Effect of Maternal Depression on Child Behavior: A Sensitive Period?

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Abstract

Objective—The purpose of this study was to examine the effect of maternal depression during the child's first year of life (i.e., sensitive period) on subsequent behavior problems.

Method—Participants were 175 mothers participating in the Oregon Adolescent Depression Project (OADP) who met lifetime diagnostic criteria for major depressive disorder (MDD) and completed the child behavior checklist (CBCL) for their first child at some point during the child's first 12 years (mean = 4.91 years).

Results—Regression analyses indicated that MDD in the sensitive period was a significant predictor of internalizing and total problems scores on the CBCL while controlling for several demographic variables (e.g., child and mother age, child gender). Maternal depression prior to pregnancy and during the prenatal period did not significantly predict later child behavior problems, suggesting the effect was not driven by the presence of previous MDD and was specific to the first year of life.

Conclusions—Presence of maternal MDD during a child's first year of life represents a sensitive period and increases the risk of adverse child outcome. The findings suggest the importance of identification, prevention, and early intervention. Future studies should examine these findings in more diverse, heterogeneous samples.

Keywords

child behavior problems; maternal depression; sensitive period

Depression among mothers of childbearing age is highly prevalent and represents a significant public health concern. A recent estimate suggests as many as 17% of women with young children have elevated levels of depressive symptoms,[1] and these symptoms are likely to persist throughout the child's preschool years.[2] Women diagnosed with postpartum depression were six times more likely to display recurrent depressive symptoms, as well as other physical and mental illnesses after 4 years compared to women without postpartum depressive symptoms. [3]

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In addition to the effects of depression on the mother, there has been substantial research demonstrating negative child behavioral outcomes across a wide age range. Maternal depression has been shown to be related to infant avoidant and disorganized attachment patterns[4] and negative mother-infant interactions,[5] which have been linked to externalizing behavior problems during toddlerhood.[6] By the preschool years, children exposed to chronic maternal depression had higher levels of parent-reported internalizing and externalizing behavior problems.[7] A meta-analysis demonstrated that the relation between maternal depression and conduct problems extends to adolescence.[8] In addition, maternal depression has been shown to mediate the relationship between exposure to community violence and adolescent behavior problems,[9] highlighting its powerful effect on long-term child outcomes.

Despite the substantial evidence that maternal depression affects child behavior, findings with respect to the timing of the depressive episodes have been conflicted. A significant history of maternal depression has been shown to have a cumulative effect on the current report of child behavior problems.[10] However, these findings were not consistent among mothers currently depressed, suggesting the report of child behavior problems may be more dependent on a history of depression than on current maternal depressive status. Similarly, postpartum depression during the first two months of the child's life was shown to predict later maternal depression, which, in turn, led to higher rates of child behavior problems.[11] Another study found that although previous or current maternal depression was unrelated to child problems at 14 months, maternal depression when children were 14 months old predicted child behavior problems at 27 and 42 months.[12] Similarly, Cambell and Cohn[13] found that maternal depression in the early post-partum period did not predict later child behavior problems unless the depressive episode lasted longer than 6 months or if there were additional risk factors.

On the other hand, Murray et al.[14] demonstrated that maternal depression in the early postpartum months was the best predictor of child behavior problems, which was not influenced by current maternal depression. Other research illustrated a model with an additive affect on child behavior problems accounting for both early and concurrent maternal depression.[15] A recent study suggested maternal depression during pregnancy was the strongest predictor of adolescent depression at 16 years, which was mediated by periods of maternal depression during the child's lifetime.[16] Finally, a longitudinal analysis conducted in Finland suggested prenatal maternal depression was associated with higher levels of child behavior problems, and prenatal and recurrent maternal depressive symptoms led to the most negative child outcomes.[17]

The conflicting findings with respect to the timing of maternal depression and its effect on child behavior illustrate the need for further research in this area. The relationship between maternal depressive episodes and important child developmental stages has been proposed to be significant,[18] but few studies examined whether there are any stages in early childhood that are particularly susceptible to the negative effects of maternal depression.[17] Therefore, the purpose of the current study was to examine the effect of timing of maternal depression on later child behavior and determine whether the first year of life, between the child's birth and first birthday, is a critical or sensitive period[19] to the effects of maternal depression.

