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Postpartum depression and child development: An investigation of mothers and fathers as sources of risk and resilience

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Abstract

We examined maternal and paternal characteristics at 1 month postpartum as risk and protective factors for children's internalizing and externalizing problems at 2-3 years of age. In a sample of 70 couples and their children, fathers' depressive symptoms at 1 month postpartum predicted children's internalizing and externalizing problems at 2-3 years of age, and the interaction of fathers' and mothers' depressive symptoms predicted subsequent internalizing problems. Mothers' postpartum symptoms did not predict either type of children's behavior problems at age 2-3. When entered in the regression equations, mothers' depressive symptoms when the children were age 2-3 years accounted for all of the effects of paternal and maternal postpartum depressive symptoms. No evidence was found for the protective effects of marital satisfaction or social support, or for low levels of depressive symptoms in a spouse. We highlight directions for future risk and resilience research related to parental postpartum depression.

Children of depressed parents are at risk for a range of adjustment problems (Gelfand & Teti, 1990; Lee & Gotlib, 1990). Compared to children of nonpsychiatrically disordered parents, school-age and adolescent children of depressed parents evidence a greater number of both externalizing and internalizing behavior problems, greater social and academic impairments, and poorer physical health. Recent research further suggests that these children may be especially at risk for depressive symptoms and clinical depression (Hammen, 1991). Given the high level of risk for child maladjustment associated with parental depression, it is essential

to identify factors that can protect children against the adverse effects of living with a depressed parent.

Compared to our knowledge of the status of school-age and adolescent children of depressed parents, relatively less is known about risk and protective factors when parental depression occurs during infancy or toddlerhood. Maternal depression, however, may have its greatest impact during these early months and years (e.g., Cohn, Campbell, Matias, & Hopkins, 1990; Whiffen, 1990; Whiffen & Gotlib, 1992b). Since depressive symptoms can interfere with daily functioning, including a mother's ability to interact effectively with her child (Weissman, Paykel, & Klerman, 1972), it is reasonable to expect that early child development would be adversely affected when a mother is depressed (Cohn et al., 1990; Whiffen & Gotlib, 1992b). The effects of

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maternal depression during early child development have been especially important to understand given that the prevalence of mothers who experience mild or major depression during the postpartum period (i.e., 4–12 weeks after delivery) may be as high as 10–15% (Cohn et al., 1990; O'Hara, 1986; Whiffen, 1992; Whiffen & Gotlib, 1992b).

Cross-sectional research has established that mothers experiencing depressive symptoms during the postpartum period and their infants are behaviorally and emotionally distinguishable from nondepressed dyads. Mothers reporting moderate to high levels of depressive symptoms interact with their babies less and are less positive and less contingently responsive toward their babies than are mothers who report few depressive symptoms (e.g., Cohn & Tronick, 1989; Field, Healy, & LeBlanc, 1989; Field et al., 1985; Fleming, Ruble, Flett, & Shaul, 1988; Hoffman & Drotar, 1991; Livingwood, Daen, & Smith, 1983). Compared to infants of nondepressed mothers, infants of depressed mothers show fewer positive and more negative facial expressions, make fewer vocalizations, play less, and are more fussy and tense (Field, 1984; Field et al., 1985; Cohn et al., 1990; Cohn & Tronick, 1989; Whiffen & Gotlib, 1992a). In addition, evidence suggests that such behavior generalizes into interactions with nondepressed strangers (Field et al., 1988).

With regard to the role of maternal postpartum depression as a risk factor for later child development, evidence suggests that the impact of a depressed mother on an infant will be evident in the development of a negative style of interacting with others. For example, Field et al. (1988) found that in a sample of 3–6-month-old infants, approximately half of whom had mothers reporting depressive symptoms, the infants' *depressive* behaviors generalized into interactions with *nondepressed* strangers. Whiffen and Gotlib (1992b) found that postpartum depression in mothers predicted decreased activity and babbling in a testing situation when the child was 12 months of age. Furthermore, maternal inaccessibility associated with her depression was related

to greater fearfulness during testing at 12 months (Whiffen and Gotlib, 1992a).

Longitudinal studies investigating the association between early maternal depression and early child behavioral adjustment have found less direct effects of early maternal depression. Caplan et al. (1989) found that although there was suggestion of a relationship between early postpartum depressive symptoms and later behavioral problems at 4 years of age, the primary contributing factors were marital conflict and psychiatric difficulties in the husband. Similarly, Philipps and O'Hara (1991) found no evidence of a direct association between early depression and behavioral problems at 4½ years of age once concurrent levels of maternal depressive symptoms were accounted for. Thus, the long-term effects of early maternal depression warrant further investigation.

