

## Psychosocial Predictors of Postpartum Depressed Mood in Socioeconomically Disadvantaged Women

Efrat Neter  
*University of California, Los Angeles*

Nancy L. Collins  
*State University of New York at Buffalo*

Marci Lobel  
*State University of New York at Stony Brook*

Christine Dunkel-Schetter  
*University of California, Los Angeles*

The effects of stress, social support, and labor and delivery experiences on postpartum depressed mood were examined in an ethnically diverse sample of low-income women ( $N = 108$ ). Women were interviewed on multiple occasions throughout pregnancy and then once approximately 2 months postpartum. Information on labor and delivery outcomes was abstracted from medical charts. Results indicated that women who were more satisfied with the prenatal social support they received were less likely to experience postpartum depressed mood, after controlling for prenatal depressive symptomatology. In addition, women who experienced more distressing life events during pregnancy and who reported higher levels of prenatal anxiety were also more likely to feel depressed, after controlling for all other factors in the model. Finally, women who were more satisfied with their labor and delivery experience tended to be less depressed in the early months following childbirth. Together, these variables accounted for 45% of the variance in postpartum depressed mood.

Correspondence concerning this article should be sent to Efrat Neter, Faculty of Industrial Engineering and Management, Technion, Haifa 32000, Israel. Bitnet: IEREN01@TECHNION.TECHNION.AC.IL or to Nancy Collins, Department of Psychology, State University of New York, Buffalo, New York 14260-4110. Bitnet: NCOLLINS@UBVM.CC.BUFFALO.EDU.

Master

Key words: postpartum depression, pregnancy, stress, social support

Although childbearing is a time of happiness for many families, it also represents a period of change and disruption. Expectant mothers are faced with a number of challenges during pregnancy, including adaptation to the physical changes of pregnancy, possible changes in family relationships, anticipation of pain or loss of control during labor, and preparation for the baby's care after birth (Lederman, 1984; Ruble et al., 1990). Moreover, at the time of labor and delivery, a woman's emotional experiences are heightened. Childbirth involves considerable pain and anxiety for most if not all women in Western cultures and includes such diverse emotions as fear, apprehension, excitement, relief, and joy (Holden, 1991). Following birth, caring for a newborn often means restructuring one's family and work life, often in a more restrictive fashion (Holden, 1991). As can be expected, the transition to parenthood is made with varying degrees of difficulty and gratification (Lederman, 1984) and may result in maternal depression (Gotlib, Whiffen, Wallace, & Mount, 1991; Hopkins, Marcus, & Campbell, 1984; Lum, 1990; O'Hara, Zekoski, Phillips, & Wright, 1990; Whiffen, 1992).

It is important to distinguish between different forms of depression in the postpartum period. Many mothers (some estimate as high as 80%, see Gotlib et al., 1991) experience a short period of "postpartum blues" during the first 10 days following childbirth. This nonclinical level of depression is characterized by mood swings, anxiety, tearfulness, and irritability (Gotlib et al., 1991; Gotlib, Whiffen, Mount, Milne, & Cordy, 1989; Knight & Thirkettle, 1987). Some women, estimated at 10% to 16% (Cox, Connor, & Kendell, 1982; O'Hara, 1987; J. P. Watson, Elliot, Rugg, & Brough, 1984), suffer debilitating depression, characterized by anxiety, irritability, confusion and forgetfulness, dysphoria and crying, fatigue, poor appetite, and insomnia (Gotlib et al., 1991; Hopkins et al., 1984; O'Hara, 1991). Finally, a very small percentage of women (one or two women per 1,000 deliveries; see Hopkins et al., 1984) suffer from puerperal psychosis, which is an incapacitating disorder requiring hospitalization. The focus of the present study is on a range of depressed affect (from mild to severe) beyond the first days following childbirth—women who do not bounce back from the initial "blues" and experience depressed mood 4 to 8 weeks postpartum.