It is important to explore the effect of timing of maternal depression on a child's later behavioral and emotional functioning for several reasons. First, it may help explain the mechanism by which risk is conferred from mother to child. For example, evidence demonstrating a more harmful effect for maternal depression occurring very early in a child's life may indicate that the disruption of the maternal-infant relationship mediates the relationship between maternal depression and later child behavior problems. Alternatively, a failure to find a timing effect may suggest that the mechanisms of transmission are temporally stable, such as genetic loading or enduring psychosocial stressors. In addition, genes may interact with other environmental

variables (e.g., parenting, psychosocial stressors) that could impact the timing effect of maternal depression. Finally, evidence for the effects of timing of maternal depression can help identify children at highest risk for subsequent behavior problems. These children can be targeted for preventive intervention programs aimed at promoting positive parenting practices and decreasing child behavior problems.

The present study extends previous research by examining the issue of Major Depressive Disorder (MDD) timing effects among a relatively large sample of mothers with positive lifetime histories of MDD and their children, compared to heterogeneous samples (i.e., mothers with and without depression). By focusing only on mothers with positive lifetime histories of MDD, our emphasis was not *whether* maternal MDD predicts child behavior problems (a question that has been sufficiently answered, in our view), but *when* maternal MDD is likely to have the greatest impact on child behavior. The sample was drawn from the larger Oregon Adolescent Depression Project (OADP).

The first aim of this report was to examine the effect of MDD in mothers during the sensitive period on subsequent offspring behavior problems. Development may be viewed as a hierarchically organized series of tasks that become increasingly differentiated over time.[20–21] Each developmental task incorporates prior developmental structures, with the implication that challenges introduced earlier in development are likely to have a broader impact on multiple systems and later tasks. For example, during the first year of a child's life, emotion regulation and cognitive systems develop rapidly and lay the foundation for subsequent development.[22] Maternal depression during this time may hinder a mother's ability to regulate her infant's emotions and establish secure attachment relationships, leading to future behavioral and emotional difficulties.[23] Therefore, we expected that the presence of maternal MDD during the first year of the child's life would associate with more child behavior problems at later assessment points, as compared to MDD that occurred prior to childbirth, prenatally, or later in children's lives.

The second aim was to examine whether the relation between the timing of maternal MDD and child behavior problems differed as a function of child gender. Based on prior research demonstrating boys were more adversely affected by pre and postnatal maternal depression than girls,[24] we expected the relation between early maternal MDD and child behavior problems to be stronger among boys than girls.

Finally, to the extent that support emerged for a maternal MDD timing effect, we examined whether it was robust to control for potential confounding variables, such as current maternal MDD, total duration of maternal MDD, and grandparental MDD loading. In addition, we examined the impact of other lifetime diagnoses on the relation between MDD timing and child behavior problems based on previous findings that the effect of maternal depression on child behavior occurred only among mothers with a history of other lifetime diagnoses (e.g., anxiety, eating disorder, substance abuse).[24]

METHOD

Sampling Strategy

OADP probands were randomly selected from nine high schools in western Oregon. A total of 1,709 adolescents (mean age = 16.60; 52.2% female; 91.1% Caucasian) completed an initial assessment (T1) between 1987 and 1989. Approximately one year later, 1,507 returned for a second evaluation (T2). Differences between the sample and the larger population from which it was selected, and between participants and those who declined or dropped out before T2, were small.[25] At age 24, all probands with a history of Axis I disorders and a random sample with no history of mental illness (NMI) by T2 (n = 457) were invited to a third evaluation (T3).

