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The role of trauma and partner support in perinatal depression and parenting stress: An Australian pregnancy cohort study

Megan Galbally
The University of Notre Dame Australia, megan.galbally@nd.edu.au

Stuart J. Watson
The University of Notre Dame Australia, stuart.watson@nd.edu.au

Phillip Boyce

Andrew J. Lewis

Title: The role of trauma and partner support in perinatal depression and parenting stress: An Australian pregnancy cohort study

Short Title: Trauma, depression, and parenting

Megan Galbally MBBS, MPM, PhD[1,2,3]

Stuart J Watson PhD[1,2]

Philip Boyce MBBS, MD[4]

Andrew J Lewis PhD[1]

Author Affiliations:

1. School of Psychology and Exercise Science, Murdoch University, Australia

2. School of Medicine, University of Notre Dame, Australia

3. King Edward Memorial Hospital, Australia

4. Westmead Clinical School, Sydney Medical School, University of Sydney

Corresponding Author:

Professor Megan Galbally Murdoch University, 90 South Street, Murdoch, WA, Australia 6150

Email: m.galbally@murdoch.edu.au Ph +61-8-9340 2844

Abstract

Background

Improving our understanding of the relationship between maternal depression and parenting stress is likely to lie in the range of additional factors that are associated with vulnerability to depression and also to parenting stress.

Objectives

To examine the role of trauma and partner support, in understanding the relationship between perinatal depression and parenting stress.

Methods

This study utilises data from 246 women in a pregnancy cohort study that followed women from early pregnancy until their infant was 12 months. Included were both women with a diagnosis of depression and those without depression. The measures included SCID-IV, Edinburgh Postnatal Depression Scale, Childhood Trauma Questionnaire, Social Support Effectiveness Questionnaire, and the Parenting Stress Index.

Results

We found women with depression were more likely to report a history of childhood trauma. Depressive symptoms were positively associated with parenting stress while partner support was negatively associated with parenting stress. The protective role of partner support for parenting distress was observed in those with no history of childhood abuse and low depressive symptoms, but not in those with a trauma history and high depressive symptoms.

Conclusions

These findings highlight the importance of early trauma in understanding the protective role of support on the relationship between parenting and depression. These findings can inform future studies and the refinement of future interventions aimed at both perinatal depression and parenting.

Background

Studies have clearly established a relationship between depression and the quality and experience of parenting (Galbally & Lewis, 2017). However, it is a common misunderstanding to assume that all mothers with depression will necessarily have poorer parenting practices, troubled relationships with their child or higher levels of parenting stress (Reuben & Shaw, 2015). Parenting stress has been found to be associated with the quality of the relationship with their child, developmental and behavioural outcomes for children and as such is an important aspect of parenting that can measured in the early years (Barroso, Hungerford, Garcia, Graziano, & Bagner, 2016; Barroso, Mendez, Graziano, & Bagner, 2018; Neece, Green, & Baker, 2012). Understanding which mothers with perinatal depression are at higher risk of parenting stress is important to appropriately target additional parenting interventions beyond the treatment of maternal depression alone. The role of partner support and experiences of past or current interpersonal violence including childhood abuse have both been postulated as important in understanding a woman's vulnerability to depression and to parenting stress.

Previous research such as a 3-year study of women treated for postpartum depression found women with a history of childhood abuse had poorer mental health, parenting and child outcomes than those without a history of abuse (Buist & Janson, 2001). In a more recent longitudinal study that examined risk factors for antenatal and postnatal depression, a history of childhood abuse and major life events were both found to be significantly associated with antenatal depression but were not predictors of postnatal depression. They did not examine parenting outcomes (Leigh & Milgrom, 2008). Flach et al. found in a large birth cohort that antenatal domestic violence, measured by two questions about whether a woman's partner had been emotionally cruel or physically hurt them, was associated with increased depressive

symptoms across pregnancy and the postpartum using the Edinburgh Postnatal Depression Scale but also did not examine how this might have impacted on parenting (Flach et al., 2011). In order to consider the potentially protective factors in early parenting, investigators have consider the role of social support and the quality of the marital/partner relationship and its capacity to moderate risk factors such as depression and trauma (Gelfand, Teti, & Radin Fox, 1992; Razurel, Kaiser, Antonietti, Epiney, & Sellenet, 2017; Taraban et al., 2017).

