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Immediate Postpartum Mood Assessment and Postpartum Depressive Symptoms

Michelle L. Miller^{*,1}, Emily B. Kroska^{*,1}, and Rebecca Grekin¹

¹University of Iowa

Abstract

Background—Negative affect (NA) and positive affect (PA) in the early postpartum period have been associated with postpartum depressive symptoms, but the exact relationship is not well understood. This study aimed to determine if NA and PA in the immediate postpartum period predicted postpartum depressive symptoms over and above well-established predictors (previous trauma, history of depression).

Methods—Participants were prospectively recruited from a Mother-Baby Unit at a large Midwestern academic medical center in the United States from April 2011 to April 2014. Participants ($N = 526$) completed the Daily Experiences Questionnaire (DEQ), a self-report measure which assessed NA and PA, within three days post-delivery. Participants then reported their depressive symptoms at two weeks ($n = 364$) and twelve weeks postpartum ($n = 271$).

Results—Hierarchical regression analyses indicated that *low PA* and *high NA* after birth significantly predicted depressive symptoms early (at 2 weeks) and later (at 12 weeks) in the postpartum period, over and above previous traumatic experiences and history of depression.

Limitations—The sample was relatively homogenous, and data were from self-report instruments.

Conclusions—The current study found NA and PA in the days immediately after birth predicted depressive symptoms at multiple time points in the postpartum period. Because the perinatal period places women at a higher risk for depressive symptomatology, prevention and early intervention are critical. Measuring affect in hospitals immediately after birth may provide a more normalized set of items that is predictive of later depression, which will allow physicians to identify those at highest risk for developing depressive symptoms.

Keywords

Negative and Positive Affect; Immediate Postpartum Mood; Birth; Trauma; Women's Mental Health

Corresponding Author Information: Michelle Miller, (317) 409-2658, michelle-miller-2@uiowa.edu, E 11 Seashore Hall, University of Iowa, Iowa City, IA 52242.

* indicates joint first-authorship

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Postpartum depression can have far-reaching negative consequences for a woman, her child, and the entire family (Wisner et al., 2010). Postpartum depression is defined as a depressive episode without psychosis that begins in the postpartum period or continues on from pregnancy (O'Hara & Swain, 1996). Approximately one in five women experience depressive symptoms in pregnancy (Gavin et al., 2005) and a recent review estimated prevalence of postpartum depression to be between 13 and 19% (O'Hara & McCabe, 2013). Depressive symptoms in the postpartum period remain under-detected (Flynn et al., 2006) because many women do not seek help (McGarry et al., 2009). This is problematic because postpartum depressive symptoms are associated with marital problems (Letourneau et al., 2012), weakened social support networks (Feldman et al., 2009), later episodes of depression (Alpern & Lyons-Ruth, 1993), and long-term negative effects on children (Field, 2010).

Many women experience the "postpartum blues", a well-established phenomenon that has been characterized as a mild mood disruption that occurs within the first ten days post-delivery (Gonidakis et al., 2007; Hau & Levy, 2003; Harris et al., 1994; O'Keane, 2011). Symptoms of the postpartum blues usually include tearfulness, emotional lability, and fatigue, although temporary anxiety and confusion are also common (Newport et al., 2002). While the postpartum blues are transient (Harris et al., 1994), it is unknown if mood, specifically negative and positive affect, in the immediate postpartum (before the usual onset of the blues) could be considered a prodrome to the onset of postpartum depressive symptoms. The immediate postpartum period may represent a unique window of time to identify and assess those most at risk to develop a later depressive episode and needs to be better understood. The aims of the present report are to describe mood in the immediate postpartum period (delivery to three days postpartum) and its potential to predict later postpartum depressive symptoms.