Of the 1,101 probands selected for a T3 interview, 941 completed the evaluation. At age 30, all 941 T3 probands were invited to a T4 evaluation, and 816 completed the T4 diagnostic interview. Among those invited to T3 and T4 assessments, women were more likely than men to complete evaluations, $\chi^2 > 5.99$, ps < .05; participation did not differ as a function of other status variables or previous diagnoses.

In addition to the four major assessments (T1–T4), probands were asked to complete a mailer questionnaire near the time of the T3 interview (mean age at first mailer = 21.58 years). For probands with children, the questionnaire included the Child Behavior Checklist (CBCL)[26–27] and a question about offsprings' dates of birth. Annually for up to 7 years, and again at T4, probands were requested to complete the mailer questionnaire. Probands who had children at any point during that time period completed the CBCL. At least one CBCL rating was completed for biological children of 238 female probands. Of these, 175 (73.9%) met lifetime diagnostic criteria for MDD by the T4 interview. These 175 mothers and their firstborn biological children represent the reference sample for the present study.

Eight cases (4.7%) were missing data on either the date of maternal MDD or the date of child birth, resulting in a final sample of 167 mothers and 167 children (91 girls; 52.0%). Scores on other measured variables did not differ as a function of missing data. Among the 167 mothers with MDD, 59 had only MDD without any history of co-occurring disorders, 80 had a lifetime history of any anxiety disorder (ANX), and 70 had a lifetime history of any substance use disorder (SUD). There were no other disorders or groups of disorders with a high enough prevalence rate in the OADP to examine the effect of comorbidity on the relation between maternal MDD and child behavior problems. Mean ages at the time of the CBCL rating selected for the current study were 27.54 for mothers (SD = 2.77) and 5.05 years for children (SD = 2.61). Over two-thirds (67.3%) of mothers were married at the time of the CBCL rating, 17.3% had never married, and 15.4% were separated or divorced. Annual household income was as follows: < $10,000 (16.5%); $10–19,999 (18.7%); $20–29,999 (12.5%); $30–39,999 (10.8%); $40–49,999 (13.6%); > $50,000 (34.8%); data on household income were not available for 20 cases (11.9%).

After a description of the study, written informed consent was obtained and mothers were remunerated for their participation. This research was approved by an Institutional Review Board.

Measures

Maternal MDD—At T1 and T2, mothers were interviewed with a version of the Schedule for Affective Disorders and Schizophrenia for School-Age Children (KSADS),[28] which included additional items to derive lifetime *DSM-III-R* diagnoses. The T3 interview was expanded to assess disorders based on the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (DSM-IV).[29] Follow-up assessments at T2–T3 were jointly administered with the Longitudinal Interval Follow-up Evaluation (LIFE).[30] The K-SADS/LIFE procedure provided information regarding the onset and course of disorders since the previous interview. The T4 interview consisted of a joint administration of the LIFE along with the Structured Clinical Interview for DSM-IV, non-patient version (SCID-NP)[31] to probe for new or continuing psychiatric episodes since T3. Although the T1 and T2 assessments were based on DSM-III-R criteria, sufficient information was collected at both time points to ascertain SUD symptoms according to DSM-IV criteria, which were used in the present study. For each identified major depressive episode (MDE), meticulous data were collected on the onset date and offset date. The mean interval between the date of the child's birth and the date of the next maternal diagnostic interview was 2.61 years. Independent review of randomly-selected audiotapes revealed excellent interrater reliability for MDD diagnoses (kappas $\geq$ 0.85 at each assessment wave).

