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Catarina Filipa Santos Cardoso

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## The Mediator Role of Emotion Regulation Difficulties

Dissertação no âmbito do Mestrado Integrado em Psicologia na Área de Psicologia Clínica e da Saúde, Subárea de Especialização em Intervenções Cognitivo-Comportamentais nas Perturbações Psicológicas e Saúde, orientada pela Doutora Ana Dias da Fonseca e apresentada à Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

Julho de 2020

Faculdade de Psicologia e de Ciências da Educação
da Universidade de Coimbra

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**Resumo**

**Objetivos:** O presente estudo teve como objetivos: a) caracterizar os sintomas depressivos, ansiosos e as dificuldades de regulação emocional das mães com elevado risco para a depressão pós-parto, desde os 3/4 até aos 9/11 meses pós-parto; b) caracterizar as associações entre as dificuldades de regulação emocional e a sintomatologia depressiva e ansiosa ao longo do pós-parto; c) examinar o potencial papel mediador destas dificuldades na relação entre os sintomas depressivos e ansiosos aos 3/4 e 9/11 meses pós-parto. **Método:** Este estudo longitudinal incluiu uma amostra recolhida online, constituída por 156 mães com elevado risco para a depressão pós-parto, que responderam a instrumentos de autorresposta com o intuito de avaliar os sintomas depressivos, ansiosos e dificuldades de regulação emocional aos 3/4 meses pós-parto, 5/6 meses pós-parto e 9/11 meses pós-parto. **Resultados:** Verificou-se uma redução dos sintomas depressivos e das dificuldades de regulação emocional dos 3/4 meses para os 5/6 meses pós-parto. Aproximadamente 30% das mães apresentaram sintomas depressivos e ansiosos comórbidos. Apesar das dificuldades de regulação emocional não se configurarem como mediadores na relação entre os sintomas depressivos/ansiosos aos 3/4 e 9/11 meses pós-parto, associaram-se significativamente com os sintomas depressivos/ansiosos em cada momento de avaliação. **Conclusões:** Estes resultados enfatizam a importância de intervir precocemente nas mães com elevado risco para a depressão pós-parto, assim como de não negligenciar a sintomatologia ansiosa e os sintomas comórbidos. Os resultados sublinham a relação entre as dificuldades de regulação emocional e os sintomas depressivos/ansiosos, enfatizando a importância das intervenções baseadas em abordagens transdiagnósticas.

***Palavras-chave:*** depressão pós-parto, risco para depressão pós-parto, sintomas depressivos, sintomas ansiosos, comorbilidade, dificuldades de regulação emocional, estudo longitudinal

## Abstract

**Objectives:** The current study aimed to: a) characterize depressive and anxious symptoms as well as emotion regulation difficulties in mothers presenting high risk for postpartum depression, from 3/4 to 9/11 months postpartum; b) characterize the associations between emotion regulation difficulties and depressive and anxious symptomatology over the postpartum period; c) examine the potential mediator role of these difficulties in the relation between depression and anxiety symptoms at 3/4 and 9/11 months postpartum. **Method:** This longitudinal study included a sample collected online, comprised by 156 mothers with high risk for postpartum depression, that answered to self-response instruments with the purpose of evaluating depressive and anxious symptoms and emotion regulation difficulties at 3/4 months postpartum, 5/6 months postpartum and 9/11 months postpartum. **Results:** A reduction of depressive symptoms and emotion regulation difficulties from 3/4 months postpartum to 5/6 months postpartum was verified. Approximately 30% of mothers showed comorbid depressive and anxious symptoms. Despite emotion regulation difficulties not configuring as mediators in the relation between depression/anxiety symptomatology at 3/4 and 9/11 months postpartum, they related significantly with depressive/anxious symptoms in each assessment moment. **Conclusions:** These results emphasize the importance of early intervention in mothers with high risk for postpartum depression, as well as to not neglect the anxious symptomatology and comorbid symptoms. The results highlight the relation between emotion regulation difficulties and depression and anxiety symptoms, emphasizing the importance of interventions based on transdiagnostic approaches.



***Keywords:*** postpartum depression, risk to postpartum depression, depressive symptoms, anxiety symptoms, comorbidity, emotion regulation difficulties, longitudinal study

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**How do Depressive and Anxiety Symptoms Evolve in a Group of Mothers at-Risk for Postpartum Depression? The Mediator Role of Emotion Regulation Difficulties**

The postpartum period implies multiple changes and rearrangements in women's roles and functions (Canavarro, 2009; Sethi, 1995), and is consequently related with multiple positive and negative emotions (Haga et al., 2012). Thus, during this period, emotion regulation strategies become relevant to the women's general well-being (Haga et al., 2012), with some studies suggesting an association between emotion regulation abilities and the presence of depressive and anxiety symptomatology during the postpartum period (e.g., Fonseca et al., 2018; Marques et al., 2018).

## Postpartum Depression: A Significant Public Health Problem

Postpartum Depression (PPD) can be defined as a major depressive episode (it includes, sometimes, a minor depression) occurring in the first 12 months postpartum (O'Hara, 2009; O'Hara & McCabe, 2013). This condition presents some particularities that distinguish it from other depressive disorders (Riecher-Rössler & Hofecker, 2003) as, for example the presence of a specific precipitant (i.e., the birth of a baby; Riecher-Rössler & Hofecker, 2003) or the occurrence of specific concerns and negative automatic thoughts focused on the baby, which may be intrusive and generate feelings of strangeness and guilt, impacting the women's functioning (Fonseca & Canavarro, 2017).

Some authors estimate that this clinical condition prevails around 13% in several countries (O'Hara & McCabe, 2013). In Portugal, the study of Alves et al. (2018) demonstrated that the average prevalence of clinically relevant depressive symptoms in the first 2 months of postpartum was of 27.5%. In another Portuguese study, it was shown that the incidence of postpartum depressive episodes on mothers between birth and 3 months postpartum was of 4.9% (Maia et al., 2011).

Literature has expressed inconsistent data in relation to the evolution of depressive symptoms during the postpartum period. In Gaynes et al. (2005) meta-analysis, it is shown that PPD symptoms occur with greater prevalence in the first 3 months of postpartum, diminishing lightly until 7 months postpartum, given that, after this period, they exhibit a sharper reduction. According to other studies, between the birth and 3 months of postpartum, the depressive symptomatology tends to diminish (Canário & Figueiredo, 2017; Figueiredo & Conde, 2011), increasing thereafter until 30 months of postpartum (Canário & Figueiredo, 2017). A more recent study points out different patterns in depressive symptomatology's evolution between the period of pregnancy and the first 5 years of postpartum (Ahmed et al., 2019). Therefore, it is shown that there are mothers who express low values of depression symptoms, consistently and over time, and other mothers that tend to experience a light reduction of symptoms over time. Mothers who

experienced depression symptoms during pregnancy may exhibit its gradual increase or decrease in the postpartum period (Ahmed et al., 2019).

When left untreated, PPD has various short and long-term negative consequences (O'Hara & McCabe, 2013; Robertson et al., 2004) affecting the whole family system (Fonseca & Canavarro, 2017; Riecher-Rössler & Hofecker, 2003). On the one hand, women's wellbeing seems to be compromised, as these women tend to feel more tired, lose their appetite, have higher levels of sadness and anxiety (Righetti-Veltema et al., 2002) and high levels of irritability and hostility (Lovejoy et al., 2000). The mother-infant relation also seems to be compromised as a result of PPD symptoms, as there is evidence that mothers with PPD tend to display less vocal communication (Righetti-Veltema et al., 2002), less visual contact (O'Hara, 2009; Righetti-Veltema et al., 2002) and less active and social interaction (Lovejoy et al., 2000) with their infants. Moreover, research has shown that PPD may also indirectly affect infant's health, as well as his/her cognitive, emotional, social, physical and behavioural development (Beck, 1998; Field, 2010; O'Hara, 2009; O'Hara & McCabe, 2013; Robertson et al., 2004). Given its negative and pervasive impact, PPD sets a relevant public health problem worldwide (Pearlstein et al., 2009).

Although after childbirth all women are vulnerable to the development of PPD, there are some women who have a higher risk of experiencing this clinical condition, compared with others (Robertson et al., 2004). In order to facilitate the identification of women at higher risk of developing PPD (Beck, 2001), many studies have searched for the identification of the factors that are associated to a higher risk of developing this condition (e.g., Beck, 2001; O'Hara & Swain, 1996; Robertson et al., 2004). These factors do no act separately but interact with each other to concur to the development of PPD (Costa et al., 2007). Different categories of risk factors for PPD have been proposed.

Regarding sociodemographic risk factors, it stands out the low socioeconomic status (Beck, 2001; O'Hara & Swain, 1996; Robertson et al., 2004), as well as marital status (e.g., being a single mother; Beck, 2001). Immigrant mothers are also a group of vulnerability to PPD, as they are separated from their support systems, and may have fewer social interactions and smaller social network (Robertson et al., 2004). In terms of obstetrical risk factors, it stands out the presence of an unplanned/unwanted pregnancy (Beck, 2001), as well as the occurrence of obstetrical complications (Costa et al., 2007; O'Hara & Swain, 1996). In addition, there are also risk factors related to the infant, as its temperament (Beck, 2001). In what concerns individual/clinical risk factors, a previous history of psychopathology (i.e., anxiety and depression), the presence of anxiety or depression during pregnancy, high stress levels (Ahmed et al., 2019; Beck, 2001; Milgrom et al., 2008; O'Hara & Swain, 1996; Robertson et al., 2004) and the presence of maternity blues (Beck, 2001) have been associated with an increased risk of PPD. Higher levels of neuroticism, a negative attributional style (e.g., dysfunctional beliefs and

negative automatic thoughts; Fonseca & Canavarro, 2019; O'Hara & Swain, 1996; Robertson et al., 2004), as well as low self-esteem (Beck, 2001) and higher perfectionism (Milgrom et al., 2008) are embedded psychological risk factors. In terms of interpersonal risk factors, low social support (Beck, 2001; Milgrom et al., 2008; O'Hara & Swain, 1996), the perception of social isolation during pregnancy (Robertson et al., 2004), and marital dissatisfaction (Beck, 2001; O'Hara & Swain, 1996; Robertson et al., 2004) have been associated with a higher risk of PPD. Lastly, it is known that the presence of stressful and significant life events may also be a potential risk factor (Beck, 2001; O'Hara & Swain, 1996; Robertson et al., 2004).

**PPD: Comorbidity With Anxiety Symptoms**

According to studies, the prevalence of anxiety disorders in the postpartum period may reach 8.5% (Goodman et al., 2016), or even 9.6% (Dennis et al., 2017). Despite this evidence, there is still a lack of studies particularly focusing on anxious symptomatology during this period, with most research giving primacy to the investigation of depressive symptomatology (Dennis et al., 2017; Falah-Hassani et al., 2016).