There is a significant literature suggesting that high negative and low positive affect specifically are the foundation of mood and anxiety disorder symptoms (Brown et al., 1998; Crawford & Henry, 2004; Mineka et al., 1998; Watson et al., 1999). Negative affect typically includes depressed mood, insomnia, and poor concentration while low positive affect includes loss of interest or anhedonia (Clark & Watson, 1991; Watson, 2005). Multiple studies have found a significant relationship between high negative affect or low positive affect in the immediate postpartum and subsequent postpartum depression (Fossey et al., 1997; Watanabe et al., 2008; Buttner et al., 2015). Further, mood disturbances at three days postpartum are the best predictor of postpartum depression at six weeks postpartum (Lane et al., 1997), while mood disturbances within the first two weeks postpartum significantly predicted postpartum depression and anxiety disorders at twelve weeks postpartum (Reck et al., 2009). Negative and positive affect are an important component in understanding perinatal mood disorders although the exact relation is still understudied (Buttner et al., 2015; Pop et al., 2015).

It is important to determine if early negative affect and positive affect (measured on the maternity ward) predict depressive symptoms later in the postpartum period. Assessment in the earliest part of the postpartum period could allow health care providers to identify women who should be monitored closely throughout the postpartum period (US Preventive

Services Task Force, 2016). Assessment in the earliest part of the postpartum period has historically been limited by methodological concerns (e.g. small or unrepresentative samples, primarily retrospective reporting, or measures not designed for the postpartum period; Henshaw, 2003). However, an assessment measure that is based on descriptions of emotions reflective of negative and positive affect, rather than descriptions of depressive symptoms, administered immediately after delivery may be particularly acceptable to postpartum women (Leigh & Milgrom, 2007).

This study utilized prospective, longitudinal data from a non-clinical sample, measuring postpartum mood immediately after delivery and at two subsequent time points in the early postpartum period. This study aimed to determine if negative and positive affect in the immediate postpartum period predict depressive symptoms over and above well-established predictors of postpartum depressive symptoms, particularly previous traumatic experiences and recent history of depression. It was hypothesized that high levels of negative affect *and* low levels of positive affect would predict depressive symptoms at two *and* twelve weeks postpartum.

Method

Participants and Procedures

All procedures were approved by the University of Iowa Institutional Review Board. Participant data were aggregated from two studies on mood in the postpartum period that utilized the same measures. The first study examined posttraumatic stress disorder in the early postpartum period and its relation to maternal health behaviors and infant temperament at 12 weeks postpartum. The second study examined obsessive-compulsive symptoms in the early postpartum and its relation to depressive and trauma symptoms. Altogether, recruitment occurred from April 2011 to April 2014. Both studies used the same recruitment procedures.

The source population included women who had recently delivered and were admitted to the mother-baby unit at a large academic medical center in Iowa City, Iowa, USA. Researchers visited the mother-baby unit most days during the week and approached all postpartum women on the floor to inquire about eligibility for the studies. From this population, women were excluded if they were under 18 years of age, unable to read and speak English, on leave from incarceration, or giving their child up for adoption. Women who were eligible for the study were asked if they were interested in participating in a study regarding mood, thoughts, and feelings in the postpartum period and were given information regarding the procedures and aims of the studies. Women who expressed interest in the study were consented and began study procedures. Of note, women were included in the study regardless of birth complications, number of days spent on the mother-baby unit, and method of delivery. Therefore, the study population included any eligible, postpartum woman who wanted to participate in either of the studies described above. The target population, to which inferences based on presented results can be made, includes non-clinical, postpartum women with demographic characteristics similar to those found in the current study. Approximately 71.6% of participants reported demographic information (Table 1).

If a participant agreed to participate, a research team member immediately administered the Daily Experiences Questionnaire (DEQ). The date a mother completed the DEQ was noted to determine length of time between DEQ administration and delivery date. A determination of 0 days occurred when a mother completed the DEQ on the same day as her delivery. Subsequent calendar days determined length of time separating DEQ administration and delivery, regardless of time of day the DEQ was administered. We examined whether there were differences in positive and negative affect, as well as 2- and 12-week depressive symptoms, based on the number of days between when the DEQ was completed and childbirth. Between-group comparisons indicated that there were no differences in positive and negative affect ($p > .05$) or depressive symptoms at either time point ($p > .05$) based on when the DEQ was completed.