Child Problem Behaviors—Child behavior problems were measured via maternal report on the CBCL. For 2- and 3-year-old children, the mother completed the 99-item CBCL 2–3 version.[27] For children ages 4 and older, the mother completed the 113-item CBCL 4–18 version.[26] Items on both measures are rated on a 3-point scale, corresponding to whether the behavior is (0) not true, (1) somewhat/sometimes true, or (2) very true/often true of the target child. The CBCL factor structure consists of eight narrow-band problem scales, two broadband scales (Internalizing Problems and Externalizing Problems), and a Total Problems scale that is the sum of all subscales. For the present study, we examined dimensional T-scores on the Internalizing, Externalizing, and Total Problems scales. For children with CBCL ratings at multiple assessment points, the rating with the highest Total Problems score was selected to capture children's worst-point behavior problems. This approach is conceptually similar to using lifetime, as opposed to current, diagnostic measures.[32] Among mothers with ratings on 2 or more children, we included ratings only for the firstborn child to reduce potential biases associated with birth order.

Grandparental MDD—We assessed lifetime psychopathology in children's biological, maternal grandparents near the time of the T3 evaluation. Of the 167 cases, 160 (95.8%) had data available on grandparent diagnostic status. Cases with missing grandparent data (n = 7) did not significantly differ from other cases on any measured variable. Grandparents were directly interviewed using a version of the nonpatient edition of the Structured Clinical Interview for *DSM-III-R* that had been modified for *DSM-IV* criteria.[31] Interviewers were unaware of mothers' diagnoses. Of the 160 grandmothers and 152 grandfathers included in the present report, 113 (70.2%) grandmothers and 67 (43.8%) grandfathers were directly interviewed. Family history data were collected using the Family Informant Schedule and Criteria (FISC),[33] supplemented with items to derive *DSM-IV* diagnoses. At least one informant interview was available for all grandfathers and for 159 (98.8%) grandmothers. Each grandmother without an informant interview completed a direct interview. Independent review of randomly-selected audiotapes revealed excellent interrater reliability for MDD diagnoses in both direct and informant interviews (*kappas* > 0.90).

Data Analysis

Prior to analyses, variables were screened for outliers and to ensure that distributions did not violate normality assumptions. To detect univariate outliers, we transformed scores on outcome variables to Z-scores and considered cases with Z-scores ≥ 3.29 as outliers.[34] Multivariate outliers were detected using the Mahalanobis distance criterion.[34] One case with extreme outliers was identified and excluded from subsequent analyses. Data transformations were not necessary because all variables approximated a normal distribution. Tests of collinearity and homoscedasticity indicated that the regression procedures were not unduly influenced by multicollinearity of predictors or heteroscedasticity of residual variances.

Dates of maternal MDEs were compared to the date of childbirth. Four dummy coded variables (0, 1) were created to reflect the absence versus presence of maternal at MDD in four discrete time periods: prior to pregnancy; prenatal (i.e., during pregnancy); postpartum (i.e., during the first year after birth); and after the first postpartum year. Grandparent MDD loading was computed as the number of maternal grandparents with a lifetime history of MDD (0, 1, or 2).

To examine the associations between the presence of maternal MDD during each of the four time periods and children's behavior problems, we first computed point-biserial correlations between the four dummy coded MDD scores and children's CBCL scores on Internalizing, Externalizing, and Total Behavior Problem scores. We then conducted a series of multiple regression models separately for children's Internalizing, Externalizing, and Total Behavior Problem scores to determine whether significant bivariate relations were robust after

controlling for potential confounders. The first step in each model included the selected maternal MDD variable along with child sex and age, parent age at the time of the of the CBCL rating, grandparental MDD loading, the total lifetime duration of maternal MDD, and the presence of current maternal MDD at the time of the CBCL rating; the second step added the interaction term of child gender and maternal MDD in each time period to determine whether the effect of maternal MDD varied as a function of child gender. Because grandparental MDD was not significantly associated with children's behavior problems, did not meaningfully change regression equations upon inclusion, and was missing data for seven cases, we present regression model results without grandparental MDD (results available upon request to J.W.P.).

We conducted additional multiple regression analyses to examine the impact of maternal comorbidity on the relation between the timing of maternal MDD and child behavior problems. Specifically, we examined whether lifetime ANX and SUD were significant predictors of child behavior problems and whether the presence of either diagnosis moderated the relationship between MDD timing and child behavior problems.