Understanding how the relationship between maternal depression and parenting may be exacerbated by a history of trauma or conversely, protected by partner support has great translational significance for the development and targeting of interventions. Early studies did not find that treatment of maternal depression alone has any notable effect on parenting and child outcomes. Such findings seemed to suggest parents would require additional interventions to ensure child outcomes were improved (Dennis & Dowswell, 2013; Murray, Cooper, Wilson, & Romaniuk, 2003). However, a more recent study failed to find any benefit of the addition of a parenting intervention on parenting outcomes in addition to the treatment of depression. In fact, this study found equally improved outcomes for those who only received treatment of depression alone with no parenting intervention (Stein et al., 2018). Indeed this recent randomised controlled trial of a parenting intervention in addition to cognitive behaviour treatment for maternal postnatal depression (Stein, et al., 2018) concluded that effective treatment of depression, as evidenced by the high fidelity to the CBT treatment protocol and reduction in depressive symptoms in both treatment and control conditions of treatment, was protective for parenting and child development. Notably this study recruited a community sample with low rates of co-morbidity of trauma, higher socio-economic, education and the majority were living with the father of the baby.

While outside of the perinatal period, some studies that have examined antidepressant treatment have found treated women had improvements in parenting and parenting stress

supporting the idea that treatment of depression alone may also improve parenting (Misri, Reebye, Milis, & Shah, 2006; Weissman et al., 2006). The current state of the literature is therefore quite unclear as to whether treatment of maternal depression can improve child outcomes, or if additional interventions focussed on parenting, family functioning or individualised psychological treatments focussed on maternal parenting cognitions and behaviour need to play an adjunct role.

In this study, we seek to address such issues by drawing on data from a longitudinal cohort study commencing in early pregnancy and following mothers until the first year postpartum. Firstly, we examine whether there will be a stronger positive association between depressive symptoms during the perinatal period and parenting stress at 12 months postpartum for women who report a history of childhood trauma compared to those who report no history. Secondly, whether there will be a stronger negative association between partner emotional support during the perinatal period and parenting stress at 12 months postpartum for women who report a history of childhood trauma compared to those who report no history. Finally, whether higher partner emotional support during the perinatal period will buffer the effects of perinatal depressive symptoms on parenting stress at 12 months postpartum, and this effect will be stronger for women who report a history of childhood trauma compared to those who report no history.

Methods

Sample

This sample is drawn from the Mercy Pregnancy and Emotional Wellbeing Study (MPEWS), which is a pregnancy cohort based in Melbourne, Australia. A study protocol can be found in Galbally et al. (2017). The data used in this paper were collected at 4 time-points: early pregnancy up to 20 weeks, third trimester, and 6 and 12 months postpartum. Only

women who completed data collection at 12 months postpartum were included in the analysis presented here given the outcome measures were collected exclusively at 12 months postpartum ($N = 246$, 87% of the full cohort). The study recruited three groups: women taking antidepressants ($n = 43$), non-medicated women who met diagnostic criteria for the diagnosis of Depressive Disorders ($n = 26$), and control women who did not meet diagnostic criteria for Depressive Disorder or taking antidepressant medication ($n = 177$). The Mercy Health Human Research Ethics Committee approved the study and each eligible women provided their written informed consent prior to participation. Mercy Health Human Research Ethics Committee, Ethics Project Number: R08/22

Measures

Parenting Stress

Parenting stress at 12 months postpartum was assessed using the fourth edition of the Parenting Stress Index, Short-form (PSI-4-SF; Abidin, 2012), a 36-item index yielding a total score of overall parenting stress as well as three subscales (Difficult Child, Parent Distress, and Parent-child Dysfunctional Interactions). Internal consistency of the total score on the PSI and three subscales have been reported as adequate to strong, with Cronbach's alphas ranging between .75 and .92 (Barroso, et al., 2016). In our data at 12 months postpartum, Cronbach's alphas for the total PSI and three subscales ranged between .85 and .92. Average subscale scores can be converted to percentile scores for relative comparisons within the sample.

Depression

A diagnosis of a Depressive Disorder including Major Depression and Dysthymia was established using the mood module of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (SCID-IV; First, Spitzer, Gibbon,

& Williams, 1997) administered upon recruitment to the study (i.e., prior to 20weeks). Women meeting DSM-IV criteria for Major Depression or Dysthymia, regardless of antidepressant use, were coded as 1 (Currently depressed; $n = 53$) and all other women coded as 0 (Not currently depressed; $n = 193$).

Depressive symptoms were measured at three time-points using the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987): during early pregnancy, third trimester, and six months postpartum. For the purposes of model parsimony, and to avoid multicollinearity in the model due to high correlations among repeat measure EPDS scores (Pearson r ranging between .50 and .66), we averaged the three EPDS scores taken during pregnancy and the postpartum, resulting in a composite average representing average level of perinatal depressive symptoms. The EPDS comprises ten items measuring depressive symptom severity on a 4-point (0–3) scale, producing a total score ranging between 0 and 30, where higher scores indicate higher levels of depressive symptoms. The EPDS has been shown to be a valid scale for use with Australian women during the perinatal period (Boyce, Stubbs, & Todd, 1993). In our sample, the EPDS scale at each measurement demonstrated strong internal consistency, with Cronbach's alphas ranging from 0.85 to 0.86.