It is widely assumed that postpartum depression is uniquely a female experience, most likely biological in nature (Whiffen, 1992). However, the prevalence, symptoms, course, and duration of postpartum depression as compared to general depression do not support this conclusion, and the distinction between postpartum and nonpostpartum depression may have little utility (Whiffen, 1992; Whiffen & Gotlib, 1993). Although the rate of depression appears elevated in the postpartum period (13% as opposed to 6% in community samples), severity of symptoms has been the only basis in most studies for the distinction between postpartum and nonpostpartum depression (Whiffen, 1992). Moreover, women with a psychiatric history of depression are more likely to develop postpartum depressive symptoms as compared to women without a history of depression. Finally, postpartum depression shares etiological features with nonpostpartum depression including marital discord, low social support, and life stress. Whiffen (1992) argued that postpartum depression may occur due to difficulty adjusting to the major life event of having a child, an event that requires adapting to the role of parent and changes in one's relationships with a partner. Therefore, depressive

symptoms may occur during this period just as they might occur after any other major life event. Thus, in addition to considering depressive symptoms at postpartum, it will also be important to account for levels of stress experienced by mothers during this period, along with factors that may protect against the effects of stress (e.g., social support). Furthermore, factors that have been shown to be sources of resilience in the face of life stress, such as adequate social support and satisfying close relationships, may also be resources for managing postpartum depression and therefore reduce the risk for negative child outcomes.

Understanding of both the short- and long-term effects of maternal depressive symptoms during postpartum can be enhanced by examining those factors that may moderate or serve a protective function against the risk associated with parental depression. Sources of resilience and protection in the face of known risk factors such as parental depression are crucial in understanding the nature of successful adaptation to stress and in designing interventions to promote positive adjustment (Masten, Best, & Garmezy, 1990). Despite the evidence that parental depression is related to impaired behavioral development during infancy, there are those children who flourish despite exposure to parental depression. There may be environmental characteristics that serve to protect these infants and foster resilience in spite of risk, that is, factors such as those that "moderate the effects of individual vulnerabilities or environmental hazards so that the adaptational trajectory is more positive than would be the case if the protective factor were not operational" (Masten et al., 1990, p. 426).

One important protective factor for children at risk for emotional and behavioral difficulties is the presence of positive adult relationships. In fact, the most frequently reported correlate of resilience for children living with a parent who has serious mental illness is a warm relationship with an adult within or outside the family (e.g., Bleuler, 1984; Fisher, Kokes, Cole, Perkins, & Wynne, 1987). For infants living with a de-

pressed parent, a positive relationship with a nondepressed parent or other adult may serve a similar protective function. Infants who spend time with another nondepressed parent or other adult may be more resilient to behavioral problems than infants whose adult contact is limited to involvement with a depressed parent or parents. Along these lines, Rutter (1990) reported that children living with parents in severe marital conflict, a risk factor that is associated with parental depression, appear to be protected by a positive relationship with one of the parents. Therefore, fathers may be an especially important resource in moderating the effects of maternal postpartum depression on child adjustment. Surprisingly, no studies have examined whether or not fathers can serve a protective function for children whose mothers experience postpartum depression.

The evidence that depressive symptoms during the postpartum period are not a unique response of new mothers suggests that depressive symptoms are at least in part a reaction to the stress of becoming a parent. Therefore, it is plausible that fathers as well as mothers may experience depressive symptoms during this period. Consequently, in addition to considering the role of fathers as a protective resource for early child development, paternal depression may represent an additional risk factor for child maladjustment. Depressive symptoms and disorders in fathers have received relatively little attention when compared to the large volume of research on these problems in mothers (Phares & Compas, 1992). Recent evidence does indicate, however, that paternal depressive symptoms and disorders are associated with increased risk for a variety of emotional and behavioral problems in children (e.g., Jacob & Leonard, 1986; Klein, Clark, Dansky, & Margolis, 1988; Orvaschel, Walsh-Allis, & Ye, 1988). These studies have shown that school-age children and adolescents of fathers who have high levels of depressive symptoms or diagnoses of clinical depression have increased levels of both internalizing and externalizing problems. In those instances in

which children of depressed fathers and children of depressed mothers have been compared, the increased risk for child maladjustment has been found to be equivalent. We were unable to identify any studies, however, that have examined the effects of paternal depressive symptoms during the postpartum period on later child development.

The present research focused on the continued search for parental characteristics during the postpartum period that serve as sources of risk and protection for subsequent child development. Specifically, using a prospective design we examined (a) the role of maternal and paternal depressive symptoms, alone and interaction with each other, as predictors of later child behavior problems; and (b) low levels of depressive symptoms in a spouse, perceived social support, and marital satisfaction during the postpartum period as protective factors of subsequent child emotional/behavioral problems. Levels of perceived stress and levels of parental depressive symptoms during later child development were examined as possible correlates or mediators of the effects of parental depressive symptoms during the postpartum period.