Literature demonstrate that there is no agreement on the evolution of anxiety symptoms in postpartum period. According to Britton (2008), during the early postpartum period, anxiety symptomatology tends to increase and reach moderate to severe levels at one month postpartum. However, other studies defend that anxiety symptoms reduce from childbirth until 3 months of postpartum (Canário & Figueiredo, 2017; Figueiredo & Conde, 2011). In addition, and despite Dennis et al. (2017) advocate that, after a month of postpartum, the symptomatology starts to diminish and stabilize, Canário and Figueiredo (2017) argue that anxiety symptoms increase from 3 months of postpartum until 30 months of postpartum. Yet, in a more recent study, Ahmed et al. (2019) demonstrate that the evolution of anxiety symptomatology may acquire different paths between the pregnancy period and 5 years of postpartum. This study expresses that there is a propensity to time stability of anxiety symptoms in mothers that present low and very low values of this symptomatology. By contrast, mothers who exhibit moderate to high levels of these symptoms experience its light reduction over time (Ahmed et al., 2019).

Comorbidity between depressive and anxiety symptomatology during the postpartum period is very common (Falah-Hassani et al., 2016; Farr et al., 2014; O'Hara, 2009). The studies show that comorbidity between depression and anxiety symptoms in postpartum period may vary between 6.3% and 18.4% (Falah-Hassani et al., 2016; Farr et al., 2014; Marques et al., 2018; Reck et al., 2008). However, there is some evidence that the proportion of women presenting comorbid symptoms of depression and anxiety may vary over time (e.g., Adewuya & Afolabi, 2005; Falah-Hassani et al., 2016). Falah-Hassani et al. (2016) indicated that comorbidity levels decreased between the first week postpartum (15.9%) and 8 weeks postpartum (10.8%). Similar

results were found in another study with Nigerian women, with the comorbidity of symptoms decreasing from 5.3% at 12 weeks postpartum to 2.5% at 36 weeks postpartum (Adewuya & Afolabi, 2005).

Studies conducted within the general population have shown a wide range of negative consequences of comorbidity between depression and anxiety symptoms (e.g., low self-esteem, lower social support and worse prognoses; Cyranowski et al., 2012; Sherbourne & Wells, 1997). It is known that the presence of this comorbidity in general population does not affect exclusively the person that expresses these symptoms, but also its professional, social and familiar life (Ansseau et al., 2008). The presence of this comorbidity in postpartum period is also related to more negative and pervasive consequences for mothers (Tavares et al., 2012) and can be considered as a public health problem (Falah-Hassani et al., 2016).

Despite this information, little is known about the evolution of depressive, anxiety and comorbid symptomatology in mothers that show higher risk to PPD. A better understanding of the evolution of these symptoms among mothers at higher risk for PPD may be of paramount importance for the optimization of diagnostic procedures (considering both depression and anxiety symptoms) and for the development of more efficient preventive and intervention protocols that take into account the cooccurrence of such symptoms.

**Emotion Regulation Difficulties: An Important Mechanism to Explain Depressive and Anxiety Symptoms Among at-Risk Women?**

Emotion regulation is defined by Gross (1998) as a set of processes that influence the individual's emotions, in terms of when and how he experiences and expresses them. This may be conceptualized as a multidimensional process, as it involves issues such as awareness, understanding, and acceptance of emotions, as well as the ability to control impulses in response to the emotions (Gratz & Roemer, 2004). The emotion regulation processes also imply the use of adequate and flexible strategies, helping the individual to reach personal goals, as well as to comply with the situational demands. Emotion regulation difficulties are ruled by the presence of ineffective and limited strategies, non-acceptance of emotional experiences, as well as the lack of clarity and emotional awareness. Besides that, the difficulties to control impulse and to act accordingly to goals also characterize emotion regulation difficulties (Gratz & Roemer, 2004).

The mother's emotion regulation processes are important in postpartum period, since this period is characterized by various demands, including caregiving-related demands (Rutherford et al., 2015). Thus, mothers need to keep their emotions regulated in order to also regulate their children's emotional state (Rutherford et al., 2015). Consequently, emotion regulation is conceptualized as a crucial skill for mothers (Rutherford et al., 2015), contributing to general well-being during the postpartum period (Haga et al., 2012).

Emotion regulation difficulties may be a potential process involved in PPD's development, since the studies have highlighted their important role in this disorder (e.g., Fonseca et al., 2019; Haga et al., 2012; Marques et al., 2018). Specifically, the use of certain maladaptive emotion regulation strategies has been associated with the presence of postpartum depressive symptoms among mothers (Haga et al., 2012; Marques et al., 2018). The study of Edwards et al. (2017) showed that a higher use of suppression strategies (i.e., avoidance of emotions) was related to greater likelihood of internalizing problems among mothers. Haga et al. (2012) have also showed that the use of certain cognitive strategies for emotion regulation such as rumination, self-blame, and catastrophizing are more related to the occurrence of PPD symptoms, in contrast to what happens when adaptive emotion regulation strategies (reevaluation and planning) are used. Similarly, Marques et al. (2018) demonstrated that mothers who showed clinically relevant depression symptoms exhibit more non-acceptance of emotional responses and lack of emotional awareness, as well as more difficulty in engaging in goal-directed behaviours. In addition, in a study that aimed to examine treatment response mechanisms of a preventive intervention to PPD, it was shown that the reduction of emotional regulation difficulties (i.e., improvement of emotion regulation abilities) was significantly associated with the reduction of depressive symptoms (Fonseca et al., 2019).

Concerning postpartum anxiety symptoms, and despite the scarcity of studies, the study of Marques et al. (2018) also corroborated the existence of a relation between emotion regulation difficulties (e.g., lack of emotional clarity) and postpartum anxiety symptomatology. The association between emotion regulation difficulties and anxiety symptoms has also been proven within the general population (Kashdan et al., 2008). Moreover, there is also some evidence that the mothers who present comorbidity between depressive and anxiety symptomatology exhibit more emotion regulation difficulties, in comparison to those who display only depressive symptoms (Marques et al., 2018), suggesting that higher emotion regulation difficulties may be associated with higher comorbidity between symptoms. A study by Fonseca et al. (2018) supports this idea, as it was shown that the presence of high levels of experiential avoidance (which may be understood as a maladaptive emotion regulation strategy of avoiding negative emotions) was related to higher anxious and depressive symptoms among postpartum women. However, existing studies on this topic are mostly cross-sectional. There is a shortage of longitudinal studies exploring the relationships between postpartum women's emotion regulation difficulties and anxious and depressive symptoms over time.

**The Current Study**

Even in mothers presenting higher risk for PPD, not all women who present common risk factors develop relevant symptomatology (Monteiro et al., 2019). Thus, it is important to explore

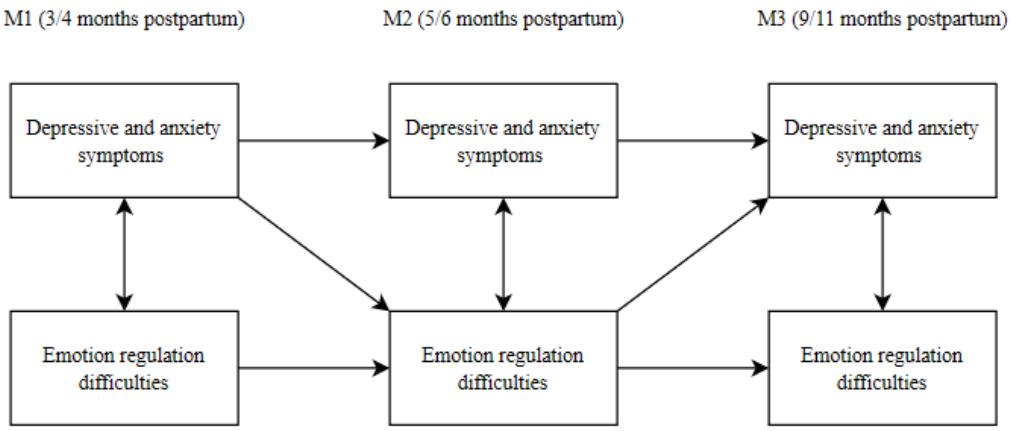
whether emotional regulation difficulties can be an important factor in helping to understand the relationship between risk and the occurrence of symptomatology among postpartum women. A previous study with women at risk for PPD showed that the presence of psychological flexibility and the non-judgmental appraisal of thoughts content act as factors that diminish the probability to develop depressive and anxious symptomatology among mothers at risk for PPD (Monteiro et al., 2019). However, the role of emotional regulation in the development of depressive and anxiety postpartum symptoms over time among women at risk needs to be better investigated.

Therefore, the main goal of this study will be to characterize the women's depression and anxiety symptoms over time during the postpartum period (from the first 3/4 months postpartum until 9/11 months postpartum) when women present high-risk for PPD, and to understand the role of emotion regulation difficulties in the evolution of these symptoms.

Specifically, this study will focus in a group of women at high risk for PPD, aiming to: (a) characterize the depressive and anxious symptomatology over time, taking into consideration the average level of symptoms and the ratio of women with clinically relevant symptomatology, as well as to characterize the comorbidity and the trajectories of these two types of symptomatology; (b) characterize the emotion regulation difficulties of women at high risk to PPD over time; (c) characterize the association between emotion regulation difficulties and depressive and anxious symptomatology over time; and (d) characterize the potential mediator role of emotion regulation difficulties in the relation between early-onset depression and anxiety symptoms (first 3/4 months postpartum) and depression and anxiety symptoms over time. Figure 1 presents the conceptual scheme of the present study.

**Figure 1**

*Study's Conceptual Scheme*



## Method

### Procedures

This study is part of a wider project entitled *BeaMomTrial - An online psychological intervention programme to promote maternal mental health.* The main goal of this project was to assess the efficacy of an online PPD preventive programme, both in women presenting high-risk and low-risk for the development of PPD. This project has been approved by the Ethics Committee of the Faculty of Psychology and Education Sciences of the University of Coimbra, and the sample collection was initiated in September 2019 and is currently ongoing.

The inclusion criteria for this study were: being a female, being over 18 years old, and having had a healthy live birth in the last 3 months. In addition, participants had to know how to read and write in Portuguese, live in Portugal, as well as to have access to Internet and computer/tablet/smartphone. The exclusion criteria were the presence of a serious medical condition (physical or psychiatric) in the mother or in the child (Fonseca et al., 2019).