Understanding the factors that contribute to depressed mood in new mothers is important for a number of reasons. First, depressed mood following childbirth has important implications for the quality of women's lives. Women in Western cultures are often exposed to representations of radiant mothers, such that experiences of sadness may seem like a personal failure. Depression can also have adverse effects on the woman's developing relationship with her newborn and her ongoing relationships with other family members. Mothers who are feeling depressed can become less responsive to their infants (Fleming, Ruble, Flett, & Shaul, 1988; Stein et al., 1991), which

may impair early bonding and attachment processes and hinder effective infant care skills (Gotlib et al., 1991). Furthermore, over time, diminished maternal responsiveness may contribute to deficits in infant cognitive and socioemotional development (Cogill, Caplan, Robson, & Kumar, 1986; Whiffen & Gotlib, 1989; Wrate, Rooney, Thomas, & Cox, 1985). Depressed mood may also cause other family members to feel confused and rejected (Holden, 1991), and a woman's relationship with her spouse or partner may become especially strained. Finally, a new mother who feels down may have difficulty carrying out other aspects of her daily routine other than infant care. For example, mothers who are employed may have problems managing work demands or preparing for the return to work. Although many women do not experience these difficulties, it is the women who do with whom we are concerned.

What places women at risk for depression following childbirth? Existing theory and research suggest that depressed mood is determined by a number of factors, including biological, personal, social, and environmental ones. However, much of the empirical work in this area has employed relatively homogeneous samples of middle- to upper middle-class women, and we know little about the predictors of depression in lower income and in ethnic minority women. The purpose of this study is to extend previous research by using a multivariate model to examine the personal and social factors that place low-income women at risk for depressed mood in the early postpartum period. Using a prospective research design, we examined the correlates of depressed mood at 4 to 8 weeks postpartum in an ethnically diverse sample. This study utilized a subset of data from a larger investigation of psychosocial factors in pregnancy (see also Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Dunkel-Schetter, Lobel, Collins, Hobel, & Scrimshaw, 1994; Lobel, Dunkel-Schetter, & Scrimshaw, 1992). Before describing the present study, it is useful to review existing knowledge on the etiology of postpartum depression.

#### ETIOLOGICAL FACTORS FOR POSTPARTUM DEPRESSED MOOD

Many causal factors for postpartum depressed mood have been suggested. The spectrum includes biological processes (e.g., levels of estriol, progesterone, cortisol), individual differences and personal attributes (e.g., previous depression history, trait anxiety, self-esteem), environmental factors (e.g., life events), and interpersonal resources (e.g., social support). Although it is believed that biochemical processes may contribute to postpartum depressed mood, there is no confirmed biological basis (Hopkins et al., 1984; O'Hara, 1987). In contrast, there is ample evidence for the role of psychosocial factors in postpartum depressed mood. These factors are conceptualized as either exacerbating risk or protecting women from postpartum distress. It is useful to categorize these factors into the following sets: (a) individual

differences and personality attributes, (b) stress, (c) social support, and (d) perceptions of labor and the postpartum period.

### Individual Differences and Personality Attributes

A major etiological factor in postpartum depressed mood is previous depressive or neurotic symptomatology, either prior to or during pregnancy (Atkinson & Rickel, 1984; Cutrona, 1983; Gotlib et al., 1989; O'Hara, Neunaber, & Zekoski, 1984; Saks et al., 1985; Whiffen, 1988). Less conclusive evidence exists about whether more general personality attributes predispose women to depression. The variables that have been investigated include trait anxiety (Grossman, Eichler, & Winickoff, 1980; Hayworth et al., 1980; Kennerley & Gath, 1989); interpersonal sensitivity (Boyce, Hickie, & Gordon, 1991); optimism (Carver & Gaines, 1987); and cognitive dysfunctions such as depressive beliefs (Gotlib et al., 1991), attributional style (Cutrona, 1983; Whiffen, 1988), and self-control beliefs (O'Hara, Schlechte, Lewis, & Varner, 1991a).