Methods

Subjects

Participants were 70 mothers and fathers who were part of a larger longitudinal study investigating the development and consequences of depression during the postpartum period (Gotlib, Whiffen, Wallace, & Mount, 1991). At the time of the study, the mothers had a mean age of 28.97 years ($SD = 3.68$) and a mean of 14.48 years of education ($SD = 2.17$). Fathers had a mean age of 30.73 years ($SD = 4.28$) and a mean of 14.47 years of education ($SD = 2.73$). The subjects in the larger study were recruited when they arrived for their first appointment during pregnancy at an obstetrics department of a large, urban hospital and private practices of family physicians. From this larger study, 130 mothers were

randomly selected and approached to participate in this project, and 122 of these women agreed to take part. Of these women, 70 had husbands who also agreed to participate, and these couples comprise the sample for the present analyses. A comparison of those mothers and children in which fathers did and did not choose to participate indicated that these groups did not differ on mothers' depressive symptoms on the Beck Depression Inventory (BDI) or on mothers' reports of social support. Mothers whose husbands did not participate ($M = 108.6$) reported less marital satisfaction than those whose husbands participated ($M = 117.3$), $p = .001$; and mothers whose husbands did not participate ($M = 23.8$) reported more perceived stress than those whose husbands participated ($M = 20.5$), $p < .04$. Mothers' ratings of children's total, internalizing, and externalizing problems on the Child Behavior Checklist (CBCL) at follow-up did not differ as a function of husbands' participation.

Measures

Maternal and paternal depressive symptoms. Mothers' and fathers' depressive symptoms were measured with the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), one of the most frequently used depression rating scales. The BDI is a 21-item self-report measure of affective, cognitive, motivational, and physiological symptoms of depression. Each item consists of four self-evaluative statements scored from 0 to 3 as an index of the intensity of each symptom. Research assessing the validity of the BDI as a diagnostic instrument has found significant correlations of the BDI with psychiatric ratings in both psychiatric and student samples (Beck, Steer, & Garbin, 1988; Bumberry, Oliver, & McClure, 1978; see Gotlib & Cane, 1989). Finally, the sensitivity of the BDI (i.e., the ability of the BDI to detect episodes of depression when present) is generally high. For example, using a cut-off score of 9, Oliver and Simmons (1984) reported that in a large, nonclinical sample of randomly se-

lected adults the BDI failed to detect only 15.4% of the depressed cases. Cut-off scores have been established for none or minimal depression (0–9), mild to moderate depression (10–18), moderate to severe depression (19–29), and severe depression (30–63; Beck et al., 1988).

Marital satisfaction. The Dyadic Adjustment Scale (DYAS; Spanier, 1976) was used to assess the quality of the marital relationship of the participants. The DYAS is a frequently used measure of marital adjustment (e.g., Jacobson & Moore, 1981). Several investigations have demonstrated that it is a psychometrically reliable and valid measure that discriminates happily married and unhappily married and divorced samples (e.g., Spanier, 1976; Whiffen & Gotlib, 1992b). Cronbach's alpha for the DYAS in this study was .96. Higher scores on this scale reflect greater marital satisfaction.

Perceived stress. The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used as a global measure of the level of stress experienced by the participants. The PSS is a psychometrically sound, 14-item questionnaire that measures the degree to which respondents feel their lives to be unpredictable, uncontrollable, and overwhelming. As such, the PSS does not assess stress associated with specific life events or situations but rather cognitions and emotions that relate to general stress levels. The PSS has been found to be significantly correlated with both depression and physical symptoms (e.g., Cohen et al., 1983; Whiffen & Gotlib, 1993). Cronbach's alpha for the PSS in this study was .87.

Perceived social support. Perceived social support was measured by the Provision of Social Resources Scale (PSRS; Turner, Frankel, & Levin, 1983). This 15-item scale measures respondents' perceptions of support, especially from family and friends. Across several studies, the PSRS exhibits good psychometric properties, with Cronbach's alphas ranging from .84 to .90 (e.g.,

Avison, Noh, & Speechly, 1991; Turner et al., 1983).

Child behavior problems. Children's internalizing and externalizing behavioral and emotional problems at 2–3 years of age were assessed with the CBCL (Achenbach, Edelbrock, & Howell, 1987). Mothers completed this 99-item scale by rating their child's behavior during the past 2 months on each item on a 3-point scale ranging from "not at all true" to "very true or often." Reliability and validity are well established, and *T* scores are normed separately for boys and girls based on a representative sample of parents' reports on their 2–3-year-old children (Achenbach et al., 1987). Scores are generated to reflect two empirically derived broadband syndromes of internalizing and externalizing problems as well as total behavior problems.

Procedures

Potential participants were approached when they arrived for their first appointment during pregnancy at the obstetrics department of a large, urban hospital and at private practices of family physicians. All women were met by a research assistant, who described the research project to them. Those women who expressed an interest in the study and provided written consent to participate were provided with a set of questionnaires to be completed at home and returned by mail. The questionnaires included a demographic information sheet and the measure described in the preceding section (with the exception of the CBCL). These questionnaires were completed first when the participants were an average of 23.1 weeks pregnant ($SD = 9.5$) and again an average of 4.5 weeks after delivery ($SD = 2.7$). The data from this 1-month postpartum assessment were used in the present study. Subsequent data collections were conducted during regularly scheduled obstetric appointments with the physician. The CBCL was completed by mothers when their children were between 2 and 3 years of age ($M = 2.67$ years, $SD = 0.47$).