On average, the DEQ measure was completed 0.96 days post-delivery. Nearly every participant (99.4%) completed the DEQ measure within 3 days post-delivery. A small percentage of participants consented to participate in the study but left the hospital before the DEQ could be completed (0.58%); these participants retrospectively reported on their post-delivery experience with an electronic copy of the DEQ, and these participants were excluded from the current analyses. The DEQ was administered in the days immediately after birth in order to best approximate affect after birth. Although positive and negative affect have been shown to peak between three and six days postpartum (Buttner et al., 2012), the current study assessed participants between days zero to three after delivery. In this medical center, women remain in the mother-baby unit for two nights after vaginal delivery, and three nights after cesarean section, barring severe maternal or infant complications. Therefore, this presents a unique and important time to assess and make contact with women who may be at increased risk for mental health issues later in the postpartum period.

Across both studies, 1,211 women were approached to participate in either study. Of the participants approached, 47.5% ($n = 575$) agreed to participate; 92.3% ($n = 531$) of all participants who consented participated in the study (Figure 1).

Following consent, participants were contacted to complete a set of questionnaires at two and twelve weeks postpartum. Questionnaires assessed demographics and current psychopathology, specifically internalizing symptoms. Questionnaires also assessed history of depressive and anxiety symptoms and trauma history, which are potential risk factors for postpartum depressive symptoms (O'Hara & Swain, 1996; Grote et al., 2012). The majority of participants in the study (99.4%) completed the DEQ at baseline ($N = 528$), and 68.5% completed questionnaires at 2 weeks postpartum ($n = 345$), and 51% completed questionnaires at 12 weeks postpartum ($n = 261$). Study data were collected by either questionnaire packets sent through the mail or using REDCap electronic data capture tools, hosted at the University of Iowa (Harris et al., 2009). REDCap is a secure, web-based application designed for research, and support was provided by the Institute for Clinical and Translational Science.

Measures

Immediate postpartum mood—The Daily Experiences Questionnaire (DEQ; Buttner et al., 2012) is a 39-item scale used to assess mood within the first few days after delivery. The

scale measures two specific factors, positive and negative affect, by asking mothers to assign value to different emotions they may have been experiencing *that day*. The measure utilizes a 5-point Likert-type scale that ranges from 1 (very slightly or not at all) to 5 (extremely). The DEQ was adapted from an early postpartum blues assessment measure (Kennerly Blues Questionnaire; Kennerly & Gath, 1989) to assess immediate postpartum mood. The DEQ was selected because it was designed for and validated with mothers. Internal consistency reliabilities (Cronbach's coefficient alpha) have been reported to be high for positive affect ($\alpha=.88-.92$) and negative affect ($\alpha=.91-.94$) (Buttner et al., 2012).

Psychopathology symptoms—The Inventory of Depression and Anxiety Symptoms (IDAS-II; Watson et al., 2012) assesses depression and anxiety symptoms experienced over the most recent two weeks with a 5-point Likert-type scale. Symptoms are grouped into several subscales. The IDAS was chosen because it was specifically designed to include multiple, factor-analytically derived subscales of depression and anxiety symptoms to allow for a more comprehensive assessment of mood (Watson et al., 2012). Further, extensive psychometric data has been used to establish the reliability and validity of the IDAS scales (Watson et al., 2007, 2008, & 2012).

Postpartum depressive symptoms risk factors—Two pertinent risk factors for postpartum depressive symptoms were included as possible covariates for this analysis, a past history of depression and/or anxiety (O'Hara et al., 1991) and trauma exposure (Grote et al., 2012).