Participants were enrolled in the study through social media advertisements, where the goals of the study were explained more accurately, as well as the role of the investigators and the participants, followed by the informed consent. Upon the consent, the mothers had to answer to a brief questionnaire to evaluate their eligibility, as well as to a questionnaire to assess the presence of risk factors to PPD (Postpartum Depression Predictors Inventory- Revised [PDPI-R]; Alves et al., 2018). According to the result given by the PDPI-R (a cut-off score of 5.5 or higher was indicative of high-risk for PPD; Alves et al., 2018), the eligible mothers were divided into two distinct groups: women presenting high-risk for PPD (high-risk group) and women presenting low-risk for PPD (low-risk group). Afterwards, all women answered to the assessment protocol concerning the first assessment moment (M1; baseline assessment), corresponding to the period of time of 3/4 months of postpartum. In each group (high-risk and low-risk) women were randomly assigned to the intervention group (the group in which mothers had access to the Be a Mom programme), and to the control group (the group without access to the programme/intervention). Afterwards, all women answered to a second moment of evaluation (M2), at post-intervention or 8 weeks after M1, and to a third moment (M3) that occurred 4 months after M2. Data collection of all assessment moments occurred online, through Limesurvey ® software, hosted at the webpage of the Faculty of Psychology and Educational Sciences, University of Coimbra. The assessment protocol at each assessment time was sent to mothers by email. If within a week the mothers had not answered to the questionnaires, reminders via SMS were sent. In the week after, the email was resent to the mothers who did not answer the survey.

In the present study, we focused on a subsample of this larger study, by including only the mothers of the high-risk group who were assigned to the control group (i.e., without intervention).

**Participants**

In this prospective longitudinal study, 407 mothers answered to the first assessment moment (M1), 207 completed the second assessment moment (M2) and 156 filled the last assessment moment (M3). The final sample comprised 156 mothers (38.3% of the initial sample).

The average age of the 156 mothers was 32.85 years (*SD* = 4.43, range = 20-45). The majority of mothers was married or co-habiting (*n* = 138, 88.5%), attended higher education (*n* = 63, 63.0%), was currently employed (*n* = 134, 87.6%) and had an income between 580€ and 1000€ (*n* = 81, 51.9%). The urban residence was the area of residence of 82.7% of mothers (*n* = 129). Of the mothers included in the sample, 47.4% (*n* = 74) reported previous history of psychiatric/psychological problems and 37.8% (*n* = 59) reported past history of a psychiatric/psychological treatment, and only 7.7% (*n* = 12) reported currently having psychological/psychiatric treatment. Concerning infant's characteristics, the average age of the infants was 2.09 months (*SD* = 0.88, range = 0.00–4.00), and the male gender was the most common in this sample (*n* = 81, 51.9%). Table 1 exhibits the participants' sociodemographic and clinical characteristics, as well as the data related with the infant.

**Table 1**

*Sociodemographic, Clinical and Infant's Related Characteristics*

| **Sociodemographic characteristics** | | |
|---|---|---|
| | ***M (SD)*** | **Range** |
| **Age** (in years) | 32.85 (4.43) | 20-45 |
| | ***n*** | **%** |
| **Marital status** | | |
| Married/ Co-habiting | 138 | 88.5 |
| Single | 9 | 5.8 |

| | *n* | % |
|---|---|---|
| Separated/Divorced | 2 | 1.3 |
| In a relationship (without co-habiting) | 7 | 4.5 |
| **Educational level** | | |
| Middle school | 4 | 4.0 |
| High school | 33 | 33.0 |
| Higher education | 63 | 63.0 |
| **Employment status** | | |
| Student | 1 | 0.7 |
| Employed | 134 | 87.6 |
| Unemployed | 16 | 10.5 |
| Housewife | 2 | 1.3 |
| **Monthly income** | | |
| Less than 580€ | 19 | 12.2 |
| 580€-1000€ | 81 | 51.9 |
| 1000€-2000€ | 48 | 30.8 |
| More than 2000€ | 8 | 5.1 |
| **Residence** | | |
| Rural | 27 | 17.3 |
| Urban | 129 | 82.7 |

| Clinical characteristics | *n* | % |
|---|---|---|
| **Previous history of psychiatric/Psychological problems** | | |
| Yes | 74 | 47.4 |
| No | 82 | 52.6 |
| **Psychiatric/Psychological treatment in the past** | | |
| Yes | 59 | 37.8 |
| No | 97 | 62.2 |
| **Psychiatric/Psychological treatment at present** | | |
| Yes | 12 | 7.7 |
| No | 144 | 92.3 |
| **Infant's characteristics** | | |
| | ***M (SD)*** | **Range** |
| **Infant's age** (in months) | 2.09 (0.88) | 0.00–4.00 |
| | ***n*** | **%** |
| **Gender** | | |
| Male | 81 | 51.9 |
| Female | 70 | 44.9 |
| Twins | 5 | 3.2 |

Mothers who completed the three assessment moments ($n$ = 156) were compared with the ones who did not complete the three assessment moments ($n$ = 251) concerning sociodemographic, clinical and infant's characteristics. No significant differences were found in what concerns sociodemographic, clinical and infant's related characteristics between the mothers

that completed the three assessment moments and the mothers who did not complete the evaluations (data not shown).

## Instruments

### *Sociodemographic, Clinical and Infant's Characteristics*

A self-report questionnaire was developed to assess sociodemographic information such as age, marital status, number of children and their age, academic qualifications, employment status, income, socioeconomic status and place of residence. The questionnaire also included clinical data, such as previous history of psychopathology and previous or current psychiatric/ psychological treatment. Moreover, it also included information related to the baby such as infant's gender and age.

### *Risk Factors for PPD*

The Postpartum Depression Predictors Inventory-Revised (PDPI-R; Beck, 2002; Portuguese Version [PV]: Alves et al., 2018) was used to identify women presenting risk factors for PPD. This self-report questionnaire is intended to evaluate 13 risk factors for PPD advocated by Beck (2002): marital status; socioeconomic status; self-esteem; antenatal depression; antenatal anxiety; unplanned/unwanted pregnancy; previous history of depression; social support; marital satisfaction; life events that are stress inductors; stress in the care of the baby; baby's temperament; and postpartum blues. By assessing these factors, the main goal of the current instrument is to recognize women with high risk to develop PPD. This instrument is formed by two versions: antenatal version and postnatal version, and the postnatal version was used in the present study. The postnatal version included 39 items (e.g., "Do you feel worthwhile?") to assess the risk factors, answered in a dichotomous scale (*yes*; *no*), except in the two first items related to the marital status and the economic status. A total score may be computed based in the sum of the items, which may vary between 0 and 39, and higher scores are indicators of higher risk to PPD. The PDPI-R psychometric properties are well-established (Beck, 2002). The Portuguese version presented good psychometric properties, and results showed that a cut-off score equal to or higher than 5.5 was indicative of a high risk for PPD (Alves et al., 2018).

### *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. This self-report questionnaire is comprised of 10 items that evaluate the presence and severity of depressive symptoms in the previous seven days (e.g., "I have looked forward with enjoyment to things: *as much as I ever did/ ... / hardly at all*"), answered in a 4-point scale (from 0 to 3). This instrument is able to detect

perinatal depressive symptoms, but the 10-item version is mainly used to evaluate postnatal depression symptoms. A total score can be computed based in the sum of the items, resulting in a score between 0 and 30. Higher values were indicate of higher levels of depressive symptoms, in which values greater than 9 indicate the presence of clinically relevant symptoms (Figueiredo, 1997). The Portuguese version showed good psychometric properties (Areias et al., 1996). Cronbach's Alpha values in our sample were .86 at M1, .88 at M2 and .90 at M3.

***Anxiety Symptoms***

To assess anxiety symptoms, the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983; PV: Pais-Ribeiro et al., 2007) was used. This self-report questionnaire evaluates the presence of anxious and depressive symptomatology in the previous seven days (e.g., «I feel tense or "wound up": *most of the time/.../ not at all*»). It is composed by 14 items organized into two subscales, Anxiety and Depression, and answered in a scale of 4-points (0 to 3). In this study, only the Anxiety subscale was used, and it is intended to assess the presence of anxious symptomatology in the week before its filling (e.g., "I get sudden feelings of panic"). A total score for each subscale can be computed based in the sum of the items and may vary between 0 and 21. Higher scores were indicative of greater anxious symptomatology. According to the authors of the original version of the scale, an individual score higher than 8 must receive clinical care and scores equal to or higher than 11 indicate the presence of clinically relevant anxious symptomatology. The Portuguese version of the instrument showed good indices of validity and internal consistency ($\alpha = .76$; Pais-Ribeiro et al., 2007). In our sample the Cronbach's Alpha values were .82 at M1, .83 at M2 and .88 at M3.

***Emotion Regulation Difficulties***

The Difficulties in Emotion Regulation Scale-Short Form (DERS-SF; Kaufman et al., 2016; PV: Moreira et al., 2020) was used to assess the women's emotion regulation difficulties. The DERS-SF is a self-report questionnaire that examines the difficulties in using adaptive strategies in emotion regulation. It is formed by 18 items (e.g., "I pay attention to how I feel") measured in a 5-point scale (1- *almost never applies to me*/ 5- *almost always applies to me*). It is divided into six dimensions: (1) Nonacceptance of Emotional Responses; (2) Lack of Emotional Awareness; (3) Lack of Emotional Clarity; (4) Difficulties Engaging in Goal-Directed Behavior; (5) Impulse Control Difficulties and (6) Limited Access to Emotion Regulation Strategies. Also, it is possible to obtain the total score from the mean of the items with higher scores being indicative of greater difficulties in the use of adaptive emotion regulation strategies. Congruently with the studies of the Portuguese adaptation of the instrument (Moreira et al., 2020), the total score was used in the present study (excluding the three items of the Awareness dimension, which

were not included in the computation of the total score). Thus, results may vary between 1 and 5. The Portuguese version of the DERS-SF showed good psychometric properties. In our sample, the Cronbach alpha values were .92 at M1, .93 at M2 and M3.

**Statistical Analysis**

Statistical analyses were performed with IBM SPSS (version 22.0) and with the AMOS software (version 26.0). Descriptive statistical analyses were calculated to characterize the sample in relation to sociodemographic, clinical and infant's related characteristics. Descriptive statistics were also computed to obtain the ratio of women with clinically relevant symptoms of depression, anxious and comorbid symptoms at M1 (3/4 months postpartum), M2 (5/6 months postpartum) and M3 (9/11 months postpartum). To compare the group of women who filled the three assessment moments and those who did not complete the three assessment moments (in relation to sociodemographic, clinical and infant's related characteristics), comparison tests (independent *t*-tests for continuous variables and chi-square tests for categorical variables) were calculated.

Concerning the first and second study goals (examine changes in depression and anxiety symptoms and emotion regulation difficulties over time), repeated measures analyses of variance (ANOVA) were performed, considering Time as a within-subject factor (three assessment times: 3/4 months postpartum, 5/6 months postpartum, 9/11 months postpartum). Additionally, post-hoc tests (paired-sample *t*-tests) were made to specify the assessment moments in which significant differences occurred.