### Stress

The association between prenatal stress and postpartum depressed mood has been widely studied (see Hopkins et al., 1984, for a detailed review). Stress is a multifaceted construct that can be conceptualized as including environmental conditions, subjective perceptions, and physiological and emotional responses (Lobel & Dunkel-Schetter, 1990). Such a conceptualization takes into account objective events, the appraisal process by which individuals evaluate the significance of these events and their ability to manage them, and the emotions generated by this appraisal process (Folkman & Lazarus, 1988). Multidimensional approaches enhance both the reliability and validity of stress measurement (Lobel & Dunkel-Schetter, 1990). Nevertheless, no study of postpartum depressed mood has operationalized stress in this manner. Most have assessed stress with only one measure, usually either the environmental component (e.g., life events) or the perceptual component (e.g., perceived distress), with inconsistent findings. For example, Whiffen (1988) and O'Hara and his colleagues (O'Hara, Neunaber, & Zekoski, 1984, O'Hara, XXXXXXXXXXXX, 1991) found that prenatal life events significantly predicted postpartum depressed mood, after controlling for important variables such as sociodemographic characteristics, prenatal depression, and marital satisfaction. However, Gotlib et al. (1991), using a measure of perceived, nonspecific stress, found that stress accounted for only 1% of the variance in depressed mood and did not contribute significantly after controlling for sociodemographic variables (such as age, education, parity), prenatal depression, and interpersonal and coping variables. Thus, there is

contradictory evidence regarding the role of stress in postpartum depressed mood, possibly attributable to limitations in the assessment of stress.

### Social Support

The effect of social support on postpartum depression has been widely studied (Cox et al., 1982; Cutrona, 1984; Gotlib et al., 1991; Kumar & Robson, 1984; O'Hara, 1986; Paykel, Emms, Fletcher, & Rassaby, 1980; Wandersman, Wandersman, & Kahn, 1980; J. P. Watson et al., 1984; Whiffen, 1988). Social support, like stress, is a multidimensional construct that includes a number of distinct components (House & Kahn, 1985). For example, support researchers have distinguished types of support (e.g., instrumental, emotional, informational), sources of support (e.g., spouse, other relatives, friends), whether support is perceived to be available or is actually received (Dunkel-Schetter & Bennett, 1990), and the amount versus the quality of social support (Collins et al., 1993).

Most studies have found that social support resources (marital support, in particular) buffer the stressors of pregnancy and childbirth. For example, Gotlib et al. (1991) found that marital quality added significantly to the prediction of postpartum depressed mood, after controlling for sociodemographic factors, prenatal depression, and dysfunctional cognitions. In addition, Cutrona (1984) found that a strong social network and the ability to count on others for assistance were the most crucial protective elements of social support in the postpartum period. Along similar lines, unsupportive relationships are associated with higher levels of depression. For example, Boyce et al. (1991) found that women were more likely to experience postpartum depression if their spouses were low in caring or overcontrolling. However, O'Hara, Schlechte, Lewis, and Varner (1991) found that marital quality was not significantly associated with postpartum depression after controlling for sociodemographic variables and previous depression.

Although studies have provided fairly strong support for the protective effect of social support following childbirth, most have operationalized social support in a limited way (e.g., available support from one person or source). Moreover, the best designed studies that measured social support with a multidimensional conceptualization have not tended to include other predictive factors such as prenatal depression, stress, and labor and postpartum experience. Thus, the contributions of particular aspects of support or of support relative to other factors are unknown.

### Labor and Postpartum Experiences

In addition to prenatal personal and social circumstances that place women at risk for depressed mood, the experience of childbirth and the health of the

baby may also have important implications for maternal well-being. For example, a difficult labor and delivery experience, accompanied by medical complications or little support from health care providers can make the childbirth experience anxiety provoking and may contribute to depressed mood (Green, Coupland, & Kitzinger, 1990). Similarly, caring for a preterm or high-risk infant can increase stress in the postpartum period (Calhoun & Selby, 1980), thereby contributing to the development of depressed mood (Blumberg, 1980).

The empirical evidence regarding medical birth outcomes is inconclusive. Some studies find no relation between birth-related events and postpartum depressive symptoms (Kennerley & Gath, 1989; Lum, 1990; Whiffen, 1988), and others find an association (Green et al., 1990; O'Hara et al., 1984; O'Hara, Schlechte, Lewis, & Varner, 1991; O'Hara, Schlechte, Lewis, & Wright, 1991). Research on childcare-related stress, however, has more consistently shown that caring for an infant with irritable temperament is associated with increased levels of depression (Cutrona & Troutman 1986; Hopkins, Campbell, & Marcus, 1987; O'Hara et al., 1984; O'Hara, Schlechte, Lewis, & Varner, 1991; O'Hara, Schlechte, Lewis, & Wright, 1991; Whiffen, 1988). However, because depression and childcare stress are usually measured concurrently, it is difficult to draw inferences about causal pathways.