History of depressive and/or anxiety symptoms: The Pregnancy Risk Assessment Monitoring System (PRAMS; Centers for Disease Control and Prevention, 2009) is administered to women after delivery. Participants report on experiences and behaviors that occurred during their pregnancy and in the 12 months prior to pregnancy. The measure assesses a wide range of pregnancy related health issues, as well as demographic and obstetric factors (e.g. age, socioeconomic status and birth complications). Demographic factors were assessed categorically while several birth complications (hypertension, kidney/urinary tract infection, placenta problems, etc.) and recent history of depression and anxiety were assessed dichotomously. The areas pertinent to this study were participant-reported (a) recent history of depression and anxiety symptoms and (b) pregnancy complications. All other relevant participant variables are presented in Table 1.

Trauma exposure: The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) is a 23-item self-report measure that assesses traumatic life events. The TLEQ asks participants if they have experienced specific events and, if so, how recently the event occurred. These items asked about 16 types of events including: experiences of physical and sexual assault, warfare, motor vehicle accidents and natural disasters, and the experience of any event that was life threatening or caused feelings of intense fear or helplessness. We utilized the total number of traumatic experiences reported by summing all endorsed events.

Statistical Analyses

Missing data were imputed using mean imputation at the item level when more than 80% of the items were completed. If less than 80% of the items were completed, the composite score was coded missing. At first measurement (when the DEQ was completed), 3 participants' data were coded missing. At 2-weeks postpartum, 168 participants' data were coded missing. Finally, at 12-weeks postpartum, 264 participants' data were coded missing. Due to the attrition between enrollment in the study and the two follow-up time points (2- and 12-weeks postpartum), we compared women who completed one, two, or three of the assessment time points on measures of positive and negative affect (as these were the only measures completed by the entire sample). Attrition occurred between each time point, with 151 women completing only the first time point, 115 completing two time points, and 260 completing three time points. There were no significant differences between these groups on measures of positive and negative affect ($p > .05$).

First, descriptive statistics were calculated. Bivariate correlations were examined to determine control variables (see Table 2). Primary analyses utilized hierarchical regression to identify the most predictive models of depressive symptoms at a) 2 weeks and b) 12 weeks postpartum. In Step 1, number of traumatic experiences and history of depression were entered to examine whether the variables of interest (positive and negative affect) predicted depressive symptoms over and above well-established predictors of postpartum depressive symptoms. In Step 2, positive and negative affect were entered. All beta weights are reported as standardized coefficients.

Results

Women were primarily Caucasian (89.6%) and on average 30 years of age ($M = 30.1$). The majority of women were in a committed relationship (82.4%). All participant characteristics are reported in Table 1.

Internal consistency of the measures was good. For the DEQ, internal consistency in the current sample was good among both positive affect items ($\alpha = .85$) and negative affect items ($\alpha = .90$). For the IDAS, the 20-item General Depression subscale was administered. A high coefficient alpha was found for the General Depression subscale across time points ($\alpha = .84 - .86$). Upon examining bivariate correlations to determine control variables, recent history of depression and traumatic experiences were correlated with the variables of interest, and as such, were included as control variables in further analysis. Pregnancy complications were not significantly correlated with any of the variables of interest, so pregnancy complications were not included in further analysis.

At 2 weeks postpartum, lower levels of positive affect after birth ($t = -2.30, \beta = -0.11, p < .05$), higher levels of negative affect after birth ($t = 9.48, \beta = 0.48, p < .001$), and higher levels of past trauma ($t = 4.09, \beta = 0.19, p < .001$) were significant predictors of depressive symptoms ($R^2 = 0.34$). Recent history of depression was not a significant predictor of depressive symptoms ($p > .05$).