RESULTS

Descriptive statistics and intercorrelations between child behavior problems and other measured variables are displayed in Table 1. The majority of women experienced at least one major depressive episode prior to pregnancy and after the first postpartum year. Fifteen percent experienced a depressive episode during pregnancy and twenty percent experienced a depressive episode during the first postpartum year. The discrepancies in MDD rates across the time periods are likely the result of longer time periods before pregnancy and after the first postpartum year (i.e., there was more time in which to experience an episode in those periods). Of the 34 women with postpartum MDD, 15 (44.1%) had an episode only during the first six months after birth, 12 (35.3%) had an episode only during the second six months after birth, and seven (20.6%) had an episode that spanned the first and second six months. On average, women with postpartum MDD were in an episode for 3.85 months of the first postpartum year.

As shown in Table 1, older children received higher ratings on the Internalizing and Total Problems scales, but not the Externalizing scale. Younger maternal age was associated with higher Internalizing and Externalizing scores, but not Total Problems. In contrast to our expectations, grandparent MDD loading, maternal MDD duration, and current maternal MDD did not significantly associate with child behavior problems.

As hypothesized, postpartum MDD during the child's first year was significantly associated with higher scores on the Internalizing and Total Problems scales (Table 1). In addition, MDD after the first postpartum year was significantly associated with higher scores on all three scales. MDD prior to pregnancy and prenatal MDD did not significantly associate with any child outcome variable, and were therefore not retained for multivariate analyses.

Based on significant bivariate results, two sets of multivariate regression models were run: one each for postpartum MDD and MDD after the first postpartum year. In the first set of regression models, displayed in Table 2, the predictive effect of postpartum MDD remained significant for Internalizing and Total Problems while controlling for all covariates. The interaction term of postpartum MDD and child gender did not significantly predict any of the three child behavior scales. In the second set of regression models, the predictive effect of MDD after the first postpartum year decreased to nonsignificance for Internalizing (B=2.24, SE=1.60, p=.16) and Total Problems (B=2.49, SE=1.55, p=.11) while controlling for all covariates. The interaction term of MDD after the first postpartum year and child gender did not significantly predict any of the three child behavior scales. Of note, older child age and younger mother age at the time of the CBCL rating significantly predicted higher child behavior problems in each

model. MDD duration and current MDD at the time of the CBCL rating did not predict child behavior problems in any model.

Finally, we examined the effect of maternal lifetime ANX and SUD on child behavior problems and on the relation between maternal MDD and child behavior problems. In separate linear regressions, lifetime SUD (B=3.08, SE=1.53, p=.04) and lifetime ANX (B=3.60, SE=1.49, p=.02) each significantly predicted child Internalizing Problems. Neither lifetime SUD or ANX predicted Externalizing or Total Problems (ps > .10). When maternal lifetime SUD and ANX were entered jointly in the previously described multiple regression models with all covariates, the predictive effect of postpartum MDD on Total Problems decreased to marginal significance (B=3.74, SE=1.96, p=.058) and nonsignificance for Internalizing problems (B=2.98, SE=1.98, p=.13). Neither form of comorbidity moderated the impact of postpartum MDD on CBCL scores (ps > .10).

DISCUSSION

We examined the effect of timing of maternal depression on children's later behavior problems. Although there has been substantial research demonstrating the adverse effects of maternal depression on child behavior[4–5, 7] and association with long-term adolescent conduct problems,[8–9] findings have been equivocal with respect to the impact of timing of maternal depression. This study was unique in that we examined the specific effect of maternal depression during the first year of life, representing a vulnerable and sensitive period of development. Another strength of the study was that we assessed the timing of MDD episodes rather than symptoms counts.