### THE CURRENT STUDY

Although research on postpartum depressed mood has improved markedly in the past decade (e.g., moving from retrospective to prospective designs), some problems still compromise the field. One important weakness is that studies have tended to rely on relatively homogenous samples of middle- to upper middle-class women (e.g., Gotlib et al., 1991; O'Hara, Schlechte, Lewis, & Varner, 1991; O'Hara, Schlechte, Lewis, & Wright, 1991; Reid, 1993; Whiffen 1988). In addition, as in most psychological research, most samples lack sufficient ethnic and cultural diversity (Graham, 1992). Consequently, we do not know whether postpartum depressed mood is a widespread phenomenon or whether it is characteristic of only certain socioeconomic groups. Moreover, it is unclear whether the processes uncovered in more advantaged samples will generalize to more diverse samples. Low-income and ethnic-minority populations experience higher levels of chronic stress, more negative life events, and may rely on different support systems, specifically, those other than the marital relationship (Hobfoll, 1989; Hobfoll & Liberman, 1987).

A second limitation in the postpartum depression literature is the tendency to measure constructs unidimensionally. The measurement of stress is a good example. Past studies typically employed a life events inventory to assess stress and, less often, a measure of nonspecific chronic stress. Past studies have also tended to focus on a single psychosocial variable (such as

stress or social support) and have not incorporated multiple variables into more comprehensive models.

The present study addressed these limitations in several ways. First, we studied postpartum depression in an ethnically diverse sample of low-income women. Second, we designed our measures with special consideration of this population. For example, in most past research, social support has been measured by relying almost exclusively on spousal support or marital adjustment (e.g., Cutrona, 1984; Gotlib et al., 1991; O'Hara, 1986; Whiffen, 1988). However, unlike the samples typically studied, a large percentage of women in our sample were neither married nor living with the baby's father. This necessitated consideration of additional sources of support, such as kin, friends, and health care providers. A third way in which our study differs from past studies is that we used multidimensional measures of our major psychosocial constructs. For example, we measured stress by incorporating environmental conditions (life events and financial strain), subjective perceptions (distress from life events and perceived nonspecific stress), and emotional responses (state anxiety). Several dimensions of social support were also measured. The measurement of these psychosocial constructs was further improved in our study by collecting prenatal assessments of stress and social support on multiple occasions throughout pregnancy (up to 10 times), thus improving reliability as well as validity. Finally, on an exploratory basis, we also examined several aspects of the postpartum experience, including the physical health of the infant at birth, perceptions of labor and delivery, and involvement of the baby's father after birth. All of these factors, along with relevant control variables, were incorporated into a multivariate model that enabled us to examine the unique and joint contributions of each set of factors to the prediction of postpartum distress.

## METHOD

### Overview

In this study, we used a subset of data from a larger investigation of psychosocial factors in pregnancy conducted in a public clinic of a university-affiliated teaching hospital that offers medical care on a sliding pay scale. Information was gathered on a variety of psychosocial variables, but this report is concerned only with findings related to postpartum depression. Women were interviewed on multiple occasions throughout their pregnancy. Some variables (prenatal depressive symptoms, satisfaction with social support, chronic stress, and state anxiety) were measured repeatedly; other variables (financial strain, life events, support from baby's father and health care providers, and satisfaction with the labor and delivery) were measured at a single interview. Birth outcomes were abstracted from medical charts, and maternal postpartum depression was assessed in a single postpartum

interview. Using hierarchical multiple regression, we examined the relations between postpartum depression and three sets of variables—prenatal social support, prenatal stress, and labor and postpartum experiences.

### Respondents

*Eligibility and recruitment.* Respondents were recruited if they were at least 18 years of age and able to speak either English or Spanish. Approximately 5% of the clinic population was ineligible because of age or language. Of all the eligible women approached, 88% agreed to participate. Reasons for not enrolling included not wanting to discuss personal topics, feeling too tired, and husband's disapproval.