At 12 weeks postpartum, lower levels of positive affect after birth ($t = -2.58$, $\beta = -0.16$, $p < .05$), higher levels of negative affect after birth ($t = 5.10$, $\beta = 0.32$, $p < .001$), and higher levels of past trauma ($t = 2.02$, $\beta = 0.12$, $p < .05$) were significant predictors of depressive symptoms ($R^2 = 0.22$). Recent history of depression was not a significant predictor of depressive symptoms ($p > .05$). Thus, positive affect and negative affect predicted depressive symptoms at 2 and 12 weeks postpartum over and above history of depression and previous traumatic experiences. Positive and negative affect accounted for the majority of the variance in depressive symptoms (2 weeks postpartum: $R^2 = .28$; 12 weeks postpartum: $R^2 = .18$) over and above the predictive value of history of trauma.

Discussion

The current study examined if positive and negative affect in the first few days after childbirth predict later postpartum depression symptom severity. Both positive and negative affect predicted postpartum depressive symptoms at two and twelve weeks, over and above previous traumatic experiences and history of depression. Thus, mood in the days after delivery is uniquely predictive of later depressive symptoms and may be important for early identification of women who are at-risk for postpartum depression.

Recent history of depression did not predict depressive symptoms in this study, which is incongruent with the broader perinatal depression literature (Di Florio et al., 2013; Payne et al., 2007; Inglis et al., 2014). The most likely explanation is directly linked to the methodology. In this study, recent history of depression was measured dichotomously, retrospectively, and limited to the year prior to conception. These measurement constraints limit the inferences that can be drawn from this variable. Future research should examine history of depression prospectively and across the lifetime in order to more fully understand the relation between past depression and current perinatal depression.

Research has pointed to an association between trauma history and depression during the perinatal period. Much of the literature in this vein has focused on the relationship between physical abuse and depression during the perinatal period, specifically that women with a history of abuse are more likely to develop depression in the perinatal period (Alvarez-Segura et al., 2014; Howard et al., 2013). In the current study, results align with these existing studies. Exposure to trauma appears to serve a role in the development of postpartum depressive symptoms at both two and twelve weeks postpartum. The current findings highlight the importance of more general trauma exposure as a factor to consider in regards to prevention of postpartum depression. Women who are known to have a history of trauma may benefit from interventions that target the prevention of postpartum depression during pregnancy or in the early postpartum period.

The time period that constitutes delivery to day five postpartum may be a specifically vulnerable time for high negative affect to exacerbate depressive symptoms later in the postpartum period, especially paired with overall low levels of positive affect. For most women, negative affect in the immediate postpartum period increases from the day of delivery until day 5 before declining (O'Hara, 1995; Buttner et al., 2015). However, women who have been diagnosed with depression at two weeks postpartum have demonstrated

higher overall trajectories of negative affect *as well as* lower overall trajectories of positive affect (Buttner et al., 2015). While negative and positive affect have long been considered hallmarks of emotional disorders (Watson & Tellegen, 1985), positive affect has often been overlooked in postpartum psychopathology. Low positive affect appears to be uniquely related to depression in other life periods (Mineka et al., 1998), and the postpartum period does not appear to be an exception. An assessment of positive affect during the immediate postpartum period has been limited to Buttner's work (2012 (2015) until now. It appears that significantly low levels of positive affect, rather than slight declines over time, may be the most pertinent factor when considering perinatal positive affect. Low positive affect in the immediate postpartum period may help explain depressive symptomology in the postpartum period and should be considered in clinical presentations of perinatal women. Future research should continue to examine different facets of positive affect, especially women who endorse high levels of negative *and* positive affect that may be predictive of "rapid cycling" mood symptoms (Pop et al., 2015).

There is limited research on who may be particularly prone to high negative affect and low positive affect during the immediate postpartum period. Predictors of the postpartum blues include personal and family history of depression, stressful life events, and higher levels of total estriol (a type of estrogen; O'Hara et al., 1991). Other factors, such as sociodemographic and obstetric risk factors, have produced conflicting findings in their relation to their influence on early postpartum mood (Henshaw, 2003). Biological factors have also been explored in relation to the postpartum blues, particularly the re-equilibration of the maternal hypothalamic-pituitary-adrenal (HPA) axis (for review, see O'Keane et al., 2011).

