/10.1016/j.jad.2018.12.124).

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