Moreover, in order to analyze the trajectories of clinically relevant depression and anxiety symptoms in mothers with higher risk for PPD, between 3/4 months postpartum (M1) and 9/11 months postpartum (M3), two variables were created, one related to trajectories of depression symptoms and one related to trajectories of anxiety symptoms. For each variable four categories were created: non-clinical maintenance (women who presented non-clinically relevant symptoms of depression/anxiety at 3/4 months and at 9/11 months postpartum); clinical maintenance (women who presented clinically relevant symptoms of depression/anxiety both at 3/4 months and at 9/11 months postpartum); clinical improvement (women who presented clinically relevant symptoms of depression/anxiety at 3/4 months postpartum and non-clinically relevant symptoms of depression/anxiety at 9/11 months postpartum); and clinical deterioration (women who presented non-clinically relevant symptoms of depression/anxiety at 3/4 months postpartum and clinically relevant symptoms of depression/anxiety at 9/11 months postpartum). Descriptive statistics were computed to obtain the proportion of women who presented each trajectory of depression and anxiety symptoms.

Concerning the third (characterize the association between emotion regulation difficulties and depression and anxiety symptoms over time) and fourth (characterize the potential mediator

role of emotion regulation difficulties between depression and anxiety symptoms over time) goals of the study, preliminary analyses were first performed. Pearson's bivariate correlations between sociodemographic, clinical and infant's related variables and the study variables (depression and anxiety symptoms and emotion regulation difficulties) at 3/4 months postpartum (M1), 5/6 months postpartum (M2) and 9/11 months postpartum (M3) were computed. Dummy variables (e.g., marital status) were coded when needed to compute the bivariate associations. Additionally, Pearson's bivariate correlations between the study variables (depression and anxiety symptoms and emotion regulation difficulties) in the three assessment moments were also computed. According to Cohen (1988), the values of Pearson's correlations between .10 and .29 were interpreted as low correlations, the values between .30 and .49 were interpreted as moderate correlations and the values between .50 and 1.0 as high correlations.

Finally, a path analysis model using the maximum likelihood estimation method was estimated. Depression, anxiety symptoms and emotion regulation difficulties in M1 (3/4 months postpartum), M2 (5/6 months postpartum) and M3 (9/11 months postpartum) were included in this model. At each assessment moment, depression symptoms, anxiety symptoms and emotion regulation difficulties were associated with one another, as well as there were associations between the three variables of the study (depression and anxiety symptoms and emotion regulation difficulties) over the three assessment moments.

The adjustment of the model was evaluated by the following adjustment indices (Hu & Bentler, 1999): chi-square (good model adjustment if $p > .05$); Comparative Fit Index (CFI; good model adjustment if > .95); and Standardized Root Mean Square Residual (SRMR; good model adjustment if < .08). The relationship between the study variables over time was estimated in the model.

In order to fulfill the fourth goal of the study, the total, direct and indirect effects of depressive and anxiety symptoms at 3/4 months postpartum on 9/11 months postpartum (through depression/anxiety symptoms, respectively, and/or emotion regulation difficulties at 5/6 months postpartum) were computed. To calculate the indirect effects, bootstrap procedures were used in 200 samples, with a confidence interval of 95% (bias-corrected confidence intervals 95% CI). Aiming to detect the specific indirect effects, as well as its confidence intervals, an AMOS user-defined estimand was used. Indirect effects were considered to be present when zero value was not included in its confidence interval.

## Results

### Characterization of Depressive, Anxiety and Comorbid Symptoms Over Time

The descriptive statistics for depression and anxiety symptoms over time, as well as the comparison test statistics are presented in Table 2. Concerning depression symptoms, significant differences were found between M1 (3/4 months postpartum), M2 (5/6 months postpartum) and M3 [9/11 months postpartum; $F_{(2, 310)} = 7.93$, $p < .001$, $\eta_p^2 = 0.05$], showing that the levels of depression symptoms have changed over time.

Post-hoc analyses were performed to examine between which assessment moments the differences occurred. Significant differences on depression symptoms were found between M1 (3/4 months postpartum) and M2 [5/6 months postpartum; $t_{(155)} = 3.30$, $p = .001$, $d = 0.26$], and between M1 (3/4 months postpartum) and M3 [9/11 months postpartum; $t_{(155)} = 3.28$, $p = .001$, $d = 0.26$], but not between M2 (5/6 months postpartum) and M3 [9/11 months postpartum; $t_{(155)} = 0.73$, $p = .468$, $d = 0.06$]. Therefore, in early postpartum stage (3/4 months postpartum), the participants have shown levels of depressive symptoms significantly higher than in later stages of the postpartum period (5/6 months postpartum and 9/11 months postpartum).

In relation to anxiety symptoms, no statistically significant differences were found on levels of symptoms over time, $F_{(2, 310)} = 0.10$, $p = .909$, $\eta_p^2 = 0.00$. Therefore, between the early postpartum stage (3/4 months postpartum) and 9/11 months postpartum, the participants have not shown significant variations in their levels of anxiety symptoms (see Table 2).

**Table 2**

*Characterization of Depressive and Anxiety Symptoms Over the Three Assessment Moments*

| | M1<br>*M (SD)* | M2<br>*M (SD)* | M3<br>*M (SD)* | $F_{(2, 310)}$ | *p* | $\eta_p^2$ |
|---|---|---|---|---|---|---|
| Depressive symptoms | 11.34 (4.61) | 10.37 (4.94) | 10.15 (5.20) | 7.93 | < .001 | 0.05 |
| Anxiety symptoms | 8.28 (4.02) | 8.19 (4.15) | 8.31 (4.68) | 0.10 | .909 | 0.00 |

*Note.* M1- 3/4 months postpartum; M2- 5/6 months postpartum; M3- 9/11 months postpartum.

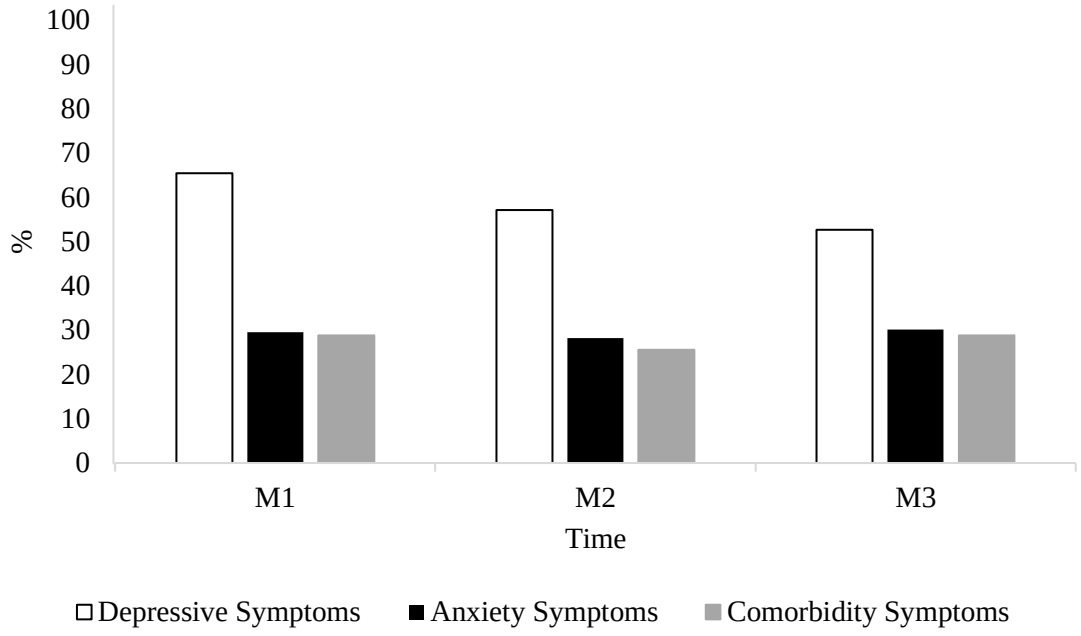
Figure 2 presents the percentage of women with clinically relevant depression, anxiety and comorbidity symptoms over the three assessment moments.

In what concerns the proportion of women with clinically relevant depression symptoms, more than half of the sample presented clinically relevant symptoms during the three assessment moments [M1 = 102 (65.4%), M2 = 89 (57.1%), M3 = 82 (52.6%)], with the proportion showing a slight decrease over time. Moreover, the number of mothers presenting clinically relevant depression symptoms was higher than the number of mothers who showed clinically relevant anxious symptoms in the three assessment moments [M1 = 46 (29.5%), M2 = 44 (28.2%), M3 = 47 (30.1%)]. Between M1 (3/4 months postpartum) and M2 (5/6 months postpartum) there was a decrease in the number of women that experienced clinically relevant anxiety symptoms. However, and despite this reduction, the results have shown that there was a slight increase of participants with relevant anxiety symptomatology between M2 (5/6 months postpartum) and M3 (9/11 months postpartum).

In addition, about 30% of mothers have shown comorbidity between depression and anxiety symptoms over time [M1 = 45 (28.8%), M2 = 40 (25.6%), M3 = 45 (28.8%)]. There was a reduction in the number of mothers that exhibited this comorbidity between M1 (3/4 months postpartum) and M2 (5/6 months postpartum). However, between M2 (5/6 months postpartum) to M3 (9/11 months postpartum) this proportion increased again, reaching the starting value. Finally, it is important to note that in all three assessment moments, the number of mothers with comorbid and anxiety symptoms was very similar, suggesting that the great majority of mothers with anxiety symptoms has shown comorbidity with depression symptomatology (see Figure 2).

**Figure 2**

*Percentage of Women With Depressive, Anxiety and Comorbidity Symptoms Over the Three Assessment Moments*




*Note.* M1- 3/4 months postpartum; M2- 5/6 months postpartum; M3-9/11 months postpartum.