In relation to negative and positive affect during the immediate postpartum period specifically, Buttner et al. (2015) found higher levels of neuroticism to significantly affect negative and positive affect trajectories in the immediate postpartum. This suggests that women who demonstrate high levels of negative emotionality may be at particular risk for postpartum depression, especially considering the stability of personality traits in adulthood (Clark, 2005). The results of the current analyses demonstrate that negative affect immediately after birth predicts both 2- and 12-week postpartum depressive symptoms; nevertheless, the effect is less powerful at 12-weeks. While the reasons for this pattern remain untested, the course of postpartum depressive symptoms, as related to negative affect immediately after birth, deserves the attention of future research.

Perinatal mental health is a serious public health concern (World Health Organization, 2014). Despite the extensive research documenting the prevalence and consequences of postpartum depression, the symptoms can go unnoticed by health care providers, and barriers to treatment exist. Because of the consequences associated with postpartum depression, the identification of women who may be at risk is critically important. Although measures like the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) have been developed specifically to screen for postpartum depression, women may be reluctant to respond to such questionnaires in a hospital setting because of the stigma associated with postpartum depression and other barriers to seeking mental health services (Dennis & Chung-Lee, 2006). In this study, the DEQ only assessed the frequency of common emotions

rather than depressive symptoms while participants were in the immediate postpartum period. In doing so, the current study presents a possible alternative screening tool, specifically an emotion-focused measure that assesses negative and positive affect. An emotion-focused measure may be more palatable as individuals may be more reluctant to answer questions on depressive symptoms in a hospital setting, as evidenced by the finding that sensitive questions receive the highest levels of reporting when self-administered through an impersonal medium, such as online (Bowling, 2005). It is important to note that the benefit of new mothers reporting on emotions rather than depressive symptoms is speculative at this point. Future research should examine the acceptability of measures focused on emotions rather than depressive symptoms during the postpartum period, particularly in hospital settings.

The current study has several limitations that should be noted. The sample is relatively homogenous, primarily Caucasian, middle to upper-middle class, and well-educated. This limits the generalizability of our conclusions. Second, the measures used were self-report and future research may benefit from the inclusion of structured clinical interviews as they are the “gold standard” to assess depressive symptoms in the postpartum period. Third, given the fact that negative affect and depressive symptoms have substantial overlap in presentation, the sequential measurement of these constructs in the hospital may have introduced information bias. Fourth, history of depression only accounted for if a participant had sought treatment for depression and/or anxiety within the 12 months prior to pregnancy. To better understand the relation between history of depression and immediate postpartum mood, a more comprehensive assessment of depression at any point in a participant’s life span would have been needed. Fifth, because the IDAS asks about symptoms in the past two weeks, the measurement of affect immediately after birth overlaps with the reference time period for the 2-week depressive symptom measurement. Because of the overlap between negative affect and depressive symptoms, it is possible that we are accounting for the same phenomenon. However, the predictive value of positive affect should be noted, as the IDAS Depression subscale used in these studies does not directly measure positive affect (Watson et al., 2012). Further, a recency effect is possible in self-report measures as participants may endorse items that reflect their more recent feelings rather than how they felt on average across the time period of interest (Chmielewski & Watson, 2009). Finally, significant attrition occurred across time points. As such, there may be unknown differences between women who chose to complete all assessments and those that did not.

Despite several limitations, the current study also has several notable strengths. The prospective measurement of mood in the day(s) immediately after delivery allow for the assessment of negative and positive affect as they unfold in the postpartum period. Further, the DEQ’s targeted assessment of current emotionality does not place an additional burden of retrospective recall on the participant, which may be especially helpful during this period of marked change. In addition, the longitudinal measurement of depressive symptoms allows us to draw conclusions about the predictive value of mood in the immediate postpartum.