Results

Overview

The analyses were carried out in three steps. First, hierarchical multiple regression analyses were used to examine the main effects and interaction of mothers' and fathers' depressive symptoms at postpartum as predictors of child emotional and behavioral problems at 2–3 years of age. Parental depressive symptoms when children were 2–3 years old were then added to determine whether these effects of parental depression at postpartum were unique predictors of later child maladjustment or they were the result of continued depressive symptoms at follow-up. A third set of analyses were conducted to examine the role of perceived stress as an additional risk factor, and marital adjustment and perceived social support at postpartum as possible protective factors in the relation between postpartum depressive symptoms and later child adjustment. Prior to reporting the results of the regression analyses, descriptive statistics and correlational analyses are presented to provide an overview of the data.

Descriptive statistics

Means and standard deviations for mothers' and fathers' depressive symptoms on the BDI at postpartum and follow-up, perceived stress on the PSS, perceived social support on the PSRS, marital satisfaction on the DYAS, and children's total, internalizing, and externalizing *T* scores on the CBCL at 2–3 years of age are presented in Table 1. The mean BDI scores for mothers and fathers are comparable to those reported in other community samples of adults. Twenty mothers (29%) and seven fathers (10%) exceeded the cut-off scores (>9) for mild depressive symptoms; three mothers (4%) and two fathers (3%) exceeded the cut-off (>18) for moderate depressive symptoms. The means and standard deviations for the CBCL *T* scores were all roughly comparable to the normative sample for this scale.

Correlational analyses

Pearson correlations of the parent data at postpartum and follow-up data on parental depressive symptoms and child emotional and behavioral problems are presented in Table 2. Mothers' and fathers' depressive symptoms on the BDI were moderately stable from postpartum to follow-up, $r = .56$, $p < .01$, and $r = .63$, $p < .01$, respectively. Mothers' and fathers' BDI scores were marginally correlated at postpartum ($r = .25$, $p < .05$) and at follow-up ($r = .38$, $p < .01$). It is noteworthy that fathers' BDI scores at postpartum were significantly related to mothers' BDI scores at follow-up ($r = .56$), whereas mothers' initial depressive symptoms on the BDI were not related to fathers' BDI at follow-up ($r = .15$). Mothers' and fathers' depressive symptoms at postpartum and at follow-up were all correlated to children's total, internalizing, and externalizing problems at follow-up, with the magnitude of the associations ranging from low (.17) to moderate (.48).

Multiple regression analyses

Prediction of children's problems from mothers' and fathers' depressive symptoms. A series of multiple regression analyses were conducted with children's total, internalizing, and externalizing *T* scores on the CBCL as the dependent variables. Mothers' and fathers' depressive symptoms at postpartum as well as their interaction were used as predictors in the first set of regressions. The overall equation was significant in predicting total behavior problems from parents' postpartum depressive symptoms, $F(3, 66) = 4.38$, $R^2 = .17$, $p < .001$. Fathers' symptoms were a significant predictor, whether they were entered before ($sr^2 = .14$, $p < .001$) or after ($sr^2 = .11$, $p = .004$) mothers' symptoms. Mothers' symptoms were not a significant predictor regardless of order of entry, and the interaction of mothers' and fathers' symptoms was also not significant. For internalizing problems, the overall equation was significant, $F(3, 66) = 2.93$, $R^2 = .12$, $p < .05$. Fa-

Table 1. Means and standard deviations of maternal and paternal depressive symptoms, perceived stress, perceived social support, marital satisfaction, and child behavior problems

	<i>M</i>	<i>SD</i>
Mothers' BDI—postpartum	7.16	5.24
Mothers' BDI—follow-up	4.50	5.45
Fathers' BDI—postpartum	3.31	5.45
Fathers' BDI—follow-up	3.14	3.77
Mothers' perceived stress	20.45	8.95
Fathers' perceived stress	16.15	12.14
Mothers' perceived social support	32.80	10.26
Fathers' perceived social support	35.88	10.15
Mothers' marital satisfaction	117.33	13.01
Fathers' marital satisfaction	114.75	13.21
CBCL—total problem <i>T</i> score	45.03	9.43
CBCL—internalizing problem <i>T</i> score	46.11	8.46
CBCL—externalizing problem <i>T</i> score	46.87	9.89

Note: BDI = Depression Inventory; CBCL = Child Behavior Checklist.

thers' depressive symptoms approached significance when entered before ($p = .06$) and after ($p = .10$) mothers' symptoms. Mothers' symptoms were not significant, regardless of whether they were entered before or after fathers' symptoms. The interaction of mothers' and fathers' symptoms in predicting internalizing problems was significant, $sr^2 = .05$, $p < .05$. This interaction was further analyzed by comparing the slopes of the regression lines for those children whose mothers were high versus low in depressive symptoms. When mothers' depressive symptoms were high, there was no association between paternal depression and children's internalizing problems. However, when mothers' depressive symptoms were low, there was a linear relation between paternal depressive symptoms and children's internalizing problems. Finally, for externalizing problems, the overall equation was also significant, $F(3, 66) = 3.18$, $R^2 = .13$, $p < .05$. Fathers' depressive symptoms were significant when entered first in the equation ($sr^2 = .07$, $p = .02$) but only marginally significant when entered after mothers' symptoms ($sr^2 = .05$, $p = .07$). Similarly, mothers' symptoms were significant when entered before fathers' symptoms ($sr^2 = .06$, $p = .04$) but

not when entered after fathers' symptoms ($p = .12$). The interaction of mothers' and fathers' symptoms was not significant in predicting children's externalizing problems.