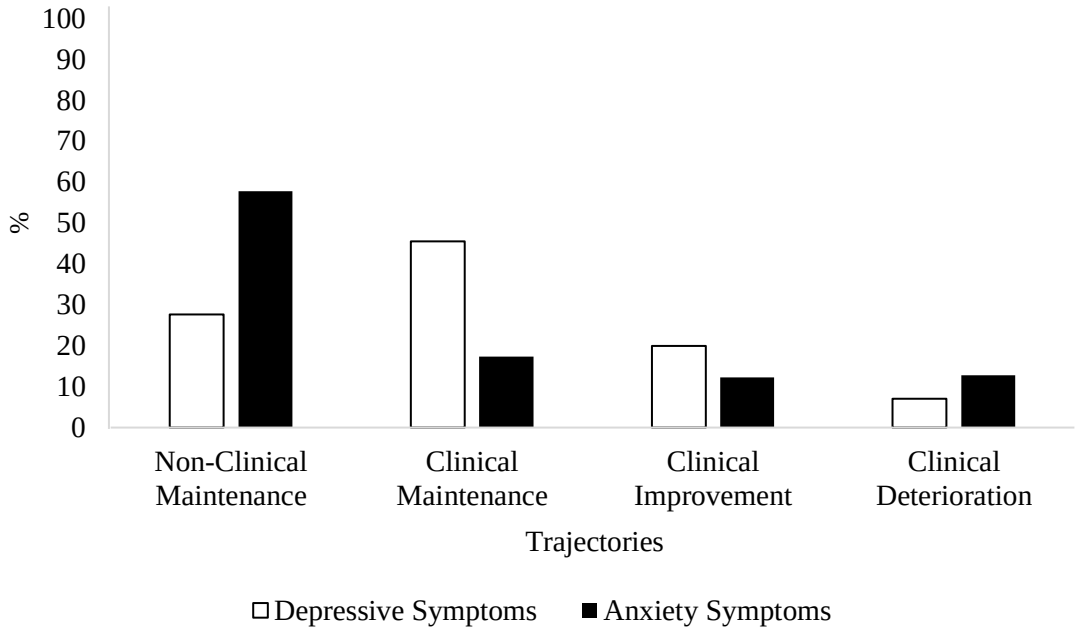
Figure 3 shows the proportion of mothers who presented each trajectory of symptoms. In what concerns the trajectories of depressive symptoms, most women (45.5%, *n* = 71) had experienced the maintenance of clinically relevant depressive symptoms, both at 3/4 months postpartum (M1) and 9/11 months postpartum (M3). On the other hand, 27.6% (*n* = 43) of mothers at-risk for PPD presented a trajectory characterized by non-clinically relevant depressive symptoms both at 3/4 months and 9/11 months postpartum (M1 and M3, respectively). In addition, 19.9% (*n* = 31) of mothers experienced symptomatic improvements, as they presented clinically relevant symptoms at 3/4 months postpartum (M1) and non-clinically relevant symptoms at 9/11 months postpartum (M3). Besides that, it was noted that 7% (*n* = 11) of mothers has shown a deterioration in their clinical condition, as they presented non-clinically relevant depressive symptoms at 3/4 months postpartum (M1) and clinically relevant depressive symptoms at 9/11 months postpartum (M3).

Concerning the trajectories of anxiety symptoms, more than half of the mothers of the sample (57.7%, *n* = 90) exhibited non-clinically relevant anxiety symptoms both at 3/4 months of postpartum (M1) and 9/11 months postpartum (M3). Yet, 17.3% (*n* = 27) of mothers at-risk for PPD presented a trajectory characterized by the maintenance of the experience of clinically relevant anxious symptoms, both at 3/4 months of postpartum (M1) and 9/11 months postpartum

(M3). Additionally, 12.2% (*n* = 19) of mothers exhibited an improvement of anxiety symptoms, as they have shown clinically relevant anxious symptoms at 3/4 months postpartum (M1) and non-clinically relevant symptoms at 9/11 months postpartum (M3). In what concerns mothers who exhibited a deterioration of symptoms (i.e., who haven't experienced clinically relevant anxious symptoms at 3/4 months postpartum [M1], but presented clinically relevant symptoms at 9/11 months postpartum [M3]), the results have exposed that this trajectory was presented in 12.8% (*n* = 20) of mothers at-risk for PPD.

**Figure 3**

*Percentage of Mothers at-Risk for PPD in Each Trajectory*




**Characterization of Emotion Regulation Difficulties Over Time**

Table 3 presents the descriptive statistics for emotion regulation difficulties over time, as well as the comparison test statistics. The average levels of emotion regulation difficulties in the three assessment moments significantly changed over time, $F_{(2, 304)} = 4.82$, $p = .009$, $\eta_p^2 = 0.03$.

Post-hoc analyses to investigate in which specific moments these differences have occurred suggested statistically significant differences between M1 (3/4 months postpartum) and M2 [5/6 months postpartum; $t_{(155)} = 2.47$, $p = .015$, $d = 0.19$] and between M1 (3/4 months postpartum) and M3 [9/11 months postpartum; $t_{(152)} = 2.66$, $p = .009$, $d = 0.21$], but not between M2 (5/6 months postpartum) and M3 [9/11 months postpartum; $t_{(152)} = .51$, $p = .614$, $d = 0.03$]. Therefore, the participants exhibited significantly higher levels of emotion regulation difficulties

in early stage of postpartum (3/4 months postpartum), in comparison to later stages (5/6 months postpartum and 9/11 postpartum).

**Table 3**

*Characterization of Emotion Regulation Difficulties Over the Three Assessment Moments*

| | M1 *M (SD)* | M2 *M (SD)* | M3 *M (SD)* | $F_{(2, 304)}$ | *p* | $\eta_p^2$ |
|---|---|---|---|---|---|---|
| Emotion regulation difficulties | 2.44 (0.81) | 2.30 (0.80) | 2.28 (0.80) | 4.82 | .009 | .03 |

*Note.* M1- 3/4 months postpartum; M2- 5/6 months postpartum; M3- 9/11 months postpartum.

## Characterization of the Association Between Emotion Regulation Difficulties and Depressive and Anxiety Symptoms Over Time

### *Preliminary Analyses*

The Pearson's bivariate correlation coefficients between sociodemographic, clinical and infant's related variables and depression and anxiety symptoms and emotion regulation difficulties in the three assessment moments are presented in Table 4.

According to the results, the significant associations between sociodemographic, clinical and infant's related variables and the study variables were scarce and, when present, showed, predominantly, a low magnitude. Specifically, the mother's age showed low and positive correlations with depressive and anxiety symptoms (M2 - 5/6 months postpartum), suggesting that older mothers presented more depression and anxiety symptoms. The income showed low and negative correlations with anxiety symptoms (M1 - 3/4 months postpartum), depressive symptoms (M2 - 5/6 months postpartum) and emotion regulation difficulties (M2 - 5/6 months postpartum; M3 - 9/11 months postpartum), with higher incomes being associated to less symptomatology and less emotion regulation difficulties. The number of children correlated low and positively with emotion regulation difficulties (M2 - 5/6 months postpartum), being a greater number of children associated to more emotion regulation difficulties in this period. Psychiatric/psychological problems in the past showed low and positive correlations with depression and anxiety symptoms (M1 - 3/4 months postpartum; M2 - 5/6 months postpartum), as well as with emotion regulation difficulties in M2 (5/6 months postpartum). On the other hand, psychiatric/psychological problems in the past correlated moderately and positively with emotion

regulation difficulties in M1 (3/4 months postpartum). Thus, the presence of psychiatric/psychological problems in the past associated with higher anxiety and depression symptoms and more emotion regulation difficulties.

**Table 4**

*Pearson's Correlations Between Depressive, Anxiety Symptoms and Emotion Regulation Difficulties Over the Three Assessment Moments With the Sociodemographic, Clinical and Infant's Related Variables*

| | M1_DEP | M1_ANX | M1_ERD | M2_DEP | M2_ANX | M2_ERD | M3_DEP | M3_ANX | M3_ERD |
|---|---|---|---|---|---|---|---|---|---|
| Age | .12 | .12 | .07 | **.16*** | **.17*** | .07 | .13 | .15 | .04 |
| Marital status | .01 | -.02 | -.02 | -.00 | -.04 | .09 | .04 | .00 | .03 |
| Education level | -.10 | -.08 | -.05 | -.13 | -.02 | -.13 | .01 | -.00 | -.12 |
| Monthly income | -.14 | **-.20*** | -.08 | **-.16*** | -.15 | **-.18*** | -.11 | -.10 | **-.23**** |
| Residence | .01 | -.05 | -.06 | .03 | -.03 | -.00 | .00 | -.07 | -.07 |
| Number of children | .07 | .13 | .07 | .09 | .11 | **.18*** | -.02 | .09 | .02 |

| | M1_DEP | M1_ANX | M1_ERD | M2_DEP | M2_ANX | M2_ERD | M3_DEP | M3_ANX | M3_ERD |
|---|---|---|---|---|---|---|---|---|---|
| Previous history of psychiatric/ Psychological problems | **.24**** | **.29***** | **.32***** | **.19*** | **.18*** | **.29**** | .12 | .16 | .15 |
| Psychiatric/ Psychological treatment in the past | -.03 | .05 | .16 | .05 | -.02 | .02 | .01 | .03 | .03 |
| Psychiatric/ Psychological treatment at present | .07 | .14 | .11 | .07 | .06 | .13 | .06 | .07 | .13 |
| Infant's gender | -.01 | -.02 | .08 | .00 | .06 | .05 | -.03 | .02 | .05 |

*Note.* M1_DEP: Depressive symptoms at M1 (3/4 months postpartum); M1_ANX: Anxiety symptoms at M1 (3/4 months postpartum); M1_ERD: Emotion regulation difficulties at M1 (3/4 months postpartum); M2_DEP: Depressive symptoms at M2 (5/6 months postpartum); M2_ANX: Anxiety symptoms at M2 (5/6 months postpartum); M2_ERD: Emotion regulation difficulties at M2 (5/6 months postpartum); M3_DEP: Depressive symptoms at M3 (9/11 months postpartum); M3_ANX: Anxiety symptoms at M3 (9/11 months postpartum); M3_ERD: Emotion regulation difficulties at M3 (9/11 months postpartum). Marital status (1 = married or cohabiting, 0 = single); Residence (1 = rural, 0 = urban); Previous history of psychiatric/psychological problems (1 = yes, 0 = no); Psychiatric/psychological treatment in the past (1 = yes, 0 = no); Psychiatric/ psychological treatment at present (1 = yes, 0 = no); Infant's gender (1 = male, 0 = female and twins). Significant correlations are bold highlighted.
* $p < .05$. ** $p < .01$. *** $p < .001$

Table 5 shows Pearson's bivariate correlation coefficients between depression symptoms, anxiety symptoms and emotion regulation difficulties over the three assessment moments. All the correlations were significant, yet some high and positive correlations stood out among the variables of the study. Specifically, more depression symptoms were associated to more anxiety symptoms in the three assessment moments. Equally, over the three assessment moments, higher depression or anxiety symptoms at each moment predicted an increase of the respective symptoms in the next assessment moment.