Trauma

Childhood trauma was measured in mothers at 12 months postpartum using the brief screen version of the Childhood Trauma Questionnaire (CTQ-SF; D. P. Bernstein et al., 2003), which is a 28-item self-report measure. Items are responded to using a 5-point Likert scale ranging from *Never True* (1) to *Very Often True* (5). The CTQ separately assesses the history of emotional, physical and sexual abuse, and emotional and physical neglect and a total score for childhood trauma can also be derived. Individual items are summed to derive each subscale and the total score. Reports of childhood trauma were positively skewed in the

sample, with many women reporting no history. As such, we used severity cut-off scores to create binary groups (*None-to-Minimal* versus *Moderate-to-Severe*) for each subscale and the total score. The CTQ manual provides severity cut-off scores that maximise identification of abuse cases using each subscale and the total score based on an American population (D. Bernstein & Fink, 1998). These cut-off scores are emotional abuse ≥ 9, physical abuse ≥ 8, sexual abuse ≥ 6, emotional neglect ≥ 10, physical neglect ≥ 8, and total score ≥ 37. In our sample, the total score CTQ and each of the five subscales demonstrated adequate to strong internal consistency, with Cronbach's alphas ranging .75 to .92.

Family Domestic Violence. Women completed a revised 24-item version of the Stressful Life Events Questionnaire (Goodman, Corcoran, Turner, Yuan, & Green, 1998) to determine the incidence of both common and pregnancy-specific life stressors. To assess experiences of Family Domestic Violence (FDV), we used two of these 24 items. Specifically, these were: "You were humiliated or emotionally abused in other ways by your partner or ex-partner" and "You were kicked, hit, slapped or otherwise physically hurt by your partner or ex-partner." Previous pregnancy cohort studies have utilised 2 similar items on physical and emotional abuse (Bowen, Heron, Waylen, Wolke, & Team, 2005; Flach, et al., 2011). Using these items and the repeated measures, we created one FDV variable to capture FDV experiences prior to and during pregnancy and the postpartum. Women who reported at least one of these two events at early pregnancy, third trimester or six months postpartum (responses encompassed a time period ranging 12 months prior to conception up to 6 months postpartum) were coded 1 (*Positive for FDV*).

Partner Support

Perceived effectiveness of partner emotional support was measured using the Social Support Effectiveness Questionnaire (Rini, Schetter, Hobel, Glynn, & Sandman, 2006) at two

time-points: third trimester and six months postpartum. We averaged participants' repeat

scores, which yielded a composite average representing average perinatal emotional support

from a partner. The emotional support effectiveness factor comprises five items measured

using a 5-point Likert scale, with higher values denoting more effective receipt of emotional

support provided by a partner. The items measured characteristics of emotional support

provided by a partner, such as availability, appropriateness and fit, efficacy, and active versus

passive receipt. In our sample, the five items informing the emotional support effectiveness

subscale demonstrated strong internal consistency (Cronbach's α = .91).

Covariates

Data were also collected at recruitment relating to maternal age, educational attainment

(0 = *no tertiary attainment*, 1 = *tertiary attainment*), employment status, relationship status,

and ethnicity. In addition, women were asked about current and ongoing use of

antidepressant medication. Women who reported taking antidepressant medication during the

first 20 weeks of pregnancy were recruited to comprise the antidepressant use group. Further

to the recruitment framework, for this paper we have used a binary variable to group the

sample into *no antidepressant use* (0; n = 203) and *antidepressant use* (1, n = 43),

irrespective of a depression diagnosis.

Data Preparation and Statistical Methods

We examined the prevalence of various traumatic events and experiences reported by

women in the non-depressed and depressed groups and then test the unadjusted associations

by comparing relative risk ratios *(RR)* for being in the depressed group versus the non-

depressed group attributable to reported incidence of the traumatic event. These descriptive

and risk estimates were conducted using *MedCalc for Windows* (MedCalc Software, 2016).

We conducted a multiple group univariate regression model, using the predictors of depression diagnosis and antidepressant use in early pregnancy, perinatal depressive symptoms, and emotional support from a partner to predict percentile scores for the total score of the PSI at 12 months postpartum. Prior to fitting the regression models, missing data for the PSI at 12 months postpartum were estimated using an Expectation-Maximisation (EM) multiple imputation, using the six month PSI subscale scores as predictors. A multiple group approach was used to address the moderation hypotheses relating to childhood trauma (*None-to-Minimal* Childhood Trauma group versus *Moderate-to-Severe* Childhood Trauma group) moderating the regression estimates of perinatal depressive symptoms, emotional support from a partner, and the interaction between perinatal depressive symptoms and perinatal emotional support from a partner, on total PSI. Continuous variables were centred prior to calculating interaction terms. Following the total PSI model, we also conducted three multiple group univariate regressions for each of the PSI subscale percentile scores: Parent Distress, Parent-Child Dysfunctional Interactions, and Difficult child. In these models, we used the same set of predictors that we used in the total PSI model.