These regression analyses were then run again, adding mothers' and fathers' depressive symptoms at follow-up (i.e., concurrent with the measure of child behavior problems) as predictors in the equation. The equation predicting total behavior problems was significant, $F(6, 43) = 4.68$, $R^2 = .40$, $p < .001$. Mothers' depressive symptoms at follow-up were the only significant predictor, $sr^2 = .06$, $p < .05$; the effect for fathers' depressive symptoms at postpartum was no longer significant. The equation predicting internalizing problems was also significant, $F(6, 43) = 2.95$, $R^2 = .29$, $p < .02$. Mothers' depressive symptoms at follow-up were the only significant predictor, $sr^2 = .12$; the interaction of mothers' and fathers' symptoms at follow-up was also significant, $sr^2 = .07$, $p = .051$. Finally, the equation predicting externalizing problems was significant, $F(6, 43) = 3.52$, $R^2 = .33$, $p < .01$. Mothers' depressive symptoms at follow-up were the only predictor that approached significance, $sr^2 = .06$, $p = .063$; neither moth-

Table 2. Pearson correlations of maternal and paternal characteristics and child behavior problems

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Mothers' BDI - postpartum	—												
2. Mothers' BDI - follow-up	.56*	—											
3. Fathers' BDI - postpartum	.25 ^a	.56*	—										
4. Fathers' BDI - follow-up	.15	.38 ^a	.63*	—									
5. Mothers' perceived stress	.71*	.48 ^a	.24	.28	—								
6. Fathers' perceived stress	-.09	.10	.11	.13	.11	—							
7. Mothers' perceived social support	.44 ^a	.33 ^a	.23	.27	.63*	.03	—						
8. Fathers' perceived social support	.16	.26 ^a	.36 ^a	.42 ^a	.08	.62*	.20	—					
9. Mothers' marital satisfaction	-.46 ^a	-.14	-.16	-.33 ^a	-.51*	-.25 ^a	-.39 ^a	-.08	—				
10. Fathers' marital satisfaction	-.30 ^a	-.17	-.25 ^a	-.30 ^a	-.34 ^a	-.38 ^a	-.22	-.33 ^a	.62*	—			
11. CBCL - total problem T score	.19	.48 ^a	.37 ^a	.40 ^a	.36 ^a	.03	.27 ^a	.09	-.19	-.18	—		
12. CBCL - internalizing T score	.17	.35 ^a	.22	.28 ^a	.24	.11	.16	.14	-.19	-.25 ^a	.74*	—	
13. CBCL - externalizing T score	.24 ^a	.44 ^a	.27 ^a	.32 ^a	.36 ^a	-.02	.25	-.01	-.21	-.18	.94*	.60*	—

^aConsidered significant by chance after Bonferroni adjustment.

* $p < .05$ after Bonferroni adjustment.

ers' nor fathers' depressive symptoms were significant once parental depressive symptoms at follow-up were included.

In summary, once mothers' depressive symptoms at follow-up were accounted for, all associations of fathers' and mothers' depressive symptoms at postpartum with children's subsequent emotional and behavioral problems were no longer significant. This may be attributable at least in part to the effect of common method variance as a result of obtaining mothers' reports of their own depressive symptoms and their children's behavior problems at the same point in time. However, it is also possible that mothers' depressive symptoms at follow-up mediated the association between fathers' postpartum depressive symptoms and children's subsequent problems. To test the possibility, an additional set of regression analyses was conducted to examine the relation between fathers' depressive symptoms at postpartum and mothers' depressive symptoms at follow-up. After controlling for mothers' postpartum depressive symptoms, fathers' depressive symptoms ($sr^2 = .19, p < .001$) were still a significant predictor of mothers' depressive symptoms at follow-up, $F(2, 67) = 32.92, R^2 = .50, p < .001$. Thus, the data suggest that fathers' initial depressive symptoms are related to increases in mothers' symptoms over time, which in turn are related to children's behavior problems at 2–3 years of age.

Perceived stress, perceived social support, and marital satisfaction as predictors of children's behavior problems. Perceived stress, perceived social support, and marital satisfaction were examined as possible moderators of the association of mothers' and fathers' depressive symptoms at postpartum with children's behavioral problems at 2–3 years of age. Analyses were run separately for mothers and fathers, and each of the potential moderator variables (stress, support, marital satisfaction) was examined along with depressive symptoms and their interaction as predictors of child problems. The interactions were only considered when a significant main effect for parental depressive

symptoms had been identified; i.e., variables that may moderate the effects of parental depressive symptoms are only of interest when an effect for depressive symptoms has been identified.

When mothers' depressive symptoms were examined alone, there was a significant effect in predicting children's total behavior problems ($F(1, 56) = 6.8, R^2 = .11, p < .01$), internalizing problems ($F(1, 56) = 5.3, R^2 = .09, p < .05$), and externalizing problems ($F(1, 56) = 9.40, R^2 = .14, p < .01$). None of the interactions of maternal depressive symptoms with perceived stress, perceived social support, or marital satisfaction were significant in predicting any of the three child outcomes.