**Table 5**

*Pearson's Correlations Between Depressive, Anxiety Symptoms and Emotion Regulation Difficulties Over the Three Assessment Moments*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|---|---|---|---|---|---|---|---|---|---|
| 1.M1_DEP | - | | | | | | | | |
| 2.M1_ANX | .71*** | - | | | | | | | |
| 3.M1_ERD | .55*** | .47*** | - | | | | | | |
| 4.M2_DEP | .71*** | .52*** | .40*** | - | | | | | |
| 5.M2_ANX | .63*** | .64*** | .44*** | .74*** | - | | | | |
| 6.M2_ERD | .51*** | .43*** | .65*** | .62*** | .63*** | - | | | |
| 7. M3_DEP | .58*** | .45*** | .33*** | .75*** | .67*** | .50*** | - | | |
| 8.M3_ANX | .55*** | .56*** | .39*** | .69*** | .77*** | .55*** | .85*** | - | |
| 9.M3_ERD | .47*** | .40*** | .56*** | .59*** | .58*** | .68*** | .68*** | .67*** | - |

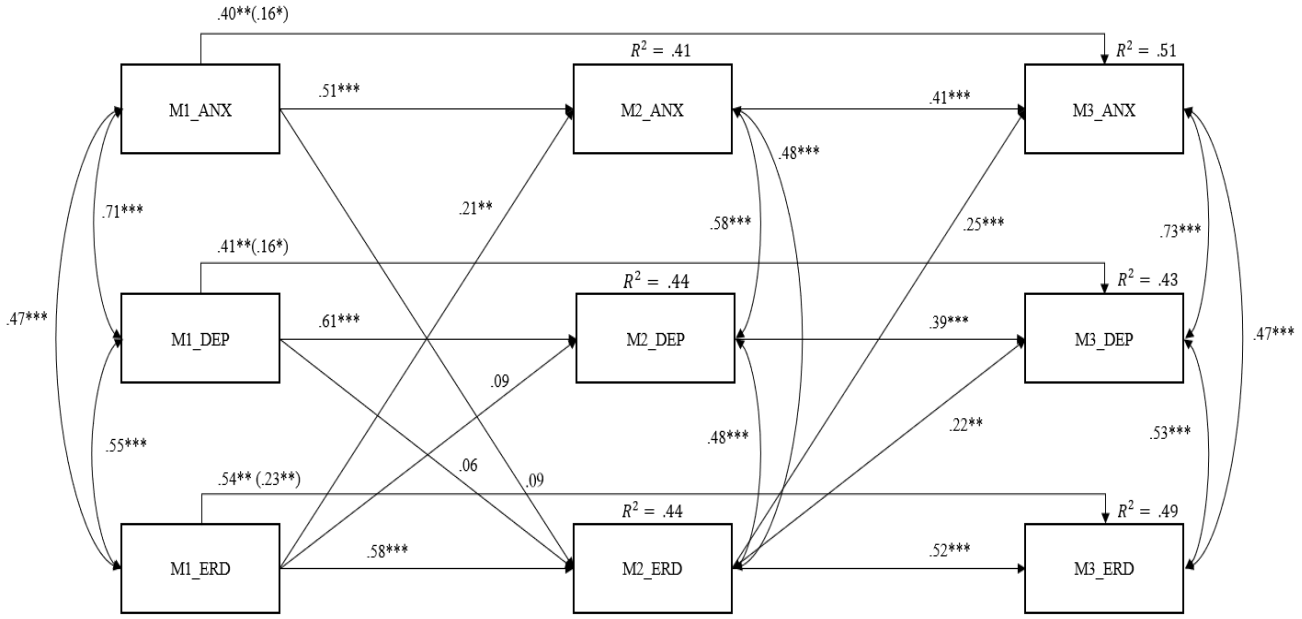
*Note.* M1_DEP: Depressive symptoms at M1 (3/4 months of postpartum); M1_ANX: Anxiety symptoms at M1 (3/4 months of postpartum); M1_ERD: Emotion regulation difficulties at M1 (3/4 months of postpartum); M2_DEP: Depressive symptoms at M2 (5/6 months of postpartum); M2_ANX: Anxiety symptoms at M2 (5/6 months of postpartum); M2_ERD: Emotion regulation difficulties at M2 (5/6 months of postpartum); M3_DEP: Depressive symptoms at M3 (9/11 months of postpartum); M3_ANX: Anxiety symptoms at M3 (9/11 months of postpartum); M3_ERD: Emotion regulation difficulties at M3 (9/11 months of postpartum).
* $p < .05$. ** $p < .01$. *** $p < .001$.

***Association Between Depressive, Anxiety Symptoms and Emotion Regulation Difficulties Over Time***

Figure 4 shows the path analysis model including depression and anxiety symptoms and emotion regulation difficulties over the three assessment moments. The path model showed an acceptable adjustment to data ($\chi^2_{(12)} = 49.13$, $p < .001$; CFI = .97; SRMR = .08).

**Figure 4**

*Path Analysis Model of Depressive, Anxiety Symptoms and Emotion Regulation Difficulties Over the Three Assessment Moments*




*Note.* M1_ANX: Anxiety symptoms at M1 (3/4 months postpartum); M2_ANX: Anxiety symptoms at M2 (5/6 months postpartum); M3_ANX: Anxiety symptoms at M3 (9/11 months postpartum); M1_DEP: Depressive symptoms at M1 (3/4 months postpartum), M2_DEP: Depressive symptoms at M2 (5/6 months postpartum); M3_DEP: Depressive symptoms at M3 (9/11 months postpartum); M1_ERD: Emotion regulation difficulties at M1 (3/4 months of postpartum); M2_ERD: Emotion regulation difficulties at M2 (5/6 months postpartum); M3_ERD: Emotion regulation difficulties at M3 (9/11 months postpartum). The values that are represented in the lines correspond to the standardized values. Out of brackets are represented the total effects and in brackets are the direct effects.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6 represents the path coefficients of the relationship between the study variables over time. In general, the study's variables in M1 (3/4 months postpartum) were high predictors of the corresponding variables in M2 (5/6 months postpartum), being the increase of the variables in M1 (3/4 months postpartum) associated to its increase in M2 (5/6 months postpartum). Similarly, the variables in M2 (5/6 months postpartum) were moderate to high predictors of the

corresponding variables in M3 (9/11 months postpartum), being the increase in M2 (5/6 months postpartum) associated to an increase in M3 (9/11 months postpartum). Despite the effects of the study's variables at M1 (3/4 months postpartum) in the corresponding variables in M3 (9/11 months postpartum) were significant, its intensity was small, being an increase in M1 (3/4 months postpartum) associated to an increased in M3 (9/11 months postpartum). Furthermore, emotion regulation difficulties in M1 (3/4 months postpartum) associated significantly with anxiety symptoms but not with depression symptoms in M2 (5/6 months postpartum). However, emotion regulation difficulties in M2 (5/6 months postpartum) was associated to anxiety and depression symptoms in M3 (9/11 months postpartum). Therefore, more emotion regulation difficulties in M1 (3/4 months postpartum) and M2 (5/6 months postpartum) were associated to more anxiety symptoms in M2 (5/6 months postpartum) and M3 (9/11 months postpartum) and more depressive symptoms in M3 (9/11 months postpartum).

**Table 6**

*Relation Between Depressive, Anxiety Symptoms and Emotion Regulation Difficulties Over the Three Assessment Moments*

| | Standardized coefficients (β) | *p* |
|---|---|---|
| M1_ANX -> M2_ANX | .51 | < .001 |
| M1_DEP -> M2_DEP | .61 | < .001 |
| M1_ERD -> M2_ERD | .58 | < .001 |
| M1_ANX -> M2_ ERD | .09 | .259 |
| M1_DEP -> M2_ERD | .06 | .462 |
| M1_ERD -> M2_ANX | .21 | .003 |
| M1_ERD -> M2_DEP | .09 | .203 |
| M2_ANX -> M3_ANX | .41 | < .001 |
| M1_ANX -> M3_ANX | .16 | .003 |
| M2_DEP -> M3_DEP | .39 | < .001 |

| | Standardized coefficients (β) | *p* |
|---|---|---|
| M1_DEP -> M3_DEP | .16 | .005 |
| M2_ERD -> M3_ERD | .52 | < .001 |
| M1_ERD -> M3_ERD | .23 | < .001 |
| M2_ERD -> M3_ANX | .25 | < .001 |
| M2_ERD -> M3_DEP | .22 | .002 |

*Note.* M1_DEP: Depressive symptoms at M1 (3/4 months postpartum); M1_ANX: Anxiety symptoms at M1 (3/4 months postpartum); M1_ERD: Emotion regulation difficulties at M1 (3/4 months postpartum); M2_DEP: Depressive symptoms at M2 (5/6 months postpartum); M2_ANX: Anxiety symptoms at M2 (5/6 months postpartum); M2_ERD: Emotion regulation difficulties at M2 (5/6 months postpartum); M3_DEP: Depressive symptoms at M3 (9/11 months postpartum); M3_ANX: Anxiety symptoms at M3 (9/11 months postpartum); M3_ERD: Emotion regulation difficulties at M3 (9/11 months postpartum).

Table 7 shows the correlations between depression, anxiety symptoms and emotion regulation difficulties at each assessment moment. The results showed that all correlations were significant, positive, and moderate to strong. Therefore, in each of the three assessment moments were detected strong associations between depression and anxiety symptoms, being more depression symptoms associated to more anxiety symptoms. In addition, in each of the assessment moments, moderate to strong associations between emotion regulation difficulties and depression and anxiety symptoms were found, being more difficulties associated to more symptoms.

**Table 7**

*Correlations Between Depressive, Anxiety Symptoms and Emotion Regulation Difficulties at Each Assessment Moment*

| | Standardized coefficients (*r*) | *p* |
|---|---|---|
| M1_DEP < - > M1_ANX | .71 | < .001 |
| M1_ERD < - > M1_DEP | .55 | < .001 |
| M1_ERD < - > M1_ANX | .47 | < .001 |
| M2_DEP < - > M2_ANX | .58 | < .001 |

| | Standardized coefficients (*r*) | *p* |
|---|---|---|
| M2_ERD < - > M2_DEP | .48 | < .001 |
| M2_ERD < - > M2_ANX | .48 | < .001 |
| M3_DEP < - > M3_ANX | .73 | < .001 |
| M3_ERD < - > M3_DEP | .53 | < .001 |
| M3_ERD < - > M3_ANX | .47 | < .001 |

*Note.* M1_DEP: Depressive symptoms at M1 (3/4 months postpartum); M1_ANX: Anxiety symptoms at M1 (3/4 months postpartum); M1_ERD: Emotion regulation difficulties at M1 (3/4 months postpartum); M2_DEP: Depressive symptoms at M2 (5/6 months postpartum); M2_ANX: Anxiety symptoms at M2 (5/6 months postpartum); M2_ERD: Emotion regulation difficulties at M2 (5/6 months postpartum); M3_DEP: Depressive symptoms at M3 (9/11 months postpartum); M3_ANX: Anxiety symptoms at M3 (9/11 months postpartum); M3_ERD: Emotion regulation difficulties at M3 (9/11 months postpartum).