To determine group differences in the multiple group approach, we first fit a model in which average parameters were estimated across groups (i.e., a constrained model). Then, one-by-one, we allowed each model parameter of interest to freely estimate between the groups and used a Wald χ^2 test of parameter equality to determine parameters that vary significantly between groups. We then fitted a final model, freely estimating parameters that varied significantly between groups and constraining to equality those parameters that did not differ. As a final inferential comparison of model fit, we present the Chi-square difference test ($\Delta\chi^2$) between the final and the constrained models in which a significant $\Delta\chi^2$ test denotes a significant improvement in fit for the final model. Model estimates for the final multiple group model were presented and interpreted. In regression models where childhood trauma

was not a significant multiple group moderator (none of the parameters differed significantly using the Wald test), the regression was rerun using the whole sample and childhood trauma was included as a predictor in the model. In models where the perinatal depressive symptoms by perinatal emotional support interaction term was significant, we probed the effect of the moderator using simple slopes analysis. We used *Mplus* (Muthén & Muthén, 1998-2012) to run the regression models and probe interactions using a *loop* function. In all analyses, a *p*-value of .05 was used to denote a significant effect; however, we also present 95% bias-corrected confidence intervals (95% *CIs*) and exact *p*-values with all estimates. Missing data amongst the predictors in the regression models were then handled using full information maximum likelihood within the robust maximum likelihood estimator in *Mplus*.

Results

Sample Characteristics

The average age of women in this study was 31.37 year of age (*SD* = 4.62), ranging from 19 to 48 years. Although women in the non-depressed group were marginally older than women in the depressed group (see Table 1), the average age between groups did not differ significantly. Table 1 also presents the sociodemographic characteristics of the sample by group (depression and non-depressed).

Traumatic Experiences and Depression in Early Pregnancy

Of all women in the sample, 56 (22.8%) reported experiencing moderate-to-severe childhood emotional neglect, 53 (21.5%) reported moderate-to-severe childhood emotional abuse, 29 (11.8%) reported moderate-to-severe childhood physical abuse, 24 (9.8%) reported moderate-to-severe childhood sexual abuse and 23 (9.3%) reported moderate-to-severe childhood physical neglect. Using the total childhood trauma score, 52 (21.1%) reported moderate-to-severe abuse/neglect during their childhood. In the period between 12 months

prior to conception up to 6 months postpartum, 16 (6.5%) reported experiencing family domestic violence (FDV).

Table 2 presents rates of a depression diagnosis by childhood trauma and recent domestic violence. With the exception of physical neglect, reporting moderate-to severe childhood emotional abuse, emotional neglect, physical abuse or sexual abuse during childhood were all individually associated with significantly greater risk of having a diagnosis of depressive disorder in early pregnancy. The effects ranged in magnitude from 1.81 to 4.22. FDV was not associated with differential risk for depressive disorder in early pregnancy; however, it should be noted that the rate of FDV in the sample was low and should be explored in a larger sample. Furthermore, childhood trauma as measured by total childhood trauma score was significantly associated with reported experiences of FDV ($r = .20$ $p = .002$).

Trauma, Mental Health, and Support as Predictors of Parenting Stress at 12 months

Table 3 displays the zero-order bivariate Pearson's correlations for all variables included in the regression models, including the total PSI, and each of the three PSI subscales. Among the parenting stress subscales measured at 12 months postpartum, Parent-child Dysfunctional Interactions and Difficult Child were most strongly positively related. Perinatal depressive symptoms was positively associated with the total PSI and each of three parenting stress outcomes at 12 months postpartum. Perceiving effective emotional support from a partner during the perinatal period was significantly and negatively associated with the total PSI and each of the three PSI subscales.

There were no significant differences in the regression coefficients for the total PSI model between the *None-to-Minimal* versus *Moderate-to-Severe* childhood trauma groups. As such, we have presented the results of the regression model predicting total PSI at 12 months postpartum in the full sample (see Table 4). The predictors in this model accounted

for 34% of the variance in the total PSI score. Antidepressant use, a depression diagnosis at recruitment, and moderate-to-severe childhood trauma each did not significantly predict PSI. We initially also included FDV, which, likewise, did not predict PSI. Perinatal depressive symptoms as measured by the EPDS (in early pregnancy, third trimester and 6 months postpartum) was a significant positive predictor of parenting stress at 12 months and perinatal emotional support was a significant negative predictor of parenting stress at 12 months. The two-way interaction term between depressive symptoms and emotional support was not a significant predictor of total parenting stress in the model.