As predicted, we found that maternal MDD during the sensitive period predicted child internalizing and total behavior problems before and after adjusting for age and gender. Children of mothers who experienced MDD during the first year of life had higher levels of internalizing and total behavior problems based on maternal report. Although the majority of children in both groups were not in the clinically significant range on the CBCL, approximately 10% more children of mothers who experienced MDD during the child's first year of life were in the clinical range on the CBCL than children of mothers experiencing MDD during other time points. These findings were consistent with previous research demonstrating that maternal depression in the early postpartum months was the best predictor of child behavior problems.[14]

Maternal depression prior to pregnancy and during the prenatal period did not significantly predict later child behavior problems, suggesting the effect was not driven by the presence of previous MDD and was specific to the first year of life. The finding that prenatal maternal depression did not significantly predict child behavior problems was surprising, particularly given previous research in this area.[35–36] One possibility for the discrepant findings may be due to low power in the current study; only 26 mothers were diagnosed with MDD during pregnancy. Alternatively, it is possible that the timing of MDD could be associated with different mechanisms of risk, which in turn have implications for the timing of child behavior problems. For example, although not directly examined in this study, the effect of MDD during the sensitive period could be mediated by psychosocial processes such as maternal sensitivity, which has been related to behavior problems in early childhood.[37] Conversely, the effect of prenatal maternal depression may be mediated by genetic or biological factors, which would have a stronger effect during adolescence.[38]

Interestingly, the timing of MDD predicted child internalizing and total behavior problems but not externalizing behavior problems. Although the effect on total behavior problems was consistent with previous research,[15] the effect on internalizing behavior problems differed from

previous studies that suggested an effect of maternal depression on externalizing and not internalizing behavior problems.[17, 24] However, these studies demonstrated a significant effect of prenatal depression on child externalizing behavior problems in contrast to maternal depression during the first year of life for the current study. In addition, previous research examined mothers with and without depressive symptoms, whereas the current study examined only mothers with a positive history of depression. Therefore, our findings suggest the timing of maternal MDD does not predict child externalizing behavior problems.

In addition to differences in the effect of timing of maternal MDD, our results differed from previous research demonstrating a gender effect. Carter and colleagues[24] found that both prenatal and postnatal maternal depressive symptoms (average of symptoms at 4 and 14 months) were associated with externalizing behavior problems for boys only, whereas the quality of mother-infant interactions at 4 months was associated with externalizing and internalizing behavior problems for girls only. These findings suggest that the mechanisms of risk from maternal depression may differ among boys and girls. Our lack of gender differences may be due to the use of maternal report of child behavior without a measure of parent-infant interactions. Nonetheless, our findings suggest that maternal MDD during the first year of life is associated with maternal report of child internalizing behavior problems regardless of gender.

Lifetime ANX and SUD were also shown to predict child internalizing behavior problems but do not predict child externalizing and total behavior problems, and neither diagnosis moderated the effect of MDD on child behavior. In addition, the effect of maternal depression during the sensitive period decreased to marginal significance for Total problems and nonsignificance for internalizing problems. This finding was fairly consistent with previous results from Carter and colleagues,[24] suggesting the effect of maternal depression on child problems was largely due to the presence of comorbid lifetime diagnoses. Overall, our findings suggest that maternal MDD during the first year has its most potent impact on child behavior, but that the presence of comorbid disorders may also be an important risk factor for child problems.

The study has some limitations that need to be addressed and may limit the generalizability of the findings. First, child behavior was assessed solely by maternal report, which is subject to rater bias. Although some research suggests mothers with depression may be more accurate in their perceptions of their child's behavior,[39] the use of more objective behavioral observations would have enhanced the study findings. Second, the sample included in the OADP was relatively homogeneous and included relatively few women from ethnic and racial minority backgrounds. Future research should attempt to replicate these findings with more culturally diverse groups. Although our overall sample size was adequate to examine the direct effect of maternal depression, the inability to detect significant moderator effects may be due to decreased power given the multiple variables entered into the regression analyses. In addition, there were an insufficient number of mothers in our sample who met criteria for the DSM postpartum onset specifier to examine this diagnostic subtype. Some of the mothers who experienced MDD during the sensitive period had an episode onset prior to childbirth and others did not have an onset until after 4 weeks post-childbirth.