**Characterization of the Potential Mediator Role of Emotion Regulation Difficulties Between Early-Onset Depressive, Anxiety Symptoms and Depressive, Anxiety Symptoms at 9/11 Months Postpartum**

As depicted in Figure 4, the total and direct effects of anxiety symptoms at 3/4 months postpartum (M1) in anxiety symptoms at 9/11 months postpartum (M3) were significant, suggesting that higher levels of anxiety symptoms in the early postpartum period (3/4 months postpartum) were associated to higher levels of anxiety symptoms almost a year of postpartum (9/11 months postpartum). In the relation between these two variables an indirect effect was found (*B* = .24, 95% CI [.16, .35]), and this occurred through anxiety symptoms at M2 (5/6 months postpartum; *B* = .23, 95% CI [.17, .35]), but not through emotion regulation difficulties at M2 (5/6 months postpartum; *B* = .02, 95% CI [-.02, .10]). Thus, it was found that higher levels of anxiety symptoms in M1 (3/4 months postpartum) led to higher levels of this symptomatology in M2 (5/6 months postpartum) and, by its turn, led to higher levels of anxiety symptoms in M3 (9/11 months postpartum).

In addition, it was found that the total and direct effects of depression symptoms at 3/4 months postpartum (M1) in depression symptoms at 9/11 months postpartum (M3) were significant. So, higher levels of depression symptoms in the early postpartum period (3/4 months postpartum) were associated to higher levels of depression symptoms almost a year of postpartum (9/11 months postpartum). Besides that, it was confirmed an indirect effect in the relation of these two variables (*B* = .25, 95% CI [.16, .38]). This indirect effect occurred through depression symptoms at M2 (5/6 months postpartum; *B* = .24, 95% CI [.16, .37]), but not through emotion regulation difficulties at M2 (5/6 months postpartum; *B* = .01, 95% CI [-.04, .07]). Thus, it was

verified that higher levels of depression symptoms in M1 (3/4 months postpartum) conducted to higher levels of depression symptoms at M2 (5/6 months postpartum) and, consequently, to higher levels of depression symptoms at M3 (9/11 months postpartum).

## Discussion

The present study is pioneering in the characterization of the evolution of depressive and anxious symptoms over the postpartum period among women presenting high-risk for PPD, as well as in the study of the role of emotion regulation difficulties in the evolution of these symptoms. The main findings of this study were: 1) depressive symptoms reduced significantly from 3/4 months postpartum (M1) to 5/6 months postpartum (M2) and remained stable at 9/11 months postpartum (M3), in contrast to anxiety symptoms, in which no significant changes were verified over the three assessment moments; 2) more than half of the mothers showed clinically relevant depressive symptomatology over the three assessment moments, thus, the percentage of mothers with clinically relevant depressive symptoms was higher than the mothers with clinically relevant anxiety symptoms; 3) approximately 30% of mothers showed comorbidity between depressive and anxious symptoms, with the majority of mothers with anxiety symptoms presenting comorbidity with depression symptoms over time; 4) the average values of emotion regulation difficulties reduced over time; and 5) emotion regulation difficulties at 5/6 months postpartum (M2) were not found to mediate the relationship between early-onset depressive and anxious symptomatology (3/4 months postpartum [M1]) and the corresponding symptoms at 9/11 months postpartum (M3), despite being found significant associations between emotion regulation difficulties and depression and anxiety symptoms in each assessment moment.

### Depressive and Anxiety Symptoms: Clinical Evolution

#### *Depressive Symptoms*

The results of this study highlight that the average values of depressive symptomatology changed over time, significantly reducing from the beginning of postpartum period (3/4 months postpartum) until 5/6 months postpartum, with no significant changes being found at 9/11 months postpartum. Our results are consistent with the results of Whisman et al. (2011), as these indicated a reduction of depression symptoms between 3 and 6 months postpartum in a group of mothers presenting risk for PPD. Despite our results being partially congruent with the results of Eberhard-Gran et al. (2004), as these indicated a reduction of depression symptoms between 4 and 8 months postpartum, the authors also found a subsequent increase of these symptomatology at 9/12 months postpartum, which was not found in our study. Furthermore, the results of our study are not congruent with the results found in other studies (Canário & Figueiredo, 2017; Haga et al., 2012), which found different patterns of evolution of symptoms over time. However, these inconsistent results may be due to the different characteristics of the sample, as these studies comprise mothers from the general population and not only mothers presenting high-risk for PPD. Moreover, when comparing the average levels of depressive symptoms presented by mothers in

the current study and the values of the above-mentioned studies, the mothers presenting high-risk for PPD seem to show average values of depression symptoms higher than the average values experienced by mothers of the general population, even when these increase over time. Thereby, it is possible to hypothesize that mothers at risk for PPD show higher severity of depressive symptoms over the postpartum period.

The reduction of average values of the depression symptoms from 3/4 months postpartum to 5/6 months postpartum found in the current study may reflect a gradual increase of mothers' perceived self-efficacy over time, as women may feel more familiarized with the maternal role and tasks. Some studies emphasize that the increase of maternal self-efficacy is related to the reduction of depression symptoms over the postpartum period (Haslam et al., 2006; Law et al., 2019). This association may occur due to the role of maternal self-efficacy in promoting the mothers' perceived control and trust, and in developing more adaptative coping strategies and positive affection (Haslam et al., 2006). Therefore, it is possible that an increase in mother's self-efficacy may act as a protective factor by reducing the impact of risk over time and contributing to reduce the levels of depressive symptoms among high-risk women. This hypothesis should be further explored.

Nevertheless, it must be noted that despite the evident reduction of average values of depression symptoms over time, more than half of mothers continued to present clinically relevant depressive symptoms at the three assessment points. These results show higher percentages than the ones found in other studies (Adewuya & Afolabi, 2005; Gaynes et al., 2005; Marques et al., 2018; Sato et al., 2008), but these inconsistencies may be due to methodological differences. Of these differences, the type of sample stands out, as the above-mentioned studies integrate mothers of general population, i.e., mothers presenting different levels of risk for PPD (high vs. low risk). These data suggest that the presence of risk factors seem to acquire a pervasive effect, as they contribute to increase mothers' vulnerability to experience postpartum depression symptoms (Robertson et al., 2004), thus highlighting the importance of the clinical monitoring of mothers at-risk for PPD.

In addition, the results of the current study exhibit that most mothers showed a trajectory characterized by the presence of clinically relevant depressive symptoms both at the beginning of postpartum period and at 9/11 months postpartum (45.5%). Therefore, in a group of mothers at-risk for PPD, there is a considerable number of mothers with clinically relevant symptomatology, even almost one year after birth. Congruently, there was a lower percentage of mothers who showed a symptomatic improvement (decrease of symptoms) during the postpartum period (19.9%). The pattern of results found in our study is congruent with some other studies exploring the trajectories of symptoms over time (Ahmed et al., 2019; McMahon et al., 2005), although being inconsistent with the results found in other studies (Cents et al., 2013; Jacques et al., 2020;

Kingston et al., 2018), in which the maintenance of clinically relevant depressive symptoms was not the most frequent trajectory. However, these inconsistent findings may be suggestive of the diverse trajectories that depression symptoms may adopt over time (Nandi et al., 2009), as a function of the presence of different risk factors in the sample under discussion (Cents et al., 2013; Jacques et al., 2020).

Specifically, research has emphasized the existence of some factors that can contribute to the maintenance of depressive symptoms over time (Barnum et al., 2013; McMahon et al., 2005). According to McMahon et al. (2005), mothers who underwent adverse experiences in childhood, who have interpersonal difficulties (e.g., marital relationship difficulties) and that show maladaptive cognitive styles, are more prone to report a trajectory characterized by the maintenance of depression symptoms between 4 and 12 months of postpartum. Some of these factors represent risk factors to PPD argued by literature (e.g., Beck, 2001; Fonseca & Canavarro, 2019; Fonseca et al., 2018; Milgrom et al., 2008; O'Hara & Swain, 1996; Robertson et al., 2004), and may not only arise as vulnerabilities that contribute to explain the etiology of PPD, but also as maintenance factors of depression symptoms over time. These hypotheses should be further explored.

***Anxiety Symptoms and its Comorbidity With Depressive Symptoms***

The results of the current study show that there were no significant differences in the average values of anxiety symptoms in mothers presenting risk for PPD, over the postpartum period. These results are configured as unexpected, as prior studies showed that anxiety symptoms vary or diminish over time (Canário & Figueiredo, 2017; van Bussel et al., 2009; Vismara et al., 2016; Whisman et al., 2011). However, the stability of average values of anxiety symptoms found in our study may be a result of the changes and normative demands of postpartum period. Nowadays, mothers have to be able to balance family, occupation and education, many times, without the help of other family members or the community (Taubman-Ben-Ari et al., 2009). High expectations that are imposed in different areas of their lives demand that these mothers act competently in all of them, becoming an ideal way to increase stress (Taubman-Ben-Ari et al., 2009). Additionally, motherhood is by itself very demanding, being full of tasks and requirements (e.g., permanent care of the infant, tiredness, sleep deprivation, return to work; Carvalho et al., 2017; O'Hara, 2009; Rapoport & Piccinini 2011; Schwengber & Piccinini, 2005) that may contribute to the maintenance of anxiety symptoms over time.

Moreover, in the current sample, the percentage of mothers with clinically relevant anxious symptomatology was lower than the percentage of mothers who experienced clinically relevant depressive symptoms. These results are expected, as the current sample is formed by mothers presenting risk for PPD and not by mothers that are specifically at-risk for Postpartum

Anxiety. Literature suggests that despite some communalities found in risk factors for PPD and Postpartum Anxiety, there are some risk factors more specific for each of these clinical conditions (e.g., infant's temperament for PPD and parity for Postpartum Anxiety; Beck, 2001; Field, 2018; Martini et al., 2015). In addition, the differences found in the proportion of mothers presenting clinically relevant depressive and anxiety symptoms may also be related with the specific nature of dysfunctional beliefs present in those mothers, which may also constitute a vulnerability for the development of psychopathology in the postpartum period (Fonseca et al., 2018; Wenzel, 2015). As the current sample comprises mothers at-risk for PPD, it is possible that they present cognitive vulnerabilities (i.e., dysfunctional beliefs) more related to themes of failure and loss (e.g., "I am a failure"), and consequently related to depressive symptoms, than to themes of danger and uncontrollability (e.g., "The world is dangerous"), which are more associated to anxiety symptoms (Wenzel, 2015). This hypothesis should be further investigated.