Fathers' depressive symptoms were also a significant predictor of children's total behavior problems ($F(1, 56) = 12.9, R^2 = .19, p < .001$), internalizing problems ($F(1, 56) = 7.02, R^2 = .11, p < .01$), and externalizing problems ($F(1, 56) = 4.96, R^2 = .08, p < .05$). The interaction of paternal depressive symptoms and perceived stress was significant for total behavior problems ($sr^2 = .10, p < .001$), internalizing problems ($sr^2 = .05, p < .01$), and externalizing problems ($sr^2 = .09, p < .05$). In all three of these analyses, fathers' depressive symptoms and perceived stress combined to predict higher children's behavior problems. None of the interactions of fathers' depressive symptoms with perceived social support or with marital satisfaction were significant in predicting any of the child outcomes.

Discussion

The present study was designed to extend prior research on parental depression during the postpartum period as a risk factor for subsequent child maladjustment in two ways. First, depressive symptoms in both mothers and fathers were examined in relation to children's subsequent internalizing and externalizing problems at 2–3 years of age. The findings clearly implicate maternal and paternal depressive symptoms as risk factors for later child maladjustment, both

alone and in combination with one another. Second, we considered potential protective factors that could moderate the effects of maternal and paternal depressive symptoms on child maladjustment. No evidence was found, however, for protective effects of low depressive symptoms in a marital partner, perceived social support, or marital satisfaction.

The potential significance of including data on fathers' depressive symptoms at postpartum was twofold. First, it has been suggested that fathers, especially fathers who are not experiencing symptoms of depression or other forms of psychological distress, may serve as an important resource to mothers during the postpartum period and subsequently during the early child-rearing years. In serving as a resource, fathers may provide a protective function for their children by moderating the negative effects of depressive symptoms in the mother. Second, the inclusion of data on fathers' depressive symptoms during the postpartum period was important in examining whether or not paternal depressive symptoms serve as an additional source of risk for child maladjustment.

We found no evidence indicating that the presence of a father who was low in depressive symptoms was a protective factor against negative effects of maternal depressive symptoms. On the contrary, fathers' depressive symptoms at postpartum served as an additional risk factor for increased child behavior problems at 2–3 years of age. Furthermore, mothers' and fathers' depressive symptoms interacted to predict higher levels of subsequent child internalizing problems. These data provide the first evidence indicating that fathers' as well as mothers' depressive symptoms during the postpartum period are predictors of later child behavior problems. Thus, it appears that paternal depressive symptoms are a source of risk for child maladjustment in early development as well as in middle childhood and adolescence (Phares & Compas, 1992). Because postpartum depression has been assumed to be a uniquely female problem, researchers have not previously

assessed depressive symptoms in fathers after childbirth. The present analyses suggest that this has been a significant oversight.

When mothers' and fathers' depressive symptoms at the time that their children were 2–3 years old were included in the regression analyses, only mothers' concurrent depressive symptoms were related to children's behavior problems. Furthermore, increases in mothers' depressive symptoms at follow-up (after controlling for mothers' depressive symptoms at postpartum) were predicted by fathers' postpartum depressive symptoms, whereas fathers' depressive symptoms at follow-up were not predicted by mothers' postpartum symptoms. These findings suggest that fathers' depressive symptoms at postpartum may affect subsequent child functioning through their contribution to later distress and depressive symptoms in mothers. These data also indicate the importance of parental depression during the 2nd and 3rd years of the child's life (Cicchetti & Aber, 1986). Further research is needed to examine this pathway, however, because the use of mothers' reports of both their depressive symptoms and their children's behavior problems may have resulted in a confound in the measurement of these two constructs. Other research on this issue indicates, however, that the association between parents' reports of their psychological distress and their reports of their children's behavior problems are not unduly influenced by problems of measurement confounding (e.g., Brody & Forehand, 1986; Conrad & Hammen, 1989; Phares, Compas, & Howell, 1989). Thus, the present findings are suggestive of an important process that may, in part, account for the association of paternal depressive symptoms and later child outcomes. This process is worthy of further investigation.

No support was found for the hypothesized role of social support or marital satisfaction as potential protective factors against the negative effects of parental depression on child development. Mothers' or fathers' perceptions of high levels of social support available to them or perceptions of

their marital relationship as supportive failed to attenuate the association between parental depressive symptoms and later child behavior problems. Some evidence in the correlational analyses, however, indicated that these factors were directly related to mothers' and fathers' depressive symptoms. Thus, it appears that social support and a positive marital relationship may serve as resources to parents in their own adjustment to the stresses associated with becoming a new parent. These resources may not directly serve a similar function for the behavioral adjustment of their children, however. Parental support and marital adjustment may be conceptualized as distal resources for children, as they may play a role in preventing new mothers and fathers from developing depressive symptoms during the early months after childbirth. Future research is needed to determine whether or not efforts to enhance parental support and the quality of the marital relationship can serve a preventive function by reducing levels of maternal and paternal postpartum depressive symptoms. This, in turn, could serve a preventive function for children by reducing the level of the risk factor, that is, parental depression.