*The current sample.* The current sample consisted of 108 women enrolled in the study who delivered a live infant at the study hospital, completed a postpartum interview, and had complete data on all study variables. Respondents ranged in age from 18 to 42 ( $M = 27.7$ ,  $SD = 4.8$ ), had an average of approximately 10 years of education ( $SD = 3.3$ ), and were an average of 12 to 13 weeks pregnant ( $SD = 3.07$ ) on entry to the study. The sample was primarily Latina (67%), with smaller percentages of African Americans (19%), Whites (10%), and others (4%). The majority of women (69.4%) were multiparous (had previously borne children) and 57% chose to be interviewed in Spanish. Eighty-one percent of women were living with the baby's father at the time of entering the study (whether or not married to him), although only 61% were married. The majority of women in the sample reported current financial difficulties: 74% reported difficulty paying for the medical care they wanted (some qualified for state-funded medical assistance), 53% reported difficulty in buying food, and 17% received no financial assistance at all from the baby's father. None of these women received prenatal care from a private physician.

During the period of data collection, an additional 126 clinic patients enrolled in the study but did not continue care at the clinic. Known reasons included spontaneous abortions, therapeutic abortions, transfer to private care or to other medical facilities, moving, and no return for postpartum care with attempts at telephone contact unsuccessful. These women were not included in this report. An additional 30 women who had incomplete prenatal measures were also excluded from the current sample. These deletions resulted in a sample of 108 women. Analyses that compared the current sample to the excluded sample showed that women in the present sample had larger social networks, fewer adverse infant outcomes, and reported less prenatal chronic stress and anxiety, all  $ps < .05$ . The current sample did not differ from the excluded sample on any of the other predictor variables, the



dependent variable, or on age, education, ethnicity, or parity. Thus, the women in the current sample were very similar to the women who were excluded. However, the small differences that did occur suggest that the current sample was somewhat better-off than those who did not complete all components of the study. Although it is impossible to know how this will effect the pattern of results, it seems unlikely that these small differences would systematically bias the results.

### Procedure

Women were interviewed at each clinic visit throughout pregnancy and once postpartum by trained bilingual female interviewers. Each prenatal interview was administered at least 10 days after the preceding one in order to space interviews women receiving more frequent care. Postpartum interviews were typically scheduled for 4 to 8 weeks following birth. Initially, those interviews were conducted in the clinic when women returned for their first visit following birth. However, many women did not return for postpartum care, so telephone interviewing was initiated. Women who completed the telephone interview were frequently contacted at a friend's or relative's phone number because they did not have telephones. The mean number of interviews completed (including postpartum) was 6.5, with a range from 4 to 10.

### Measures

The selection of measures was made with special concern for the sample's cultural and linguistic diversity, low level of education, and the necessity to administer interviews in the clinic quickly and with ease. Standard scales and specially developed sets of structured questions were used to assess the major study variables. All measures required equivalent Spanish and English versions. The selection, adaptation, and translation of measures took place during 1 year of pretesting in the clinic. Instruments were chosen and developed so that they yielded equivalent meaning in English and Spanish and could be easily understood by women with little formal education. All instruments were translated in a forward and backward fashion by experienced translators.

*Social support.* Three aspects of social support were assessed. One was an overall assessment of satisfaction with received support, and the others focused on specific sources of support: the baby's father and the woman's health care providers.

To assess satisfaction with the support that a woman received during her pregnancy, we developed a social support measure that was appropriate for

low-income pregnant women and could be administered repeatedly. Based on the theoretical and empirical literature, we expected that four types of support would be relevant to this sample: material aid, assistance with tasks, informational support, and emotional support. For each type of support, respondents were first asked if they had received that type of support in the previous week. For example, to assess task support, women were asked "In the past 7 days, did you get help from anyone with things you had to do, such as errands, household tasks, or child care?" If they answered yes, they were asked who provided the support and how satisfied they were with the support they received on a scale from 1 (*not at all*) to 4 (*very much*). This measure was administered in each interview. For the present study, an index of satisfaction with received support was computed. For each interview, satisfaction with the four types of support (if received) were averaged, and then an average across interviews was computed. Thus, satisfaction scores could range from 1 to 4.