Another limitation is that data presented were collected only from mothers. Although some fathers participated in the OADP, there were an insufficient number of fathers to include in the analyses, and it is unknown whether the effects of depression during the first year would exist among fathers. Finally, we did not examine the effect of maternal depression during more narrow time periods within the first year. Although our decision to focus on the first year of life was guided by both practical and theoretical reasons (e.g., development of emotional systems during this time that lay the foundation for subsequent development), we recognize that the use of a 12-month cutoff is somewhat arbitrary. It would be interesting for future

research to examine whether there are differential effects of maternal depression across the child's lifespan.

The finding that maternal depression during the child's first year is associated with later child internalizing and total behavior problems highlights the importance of early identification maternal depression. Effective screening can lead to the implementation of important prevention and early intervention programs. Although the present study demonstrates when maternal depression has the largest impact on child behavior, we did not examine what makes the first year sensitive to maternal depression and how, or the mechanism by which, maternal depression impacts child development. Future research needs to address these questions, which will help with the development of effective and targeted prevention and early intervention programs for depressed mothers and their children.

Acknowledgments

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Table 1

Means of, standard deviations of, and intercorrelations between variables.

	Intern	Extern	Total Prob	M (SD) or %
Intern	--			52.29 (9.95)
Extern	.70***	--		53.47 (9.97)
Total Prob	.81***	.87***	--	51.50 (9.51)
Child Male	−.02	.06	.06	48.30%
Child Age	.20**	.11	.24**	4.91 (2.61)
Parent Age	−.19*	−.17*	−.07	27.56 (2.75)
Maternal MDD				
Prior to pregnancy	.03	.01	.03	75.9%
During pregnancy	.14	.14	.13	15.1%
Postpartum year	.18*	.15	.20**	20.5%
After postpartum year	.18*	.16*	.19*	61.4%
Grandparent MDD [a]	.03	−.04	−.02	56.00%
Maternal Current MDD	−.02	.08	.05	7.00%
Maternal MDD Duration	.08	.11	.07	71.99 (94.27)

Note: Maternal MDD Duration refers to the total duration of all MDD episodes in weeks. n=166; Extern = CBCL Externalizing Behavior Problem *T* score; Intern = CBCL Internalizing Behavior Problem *T* score; MDD = major depressive disorder; Total Prob = CBCL Total Problems *T* score.

[a] n = 159.

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 2

Multiple Regression of Postpartum Major Depressive Disorder on Child Behavior Problems.

	Internalizing B (SE)	Externalizing B (SE)	Total Problems B (SE)
Postpartum Major Depressive Disorder	3.74 (1.88)*	2.97 (1.97)	4.16 (1.82)*
95% CI of B	.02, 7.46	−.92, 6.86	.56, 7.76
Child Male Gender	1.31 (1.48)	1.69 (1.54)	1.90 (1.43)
95% CI of B	−1.61, 4.22	−1.36, 4.73	−.92, 4.72
Child Age	1.31 (.31)**	.72 (.32)*	1.20 (.30)**
95% CI of B	.69, 1.92	.10, 1.38	.60, 1.79
Mother Age	−1.18 (.29)**	−.84 (.31)**	−.67 (.28)*
95% CI of B	−1.75, −.60	−1.44, −.24	−1.23, −.12
Maternal Major Depressive Disorder Duration	.004 (.008)	.006 (.008)	.002 (.008)
95% CI of B	−.01, .02	−.01, .02	−.01, .02
Maternal Current Major Depressive Disorder	−1.79 (3.04)	2.19 (3.17)	.89 (2.94)
95% CI of B	−7.79, 4.21	−4.08, 8.46	−4.92, 6.69
	$F_{(6, 159)}$ = 5.07, $p < .001$	$F_{(6, 159)}$ = 2.62, $p < .05$	$F_{(6, 159)}$ = 4.23, $p < .001$

Note: CI = confidence interval.

*
$p < .05$;

**
$p < .01$.