Predicting Parent Stress Subscales at 12 Months Postpartum

For both the Difficult Child and the Parent-Child Dysfunctional Behaviour subscales, there were no multiple group effects by history of childhood trauma; thus, we presented the results of both regression models using the ungrouped sample (see Table 4). The pattern of results for the regression model predicting the Difficult Child subscale was comparable to the results presented in the total parenting stress model. That is, only perinatal depressive symptoms and perinatal emotional support from the partner were significant predictors of Difficult Child. However, these same set of predictors accounted for less variance in Difficult Child (13%) compared to the total PSI. The results of the Parent-child Dysfunctional Interactions Subscale were also similar to the results for the total parenting stress model. Perinatal depressive symptoms was a significant predictor in the model, however, perinatal emotional support from a partner was a much weaker predictor of Parent-child Dysfunctional Interaction. This model accounted for 14% of the total variance in Parent-child Dysfunctional Interactions. Interestingly, perinatal emotional support compared to perinatal depressive symptoms was a stronger predictor of the Difficult Child subscale, whereas perinatal depressive symptoms compared to perinatal emotional support was a stronger predictor of the Parent-child Dysfunctional Interaction subscale.

In the multiple group regression model predicting the Parent Distress subscale, however, there were significant differences between the None-to-Minimal versus Moderate-to-Severe childhood trauma groups. There were significant differences between the groups for the model-estimated group means (i.e. Intercepts; Wald χ^2 [$d.f.$ = 1] = 36.41, p < .001) and the regression coefficient for perinatal emotional support by a partner (Wald χ^2 [$d.f.$ = 1] = 4.45, p = .023). Compared to the fully constrained model (χ^2 [$d.f.$ = 6] = 57.10, p < .001), there was a significant improvement in the model after allowing regression coefficients that differed significantly to be estimated individually for each group ($\Delta\chi^2$ [$\Delta d.f.$ = 2] = 53.93, p < .001); this final model fit the data well (χ^2 [$d.f.$ = 4] = 3.17, p = .530).

In the Final model predicting Parent Distress (see Table 5), the model-estimated average Parent Distress percentile for the Moderate-to-Severe childhood trauma group was significantly higher than the model-estimated Parent Distress average for the None-to-Minimal childhood trauma group (62nd versus 46th percentile). Antidepressant treatment and a depression diagnosis were both not associated with Parent Distress across the groups. Perinatal depressive symptoms was a significant predictor of Parent Distress across the groups. For the none-to-minimal childhood trauma group, perinatal emotional support from a partner was a significant negative predictor of Parent Distress, whereas perinatal emotional support from a partner did not predict Parent Distress for the moderate-to-severe childhood trauma group. Finally, the interaction between perinatal depressive symptoms and partner emotional support was a significant predictor of Parent Distress across the groups.

Figure 1 illustrates the slopes for this interaction at low (-1 SD below the mean) and high levels (+1 SD above the mean) of emotional support in both childhood trauma groups. Although the interaction term for the final model was the average across the groups, we have plotted the slopes accounting for the childhood trauma group to demonstrate the difference in the model-estimated averages and because perinatal emotional support was an additive

predictor for the none-to-minimal childhood trauma group but was not for the moderate-to-severe group. For women who reported one standard deviation above average emotional support from a partner, the positive and significant association between perinatal depressive symptoms and Parent Distress at 12 months postpartum ($B_{higher\ support}$ = 4.39, SE = .44, p < .001) was stronger than it was for women who reported one standard deviation lower than average partner emotional support ($B_{lower\ support}$ = 2.71, SE = .46, p = .001). These results suggest that perceiving higher than average emotional support from partners is only protective for Parent Distress at 12 months when depressive symptoms are low-to-average levels throughout the perinatal period and there is a none-to-minimal history of childhood abuse. Conversely, for women with a history of moderate-to-severe childhood abuse, perceiving higher than average emotional support from partners was not protective of Parent Distress at 12 months postpartum when perinatal depressive symptoms were around the sample average (EPDS M = 6.25). In fact, higher than average emotional support from a partner was associated with greater Parent Distress, compared to lower than average emotional support, when perinatal depressive symptoms were higher than the sample average.

Discussion

This study highlights some of the important aspects of understanding the effect of past and current trauma on mental health in the perinatal period. Firstly, our study did find reported experiences of childhood trauma to be associated with an increased rate of depression with 58.3% of women with depression experiencing some form of childhood trauma compared to 21.2% of control women. Emotional neglect was the most common form of childhood trauma for women with depression. In the jurisdiction where this sample was recruited, there has only been mandatory reporting of child abuse for physical and sexual abuse. However, this data suggests that emotional neglect may also be an important area of

childhood trauma with our data suggesting an association with the later development of depressive disorder in the perinatal period.