To measure support received from the baby's father during pregnancy, an eight-item scale was developed. This measure was administered once in the third trimester (at 30 weeks gestation, on average), and women were asked to respond in terms of the baby's father's behavior since they became pregnant. Respondents were asked how much the baby's father had provided money, helped with errands, listened to worries and concerns, helped solve problems, and showed that he cared. Two additional items asked how often the baby's father disappointed them and was critical or short-tempered. These seven items were rated on a scale from 0 (*never*) to 4 (*almost always*). A final item asked respondents how satisfied they were, overall, with the support given by the baby's father since they became pregnant, on a scale from 1 (*not at all*) to 4 (*very much*). When factor analyzed, all eight items loaded highly on one factor and were therefore summed to form a single composite. This scale had high internal consistency ( $\alpha = .93$ ).

To measure satisfaction with support received from health care providers, a six-item scale was developed and administered once during the third trimester. Three items asked how satisfied respondents were with the emotional support, information, and overall care they received from nurses at the clinic, and three identical items asked about support from doctors in the clinic. Responses were made on a scale from 1 (*not at all*) to 4 (*very much*). When factor analyzed, all items loaded highly on a single factor and were therefore averaged. The scale had high internal consistency ( $\alpha = .89$ ).

**Stress.** Four dimensions of stress were assessed: financial strain, life events distress, chronic stress, and state anxiety. First, a five-item scale was developed to measure financial strain and was administered once during the second trimester. Women were asked how difficult it was for them to pay for medical care, monthly bills, furniture and household things, food, and clothing. Responses were made on a scale from 1 (*not at all*) to 4 (*very much*).

When factor analyzed, all items loaded highly on a single factor and were therefore averaged. The scale had high internal consistency ( $\alpha = .84$ ).

Next, a life events inventory was adapted from the Los Angeles Epidemiological Catchment Area Study (Golding, 1989) and was administered in the postpartum interview. The measure contained 22 events such as moving, being robbed, having trouble with immigration, or having someone close die. Women were asked whether they or a close family member had experienced these events at any time during their pregnancy. In addition, for each event that occurred, women were asked to rate how undesirable or negative it was for them on a scale from 1 (*not at all*) to 4 (*very much*). Three scores were computed. First, the number of life events during pregnancy was summed. Respondents reported an average of 2.3 life events during pregnancy, with a range from 0 to 10. Second, the mean level of distress was computed by averaging the distress rating across events ( $M = 2.28$ ,  $SD = 2.16$ ). Finally, to obtain an overall index of life events distress, we multiplied the life events score by the average level of distress score. This index was used in all analyses.

Next, a five-item short form of the Perceived Stress Scale (PSS; S. Cohen, Kamarck, & Mermelstein, 1983; see also S. Cohen & Williamson, 1988) was used to assess general or nonspecific chronic stress. This measure was administered at each prenatal interview. Items assessed how often in the past 7 days women felt unable to control important things, coped well with changes, had too many difficulties to overcome, felt things were going well, and felt they could handle their problems. Each item was rated on a 5-point scale ranging from 0 (*never*) to 4 (*almost always*). Positively worded items were reverse scored, and the five ratings were averaged. PSS scores were then averaged across interviews to create a single perceived stress index for each subject. The scale had good internal consistency ( $\alpha$ s ranged from .63 to .79 within interviews, with an average of .71 across interviews).

Finally, the State Anxiety scale of Spielberger's (1983) State-Trait Anxiety Inventory (STAI) was used to assess state anxiety. This measure was also administered at each prenatal interview. Respondents were asked how they feel "right now, at this moment," which differs from trait anxiety measures that ask how respondents "generally feel." The women responded to 20 adjectives, using a 4-point scale ranging from 1 (*not at all*) to 4 (*very much*). State anxiety items were first summed in each interview and then averaged across interviews to create a single prenatal state anxiety score for each subject. The scale had high internal consistency ( $\alpha$ s ranged from .88 to .92 within interviews). For more detailed information on the stress measures used in this project, see Lobel and Dunkel-Schetter (1990) and Lobel et al. (1992).