Furthermore, the results of the current study denote that a proportion of women at-risk for PPD showed clinically relevant anxiety symptoms both at 3/4 months postpartum and 9/11 months postpartum (17.3%), although the presence of non-clinical symptoms of anxiety in that period appeared as the most common (57.7%). In an even lower value, there were mothers that showed a deterioration (increase of symptoms) by the end of postpartum period (12.8%). These results are congruent with other studies showing a higher percentage of mothers that do not reveal clinically relevant anxiety symptoms in the course of postpartum period (Ahmed et al., 2019; Don et al., 2014). The data of our study highlight that despite most mothers do not display clinically relevant symptoms over time, it is important to pay attention to those mothers that present this symptomatology over time and to the ones that only reveal it almost one year after birth. The existence of mothers with this pattern highlights the need of a constant clinical evaluation of both depression and anxiety symptoms during the postpartum period.

In addiction, the current study reveals that about 30% of mothers showed comorbidity between anxiety and depression symptoms, reinforcing the premise that these symptomatologies are considerably related with one another. This close relation between the mentioned symptomatology is not only evident in the current study, but in other studies (Falah-Hassani et al., 2016; Farr et al., 2014; Marques et al., 2018; O'Hara, 2009; Reck et al., 2008). This comorbidity may be explained by the presence of certain risk factors (Falah-Hassani et al., 2016), as mothers with previous vulnerabilities (as the women of the current sample) that exhibit less internal resources (e.g., maternal vulnerable personality; Falah-Hassani et al., 2016) to deal with motherhood-related challenges tend to recognize the transition to motherhood as a high cost psychological event (Taubman-Ben-Ari et al., 2009). These data suggest that the presence of vulnerability factors may predispose some women both to anxiety and to depression symptoms. This premise is congruent with our results, as the percentage of comorbidity found in the current

study is considerably higher than other studies that comprised mothers of general population (e.g., Falah-Hassani et al., 2016; Farr et al., 2014; Marques et al., 2018). This information suggests that mothers at-risk for PPD show higher probability to experience comorbid symptoms, in comparison to mothers of the general population. Our results are congruent with the results found by Hendrick et al. (2000), as these authors emphasized that the co-occurrence of anxiety symptoms is more common in mothers that experience PPD, in comparison to mothers without this clinical condition.

**Emotion Regulation Difficulties**

The results of our study show that the average levels of emotion regulation difficulties in mothers at-risk for PPD diminished over time, especially between 3/4 months postpartum and 5/6 months postpartum, remaining unmodified over the last period until 9/11 months postpartum. These data are congruent with the results found by Fonseca et al. (2019), as these showed a reduction in average values of emotion regulation difficulties over time, in a sample of mothers at-risk for PPD that was not submitted to intervention.

It is known that for an individual to have adaptive emotion regulation skills, he/she needs to be not only aware and understand their emotional states, but also to use flexible strategies to deal with the environmental demands (Gratz & Roemer, 2004). Thus, the reduction of emotion regulation difficulties of mothers in the current sample may mirror their acquisition of emotion regulation competences. During the postpartum period, mothers tend to look for social support, namely by other family members and peers that have experienced motherhood (Darvill et al., 2010; Negron et al., 2013). Furthermore, currently, there is a demand for support groups formed by other mothers (Darvill et al., 2010; Negron et al., 2013), through, for example, social networks. It is possible to hypothesize that, over time, mothers can seek validation and normalization of their difficulties, negative experiences and emotions related to motherhood (Darvill et al., 2010; Grassley & Eschiti, 2008; Negron et al., 2013), which may help them to develop a different attribution of meaning for their negative emotions, understanding them as something normative to the motherhood experience (Fonseca et al., 2019). Consequently, this emotional significance may contribute to an increase in emotion's clarity and awareness, as well as to the acceptance of negative emotions, contributing to more adaptative emotion regulation skills (Fonseca et al., 2019). However, it should be noted that despite the decrease in emotion regulation difficulties from the early postpartum to 5/6 months postpartum, the average value of these difficulties remained high over time in the current sample.

In addition, the results of the current study indicate that emotion regulation difficulties at 5/6 months postpartum did not serve as mediators of the relationship between early-onset depression and anxiety symptoms and the correspondent symptoms at 9/11 months postpartum,

when the effects of depressive and anxious symptoms were controlled at 5/6 months postpartum. According to our knowledge, there are scarce longitudinal studies in the postpartum period that analyze the mediator role of emotion regulation difficulties in depression and/or anxiety symptoms. However, our results are congruent with the ones found by Haga et al. (2012), which showed that the use of different emotion regulation strategies did not predict changes in depressive symptoms over time. As referred, in the current study, the average values of emotional regulation difficulties diminished over time, which may mean that mothers have developed more emotion regulation competences. This competences' acquisition may have interfered in the mediator role of emotion regulation difficulties over time, contributing to its non-significant influence in symptoms in the long term. This hypothesis should be further explored.

Despite the non-significant mediator effect of emotion regulation difficulties over time, the results of the current study suggest that emotion regulation difficulties may influence the mentioned symptomatology in the short-term, as they were significantly associated to depressive and anxiety symptoms each assessment moment. The concurrent relation between more emotion regulation difficulties and higher depression and anxiety symptoms has been previously proved in literature (Fonseca et al., 2018, 2019; Haga et al., 2012; Marques et al., 2018). Some studies have been examining the underlying mechanisms explaining this relationship (e.g., Campbell-Sills et al., 2006; Gross & John, 2003), highlighting that the use of less adaptative emotion regulation strategies leads to certain consequences (e.g., experience of more negative emotions, less satisfaction with life, less optimism, self-esteem and well-being; Gross & John, 2003) favorable to the development and maintenance of depressive and anxious disorders (Campbell-Sills et al., 2006). Moreover, it is noted that some essential features of these disorders as, for example, behavioural avoidance, may be understood as non-adaptative emotional regulation strategies (Campbell-Sills & Barlow, 2007). Thus, these premises support the existence of a close relation between emotion regulation difficulties and anxious and depressive symptoms.

In sum, these results highlight the need of clinical monitoring for mothers presenting risk for PPD, not only because these mothers show difficulties in dealing with negative emotions, but also because emotion regulation difficulties seem to play an important role in the occurrence of depressive and anxious symptoms.

**Limitations of the Study**

Despite the innovative contributes of the current study, some limitations should be acknowledged and considered when interpreting the results.

First, the participant's drop-out of the study, which is characteristic of longitudinal studies, was high. Nevertheless, we must remark that there are no significant differences in terms of sociodemographic, clinical and infant's related variables, between mothers that concluded the

study and those who dropped out. Therefore, the final sample may be globally considered representative of the initial study sample.

Secondly, the self-selected nature of the sample (as women were recruited online and the ones who answered the survey may be the ones who revealed more interest and willingness to share information about the topic) may have compromised its representativeness. Moreover, the characteristics of the present sample may not be representative of the whole postpartum population, as most mothers who participated in the study are married/co-habiting, highly educated, employed and live in an urban area.

Afterwards, the use of self-response instruments may be configured as an additional study limitation, as this does not allow the establishment of a clinical diagnosis (i.e., depressive and/or anxiety disorder). In order to circumvent this problem, a clinical interview should have been made. Despite that, the results of the current study are important, as they provide us preliminary information about the evolution of depressive and anxious symptoms over the postpartum period, and about the associations between emotion regulation difficulties and this symptomatology.

Lastly, the women's level of risk for PPD was identified through a self-report questionnaire (PDPI-R), which not evaluate all the risk factors previously identified in the literature (e.g., higher perfectionism; Milgrom et al., 2008). In addition, the use of the Anxiety subscale of HADS to evaluate postpartum period's anxiety may be considered as a limitation of the current study, as this instrument evaluates anxiety symptoms in general (i.e., it is not exclusively targeted to postpartum period). Nevertheless, the use of the last-mentioned instrument mirrors the lack of assessment instruments validated to Portuguese population that are targeted to anxiety assessment in postpartum period.

**Implications for Clinical Practice**

The findings of the current study highlight some implications for clinical practice. First, the findings from this study support the need of specialized clinical attention targeting mothers who present high risk for PPD. These mothers may need a closer monitoring, in comparison with mothers presenting low risk for this clinical condition. As shown in the current study, mothers with high risk for PPD show greater chance of having emotional disorders, as well as more complex clinical cases (ruled by higher severity levels, higher chronicity and comorbidity), leading to the presence of diverse consequences to the whole family system (Fonseca & Canavarro, 2017; Riecher-Rössler & Hofecker, 2003). In order to ease this specialized monitoring since the beginning of the pregnancy, it is important to train health providers that make the first contact with these mothers (e.g., family doctors, gynecologists). Thus, these professionals should become able to accomplish an initial assessment of their patient's risk to PPD, and to refer

mothers at high-risk for PPD for further psychological assessment and for preventive interventions, aiming to reduce the impact of risk in mothers' adjustment.

In addition, the current study suggests that psychological assessment and interventions should not only focus on depression symptoms but also on postpartum anxiety symptoms. Although it is not as far investigated as depressive symptoms (Dennis et al., 2017; Falah-Hassani et al., 2016), it is important to not neglected anxiety symptoms. Additionally, our study shows that, in clinical practice, it is essential to take into consideration the high comorbidity between depression and anxiety symptoms in mothers at-risk for PPD. Comorbid symptoms entail a set of negative consequences (Cyranowski et al., 2012; Sherbourne & Wells, 1997; Tavares et al., 2012), affecting diverse areas of the individual's life (Ansseau et al., 2008), highlighting the need to not neglect this comorbidity.

Lastly, we highlight the important role of emotion regulation difficulties that, despite not acting as mediators of the relationship between depression and anxiety symptoms over time, were significantly associated with the presence of anxiety and depression symptoms at each assessment moment. With this premise, we identify the need of intervention in these difficulties, as the promotion of emotion regulation abilities was found to be related to the reduction of depression and anxiety symptoms (Fonseca et al., 2019; Haga et al., 2012). In fact, as emotion regulation difficulties are related to both depression and anxiety symptoms, they can be hypothesized as a transdiagnostic mechanism (McLaughlin & Nolen-Hoeksema, 2011) that explains the occurrence of such symptoms in women presenting risk for PPD. Therefore, intervention protocols using a transdiagnostic approach may be an adequate approach for women at-risk for PPD and/or presenting clinically relevant postpartum anxiety and depressive symptoms, as these advocate that emotion regulation difficulties are common to every emotional disorders (Osma et al., 2015). The main goal of this type of intervention is to help individuals to deal with their emotions more adaptatively, promoting higher tolerance to them through emotion regulation difficulties identification and modification (Osma et al., 2015). Moreover, transdiagnostic interventions have been showing promising results, ruled by emotion regulation difficulties reduction, efficacy in internalizing disorders and comorbid symptoms, reduction of functional disability and higher quality of life (Sakiris & Berle, 2019; Steele et al., 2018).

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