While our sample reported a rate of 6.5% for the experience of family domestic violence (FDV) across the perinatal period, against prediction this was not significantly associated with an increased risk of depressive disorder. However, the numbers reporting FDV in our study were low and these findings require replication in a larger sample. Of note, a reported history of childhood trauma was associated with FDV prior to and during pregnancy, and up to 6 months postpartum, supporting the link between earlier and current experiences of interpersonal trauma. Depressive symptoms and lower partner support across the perinatal period did predict higher parenting stress experienced at 12 months postpartum; however, a diagnosis of depression, treatment with an antidepressant or experiences of past or recent interpersonal trauma did not predict parenting stress.

The association of depressive symptoms and parenting stress found in our study is consistent with a large number of previous studies (Gelfand, et al., 1992; Leigh & Milgrom, 2008; Vismara et al., 2016). Our findings build on this by examining diagnosed depression using a structured psychiatric interview as well as symptoms using a self-report screening measure on a continuous scale. Our studies found that the association of depressive symptoms with parenting stress was independent of the role of depressive disorder, partner support, interpersonal trauma and taking antidepressant medication. The discrepancy between an association between depressive disorder and depressive symptoms is important to understand and explore in future studies. Furthermore, exploring the additional role of both support and trauma in understanding the relationship between depressive symptoms and parenting distress. For women with low depressive symptoms and low childhood trauma partner support across the perinatal period reduced the parenting distress supporting pregnancy interventions that bolster effective partnerships for these women (Rowe & Fisher,

2010). However, our findings also suggest that in those women with depression and childhood trauma, partner support was not protective and in these women it would be worth examining the role of additional parenting interventions for parenting stress. Overall, our findings would support moving away from a one size fits all approach to interventions for depression in the perinatal period and instead understand the variety of factors that are important in understanding and intervening to improve mental health and parenting.

This study has a number of limitations including the limited measurement of FDV, while other studies have relied on similar two items, it would ideally use a broader measure validated across perinatal women. Similarly, our parenting stress outcome is limited to a parental self-report and would be enhanced with the addition of an observational measure of stress within the parent-infant interaction.

Future research, both observational and intervention studies should include samples and measures that capture childhood trauma and the quality of current emotional support when examining depression and parenting. It may be while a recent trial of an intervention to support parenting in addition to treatment for depression found no additional benefit of a focus on parenting was related to the sample recruited into this trial (Stein, et al., 2018). Our findings suggest that the group of women with depression who would benefit most from the addition of a parenting intervention would be those with a history of childhood trauma and where there is little current emotional support. Ensuring that both trauma and support are accounted for is important in understanding better the contextual factors that may influence the relationship between maternal perinatal depression and parenting.

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Table 1. Sociodemographic Characteristics of the Sample by Major Depressive Disorder Group (*N* = 246) at Study Entry in Early Pregnancy

	Not Depressed (*n* = 193)		Depressed (*n* = 53)	
	M [min-max]	*SD*	*M* [min-max]	*SD*
Maternal Age at Recruitment	31.55 [19 - 48]	4.40	30.73 [20 - 42]	5.39
	n	*%*[a]	*n*	*%*[a]
Ethnicity				
Oceania/European	170	88.5	46	86.8
ATSI	1	0.5	1	1.9
Asian	18	9.4	4	7.5
Middle-Eastern	3	1.6	2	3.8
Maternal Education				
No further study since leaving high school	13	6.8	8	11.7
Apprenticeship or traineeship	4	2.1	3	5.9
Certificate or Diploma	40	20.7	14	27.5
Bachelor's degree or higher	136	70.4	28	54.9
Employment Status at Recruitment				
Full-time work	137	71.4	25	49.0
Part-time and casual work	39	20.3	17	33.3
On maternity leave	0	0	1	2.0
Unemployed	4	2.1	3	5.9
Studying	3	1.6	1	2.0
Full-time home duties	3	1.6	1	2.0
Other	4	2.1	3	5.9
Relationship status at Recruitment				
Not currently in a relationship	5	2.6	4	7.8
Married	130	67.7	30	58.9
De facto	56	24.0	14	27.5
In a stable relationship but not living together	6	3.1	1	2.0
In a same sex partnership	1	0.5	1	2.0
Separated	2	1.0	1	2.0

Note. ATSI, Aboriginal and Torres Strait Islander peoples.

[a] Valid percentage.

Table 2. Experiences of Trauma Presented by Not Depressed and Depressed Women ($N =$ 246).