It is important that the search for factors that may protect children from both maternal and paternal postpartum depressive symptoms is not limited to the postpartum period alone. It is likely that the risk factors for parental postpartum depression lie in social factors that are evident prior to the birth of the child. For example, high levels of parental stress and marital discord during pregnancy may be important contributors to depressive reactions in mothers and fathers after the birth of a child. The mechanisms that most powerfully protect children from parental postpartum depression may well lie in the factors that protect parents from developing depressive symptoms

rather than in factors that protect children from such symptoms once they have developed.

For those children who are exposed to parental depressive symptoms in the early months and years of their development, the present study indicates that researchers need to consider other possible sources of protective factors. Specifically, characteristics of parent-child interactions and attachment, and individual differences in infant temperament and behavioral style, are possible sources of resilience to parental postpartum depression (e.g., Cicchetti & Aber, 1986), and these factors need to be investigated more closely in future research.

We should note that the present study was limited in several ways, and future research is needed to address these shortcomings. First, the parents in this study ranged from nondepressed to moderately depressed and, as such, did not provide a test of the impact of clinical levels of depression and associated impairment on early child development. Second, a focus on parental depressive symptoms alone does not tell the whole story in understanding the impact of parental depression on child functioning. That is, assessment of the patterns of parent-child interactions, including father-child interactions and parent-child triads, may be necessary to identify the processes through which parental depressive symptoms affect children. Maternal and paternal depressive symptoms may be manifested in different ways and may influence child functioning through somewhat different processes. For example, prior studies suggest that depressed mothers are withdrawn and nonresponsive in their interactions with their infants. It is possible that fathers may manifest their depressive reactions differently, perhaps by exhibiting increased levels of irritability and hostility that are frequently associated with depressed mood.

References

- Achenbach, T. M., Edelbrock, C. S., & Howell, C. T. (1987). Empirically-based assessment of the behavioral/emotional problems of 2-3-year-old children. *Journal of Abnormal Child Psychology, 15*, 629-650.
- Avison, W. R., Noh, S., & Speechly, K. N. (1991). Parents as caregivers: Caring for children with health problems. *Advances in Medical Sociology, 2*, 65-94.

- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*, 77-100.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.
- Bleuler, M. (1984). Different forms of childhood stress and patterns of adult psychiatric outcome. In N. F. Watt, E. J. Anthony, & J. E. Rolf (Eds.), *Children at risk for schizophrenia* (pp. 537-542). Cambridge: Cambridge University Press.
- Brody, G. H., & Forehand, R. (1986). Maternal perceptions of child maladjustment as a function of the combined influence of child behavior and maternal depression. *Journal of Consulting and Clinical Psychology, 54*, 237-240.
- Bumberry, W., Oliver, J. M., & McClure, J. N. (1978). Validation of the Beck Depression Inventory in a university population using psychiatric estimate as the criterion. *Journal of Consulting and Clinical Psychology, 46*, 150-155.
- Caplan, H. L., Cogill, S. R., Alexandra, H., Mordecai Robson, K., Katz, R., & Kumar, R. (1989). Maternal depression and the emotional development of the child. *British Journal of Psychiatry, 154*, 818-822.
- Cicchetti, D., & Aber, J. L. (1986). Early precursors of later depression: An organizational perspective. In L. P. Lipsitt & C. Rovee-Collier (Eds.), *Advances in infancy research* (Vol. 4, pp. 87-137). Norwood, NJ: Ablex.
- Cohen, S., Kamarck, T., & Mermelstein, P. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Cohn, J. F., Campbell, S. B., Matias, R., & Hopkins, J. (1990). Face-to-face interactions of postpartum depressed and nondepressed mother-infant pairs at 2 months. *Developmental Psychology, 26*, 15-23.
- Cohn, J. F., & Tronick, E. (1989). Specificity of infants' response to mothers' affective behavior. *Journal of the American Academy of Child and Adolescent Psychiatry, 28*, 242-248.
- Conrad, M., & Hammen, C. (1989). Role of maternal depression in perceptions of child maladjustment. *Journal of Consulting and Clinical Psychology, 57*, 663-667.
- Field, T. M. (1984). Early interactions between infants and their postpartum depressed mothers. *Infant Behavior and Development, 7*, 517-522.
- Field, T. M., Healy, B., Goldstein, S., Perry, S., Bendell, D., Schanberg, S., Zimmerman, E. A., & Kuhn, C. (1988). Infants of depressed mothers show "depressed" behavior even with nondepressed adults. *Child Development, 59*, 1569-1579.
- Field, T., Healy, B., & LeBlanc, W. G. (1989). Sharing and synchrony of behavior states and heart rate in nondepressed versus depressed mother-infant interactions. *Infant Behavior and Development, 12*, 357-376.
- Field, T. M., Sandberg, D., Garcia, R., Vega-Lahr, N., Goldstein, S., & Guy, L. (1985). Pregnancy problems, postpartum depression, and early mother-infant interactions. *Developmental Psychology, 21*, 1152-1156.
- Fisher, L., Kokes, R. F., Cole, R. E., Perkins, P. M., & Wynne, L. C. (1987). Competent children at risk: A study of well-functioning offspring of disturbed parents. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 221-228). New York: Guilford Press.
- Fleming, A. S., Ruble, D. N., Flett, G. L., & Shaul, D. L. (1988). Postpartum adjustment in first-time mothers: Relations between mood, maternal attitudes, and mother-infant interactions. *Developmental Psychology, 24*, 71-81.
- Gelfand, D. M., & Teti, D. M. (1990). The effects of maternal depression on children. *Clinical Psychology Review, 10*, 329-354.
- Gotlib, I. H., & Cane, D. B. (1989). Self-report assessment of depression and anxiety. In P. C. Kendall & D. Watson (Eds.), *Anxiety and depression: Distinctive and overlapping features* (pp. 131-169). Orlando, FL: Academic Press.
- Gotlib, I. H., Whiffen, V. E., Wallace, P., & Mount, J. (1991). A prospective investigation of postpartum depression: Factors involved in onset and recovery. *Journal of Abnormal Psychology, 100*, 122-132.
- Hammen, C. (1991). *Depression runs in families: The social context of risk and resilience in children of depressed mothers*. New York: Springer-Verlag.
- Hoffman, Y., & Drotar, D. (1991). The impact of postpartum depressed mood on mother-infant interaction: Like mother like baby? *Infant Mental Health Journal, 12*, 65-80.
- Jacob, T., & Leonard, K. (1986). Psychosocial functioning in children of alcoholic fathers, depressed fathers and control fathers. *Journal of Studies on Alcohol, 47*, 373-380.
- Jacobson, N. S., & Moore, D. (1981). Spouses as observers of the events in their relationship. *Journal of Consulting and Clinical Psychology, 49*, 269-277.
- Klein, D. N., Clark, D. C., Dansky, L., & Margolis, E. T. (1988). Dysthymia in the offspring of parents with primary unipolar affective disorder. *Journal of Abnormal Psychology, 97*, 265-274.
- Lee, C. M., & Gotlib, I. H. (1990). Family disruption, parental availability, and child adjustment: An integrative review. In R. J. Prinz (Ed.), *Advances in the behavioral assessment of families*. Greenwich, CT: JAI Press.
- Livingwood, A. B., Daen, P., & Smith, B. D. (1983). The depressed mother as a source of stimulation for her infant. *Journal of Clinical Psychology, 39*, 369-375.
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology, 2*, 425-444.
- O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and puerperium. *Archives of General Psychiatry, 43*, 569-573.
- Oliver, J. M., & Simmons, M. E. (1984). Depression as measured by the DSM-III and the Beck Depression Inventory in an unselected adult population. *Journal of Consulting and Clinical Psychology, 52*, 892-898.
- Orvaschel, H., Walsh-Allis, G., & Ye, W. (1988). Psychopathology in children of parents with recurrent depression. *Journal of Abnormal Child Psychology, 16*, 17-28.
- Phares, V., & Compas, B. E. (1992). The role of fathers in child and adolescent psychopathology:

- Make room for daddy. *Psychological Bulletin*, *111*, 1-26.
- Phares, V., Compas, B. E., & Howell, D. C. (1989). Perspectives on child behavior problems: Comparisons of children's self-reports with parent and teacher reports. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, *1*, 68-71.
- Philipps, L. C., & O'Hara, M. W. (1991). Prospective study of postpartum depression: 4½-Year follow-up of women and children. *Journal of Abnormal Psychology*, *100*, 151-155.
- Rutter, M. (1990). Commentary: Some focus and process considerations regarding effects of parental depression on children. *Developmental Psychology*, *26*, 60-67.
- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, *38*, 15-28.
- Turner, J., Frankel, G., & Levin, D. (1983). Social support: Conceptualization, measurement, and implications for mental health. In J. Greenley (Ed.), *Research in community and mental health* (Vol. 3, pp. 67-111). Greenwich, CT: JAI Press.
- Weissman, M. M., Paykel, E. S., & Klerman, G. L. (1972). The depressed woman as a mother. *Social Psychiatry*, *7*, 98-108.
- Whiffen, V. E. (1990). Maternal depressed mood and perceptions of child temperament. *Journal of Genetic Psychology*, *151*, 329-339.
- Whiffen, V. E. (1992). Is postpartum depression a distinct diagnosis? *Clinical Psychology Review*, *12*, 485-508.
- Whiffen, V. E., & Gotlib, I. H. (1992a). *Interactions of depressed mothers with their two- and seven-month-old infants*. Unpublished manuscript.
- Whiffen, V. E., & Gotlib, I. H. (1992b). *The effects of postpartum depression on infant cognitive and socio-emotional development*. Unpublished manuscript.
- Whiffen, V. E., & Gotlib, I. H. (1993). Comparison of postpartum and nonpostpartum depression: Clinical presentation, psychiatric history, and psychosocial functioning. *Journal of Consulting and Clinical Psychology*, *61*, 485-494.