In conclusion, the current study provides important insight into the predictors of postpartum depression. More specifically, positive and negative affect immediately after birth and previous traumatic experiences predicted postpartum depressive symptoms. The implications

of the results are critical from a prevention perspective. Identifying women who are experiencing low positive affect and high negative affect after giving birth may be especially important in preventing postpartum depression. Women who are at risk can be identified early in the postpartum period, and intervention can help women to cope with depressive symptoms. Given the established negative effects of postpartum depression on mothers, infants, and families longitudinally, these outcomes could be modulated with targeted interventions.

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Highlights

- The postpartum blues have been associated with negative and positive affect (NA/PA)
- NA and PA in the immediate postpartum (3 days post-delivery) were examined
- NA and PA predicted depressive symptoms at 2 and 12 weeks postpartum
- Previous trauma exposure and history of depression were included in analyses
- Early NA and PA should be considered for postpartum depression prevention

Figure 1.
Flow diagram of participants

Table 1

Participant characteristics

<i>Demographics (N ~ 380[*])</i>	<i>%(<i>n</i>) M(SD), Range</i>
Race	
Caucasian	89.6(337)
African American	4.8(18)
Latina	4.4(17)
Asian	1.9(10)
More than one race	1.9(10)
American Indian	0.3(1)
Age	30.1(4.8), 19–45
Committed relationship	82.4(318)
Household income	
20K	13.4(51)
>20K and < 70K	49.6(189)
70K	37.0(141)
Parity	
Primiparous	43.8(167)
Multiparous	56.6(218)
Wantedness	
Sooner or at that time	74.5(284)
Later date	20.2(77)
Never	5.2(20)
Treatment for Depression/Anxiety	
No history	83.2(321)
History of treatment [±]	16.8(65)
Pregnancy complications	
No	53.5(206)
Yes	46.5 (176)
Trauma exposure	
Zero events	15.9(60)
One event	26.7(101)
Two or more events	57.4(217)
Positive affect	37.96(8.21)
Negative affect	31.16(9.93)
Depressive symptoms, 2 weeks	38.18(11.03)
Depressive symptoms, 12 weeks	35.03(10.05)

Note. N = Number of participants; % = percentage of the total sample; M = mean; SD = standard deviation;

^{*} = the number of participants reporting data ranged from 372 – 387;

[±] = history of seeking treatment for depression or anxiety in the 12 months prior to pregnancy.

Table 2

Correlations among included measures

	1	2	3	4	5	6	7	8
1. History of depression								
2. Age	.02							
3. Traumatic experiences	.21***	.11*						
4. Birth complications	-.02	.01	.03					
5. Positive affect	-.04	-.09~	-.04	.08				
6. Negative affect	.10~	-.05	.08	-.01	-.45***			
7. Depressive symptoms, 2 weeks	.16**	-.09~	.22***	.01	-.32***	.51***		
8. Depressive symptoms, 12 weeks	.15*	-.09	.18**	.05	-.33***	.42***	.63***	

Note.

~ $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Positive affect, and negative affect collected at Time 1 ($N = 523$). History of depression ($N = 383$), age ($N = 375$), pregnancy complications ($N = 382$) traumatic experiences ($N = 376$), and depressive symptoms at 2 weeks measured at Time 2 ($N = 366$). Depressive symptoms at 12 weeks measured at Time 3 ($N = 271$).

Table 3

Hierarchical regression analyses

Variables Entered (Step 1, Step 2)	β (Final)	sr^2	R^2
Depression (2 weeks)			
History of depression	.11 **		
Trauma	.21 **	.06	
Depression (12 weeks)			
History of depression	.04		
Trauma	.19 **		
PA	-.11 *		
NA	.48 **	.28	.34
Depression (12 weeks)			
History of depression	.10		
Trauma	.15 *	.04	
History of depression	.07		
Trauma	.12 *		
PA	-.16 *		
NA	.32 **	.18	.22

Note.

*
p < .05;

**
p < .001.

PA = positive affect; NA = negative affect. $N(2 \text{ weeks}) = 343$. $N(12 \text{ weeks}) = 260$.