	Not Depressed (n = 193)		Depressed (n = 53)		Relative Risk [95% CIs]
	n	*%*ᵃ	*n*	*%*ᵃ	
Emotional Abuse^	37	24.5	16	44.4	1.81* [1.44, 2.87]
Emotional Neglect	38	25.5	18	50.0	1.96** [1.28, 3.00]
Physical Abuse	18	12.1	11	30.6	2.53** [1.31, 4.87]
Sexual Abuse	12	7.9	12	33.3	4.22*** [2.07, 8.61]
Physical Neglect	18	11.9	5	13.9	1.17 [.46, 2.93]
Total Abuse/Neglect	31	21.2	21	58.3	2.75*** [1.81, 4.17]
Family Domestic Violence Experience (during a period 12 months prior to Pregnancy and up to 6 Months Postpartum, Inclusive)	13	6.7	3	5.8	.86 [.25, 2.89]

ᵃ Valid percent as missing data handled using case-wise deletion.

*p < .05 **p < .01 ***p < .001

^comparison of Moderate-to-Severe (1) versus None-to-mild (0) childhood trauma.

Table 3. Correlations and Descriptive Statistics For Predicting Parenting Stress (Total and Subscales) as Reported by Mothers at 12 Months Postpartum (N = 246).

	1	2	3	4	5	6	7	8	9
1. Total Parenting Stress Index	-								
2. Parent Distress[a]	.76***	-							
3. Parent-child Dysfunctional Interactions[a]	.83***	.48***	-						
4. Difficult Child[a]	.81***	.44***	.70***	-					
5. Major Depression Diagnosis	.21***	.22***	.14*	.14*	-				
6. Antidepressant Treatment	.11	.08	.07	.08	.46***	-			
7. Childhood Trauma	.18**	.31***	.09	.06	.21**	.09	-		
8. Perinatal Depressive Symptoms	.54***	.63***	.35***	.28***	.38***	.27***	0.37***	-	
9. Perinatal Emotional Support	-.39***	-.36***	-.26***	-.32***	-.12*	-.07	-.20**	-.42***	-
Mean	36.52	49.80	29.58	34.00	0.22	0.18	0.33	6.25	14.27
Standard Deviation	21.67	23.20	19.41	22.85	0.41	0.38	0.47	3.87	3.68

[a] Parenting Stress Index Subscales

*p < .05 **p < .01 ***p < .001

Table 4. Results for Regression Models predicting the 12-month Total Score, and the Difficult Child and Parent-Child Dysfunctional Interactions Subscales of the Parenting Stress Index, with 95% Confidence Intervals for Unstandardised Path Coefficients ($n = 242$)

	Total Score PSI Model				Difficult Child Subscale Model				Parent-Child Dysfunctional Interactions Subscale Model			
	B	*95% C.I.'s*	*SE B*	*β*	*B*	*95% C.I.'s*	*SE B*	*β*	*B*	*95% C.I.'s*	*SE B*	*β*
Intercept	37.78***	34.30, 41.27	1.78	1.74	34.58***	30.52, 38.63	2.07	1.51	30.25***	26.62, 33.89	1.85	1.56
Antidepressant Treatment	-2.85	-9.19, 3.48	3.23	-.05	-.12	-7.73, 7.49	3.88	-.00	-1.85	-8.24, 4.61	3.28	-.04
Major Depression Diagnosis	2.05	-5.00, 9.09	3.59	.04	2.89	-4.73, 10.51	3.89	.05	1.85	-5.20, 8.90	3.60	.04
Childhood Trauma	-1.48	-6.48, 3.53	2.55	-.03	-3.17	-9.24, 2.89	3.09	-.07	-2.24	-7.44, 2.97	2.57	-.05
Perinatal Depressive Symptoms	2.71***	1.99, 3.43	.37	.48	1.04*	.17, 1.90	.44	.18	1.51***	.79, 2.22	.37	.30
Perinatal Emotional Support	-1.23**	-1.98, -.46	.39	-.21	-1.55**	-2.46, -.64	.46	-.25	-.74*	-1.47, -.01	.37	-.14
Perinatal Depressive Symptoms BY Perinatal Emotional Support from Partner	.11	-.05, .26	.08	.08	.01	-.20, .21	.11	.00	-.01	-.16, .14	.08	-.01
R^2	.34***				.13**				.14**			

*p < .05 **p < .01 ***p < .001

Table 5. Results for the Final Multiple Group Regression Model[a] predicting 12-month Parent Distress PSI Subscale for the No-to-Minimal Childhood Trauma group ($n = 164$) and Moderate-to-Severe Child Trauma Group ($n = 80$), with 95% Confidence Intervals for Unstandardised Regression Coefficients ($n = 242$)

	B	95% C.I.'s	SE B	β
Intercept	46.42***	31.52, 38.35	1.65	1.99
	(62.97***)	(58.47, 66.77)	(2.12)	(3.24)
Antidepressant Treatment	-6.09	-12.45, 4.52	4.33	-.06
Major Depression Diagnosis	.39	-13.53, 8.32	5.57	-.04
Perinatal Depressive Symptoms	3.55***	3.07, 4.74	.43	.58
Perinatal Emotional Support	-1.50**	-2.32, -.45	.48	-.21
	(.32)	(-.90, 1.00)	(.48)	(.01)
Interaction Terms				
Perinatal Depressive Symptoms BY Perinatal Emotional Support from Partner	.22**	.03, .36	.08	.11
R^2		.39*** (.41***)		

[a] Where the Wald Test was significant during pairwise parameter testing, parameter estimates are presented for the None-to-Minimal Childhood Trauma Group and parenthetically for the Moderate-to-Severe Childhood Trauma group.
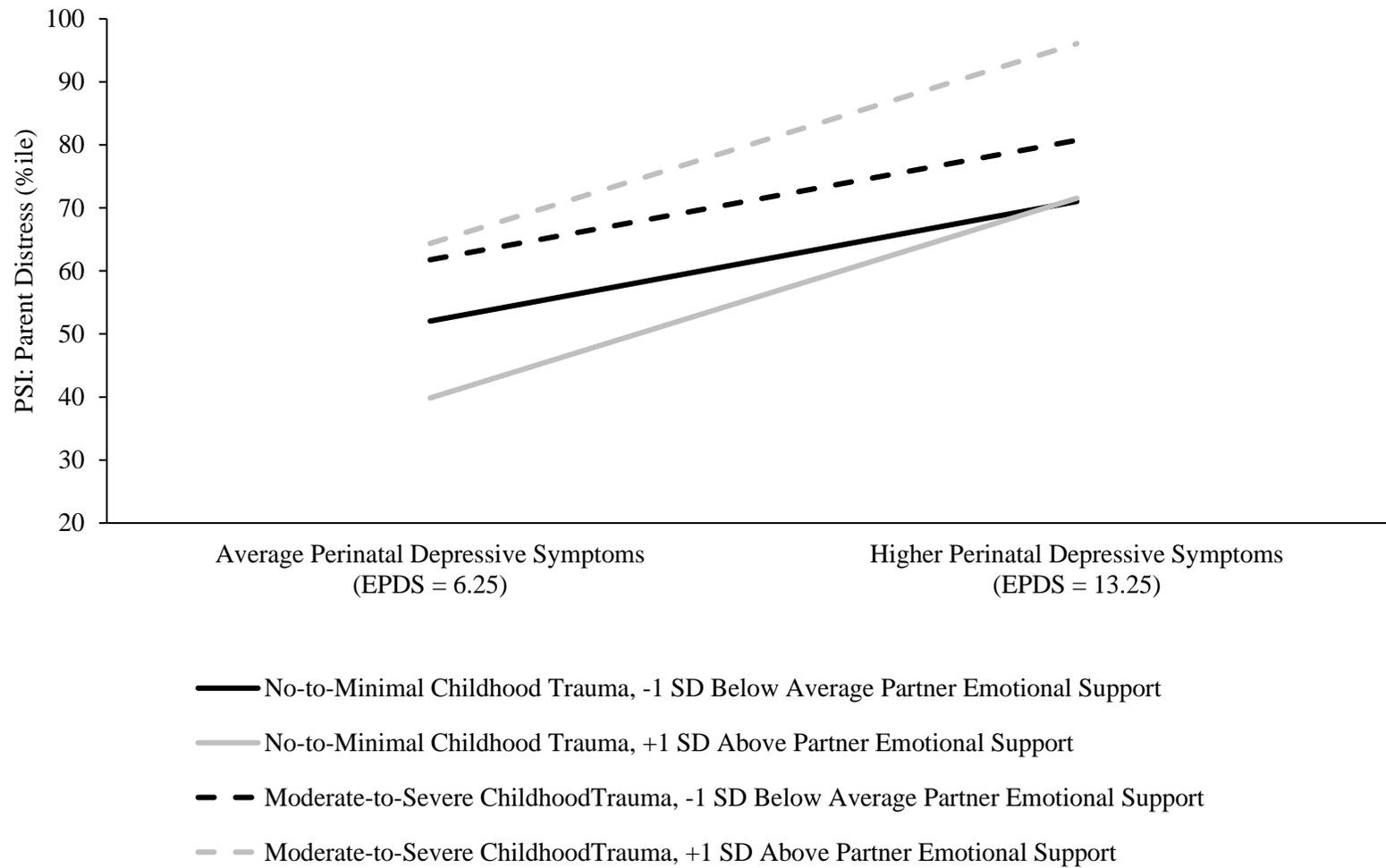*$p < .05$ **$p < .01$ ***$p < .001$

Figure 1. Simple slope plot for significant interaction between perinatal depressive symptoms and partner emotional support predicting parent distress, by history of childhood trauma groups.