*Labor and postpartum experiences.* First, to assess the health of the infant, we computed an adverse infant outcomes index. This index was

computed by counting the number of adverse outcomes from a list of four clinically significant birth outcomes. These included low birthweight (less than or equal to 2,500 g), prematurity (less than 37 weeks gestation), low Apgar score (5-min score less than 7), and the presence of any neonatal complications (such as infant resuscitation after delivery). Thus, scores on this index could range from 0 (*no adverse outcomes*) to 4 (*all four adverse outcomes*). Information on the infant's health was abstracted from medical charts by obstetric nurses. Average interrater agreement was 92%.

A three-item measure was developed to assess satisfaction with labor and delivery and was administered in the postpartum interview. Respondents were asked how satisfied they were with the way labor and delivery went and how satisfied they were with the care they received from the doctors and the nurses during the labor and delivery. The three items were rated on a scale from 1 (*not at all*) to 4 (*very much*). This scale had adequate internal consistency ( $\alpha = .63$ ) for a three-item index.

Two items were developed to assess the baby's father's involvement with the mother and the baby following birth, and this measure was also administered once in the postpartum interview. Respondents were asked whether they had seen the baby's father since the birth and how he was adjusting to the baby (using a 4-point scale). The correlation between the two items was .56. The items were standardized and then averaged.

*Postpartum depression.* Postpartum depressed mood was measured with the Center for Epidemiological Studies Depression scale (CESD; Radloff, 1977). This 20-item scale is a widely-used measure of depressive symptomatology and has been shown to be valid and reliable in many samples, including pregnant women (Turner, Grindstaff, & Philips, 1990; Zuckerman, Amaro, Bauchner, & Cabral, 1989). Although the CESD is not equivalent to a diagnosis of depression and is not adequate as a screening device for medical care (Fechner-Bates, Coyne, & Schwenk, 1994; Whiffen, 1992), there is a highly significant correlation between scores on the CESD and a diagnosis of depressive disorder based on clinical interviews. In a recent study, for example, its sensitivity (the proportion of people correctly identified as disordered) and specificity (the proportion of people correctly identified without a disorder) were 79.5% and 71.1%, respectively (Fechner-Bates, Coyne, & Schwenk, 1994). Moreover, this measure has been validated among Mexican American adults (Garcia & Marks, 1989). Cronbach's alpha in this sample was .88 in English and .89 in Spanish.

*Control variables.* Prenatal depressive symptoms were measured with a brief measure composed of three items administered in each prenatal interview. Respondents were asked the extent to which they felt sad, felt hopeless, and had been crying during the past 7 days. Responses were given on a scale ranging

TABLE 1  
Intercorrelations, Means, and Standard Deviations of Key Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Prenatal depression	1.00										
2. Adverse infant outcomes	.13	1.00									
3. Satisfaction with labor	-.16	.02	1.00								
4. Baby's father involvement	.04	-.07	.04	1.00							
5. Baby's father support	-.42**	-.13	.07	.37**	1.00						
6. Health-care provider support	-.03	-.13	.42**	-.01	.09	1.00					
7. Satisfaction with support	-.20*	-.12	.17	.30**	.31**	.37**	1.00				
8. Financial strain	.26**	-.08	-.03	-.01	-.00	-.19*	-.28**	1.00			
9. Life events distress	.38**	.14	-.03	-.21*	-.34**	-.09	-.05	.25**	1.00		
10. Perceived stress	.63**	.00	.05	-.14	-.35**	-.00	-.27**	.38**	.31*	1.00	
11. State anxiety	.62**	.12	-.02	-.06	-.36**	-.20	-.39**	.38**	.19*	.65**	1.00
M	1.65	.27	3.45	-.02	3.46	3.45	3.70	2.22	6.51	4.83	35.58
SD	.58	.45	1.00	.66	.82	.61	.42	.82	7.16	2.79	7.92

\*  $p < .05$ . \*\*  $p < .01$ .

from 1 (*not at all*) to 4 (*very much*). The three items were summed for each interview and then averaged across interviews to obtain an overall index of prenatal depressive symptoms. Internal consistency within interviews ranged from .63 to .82, with a mean reliability of .75. When computed across interviews, the stability was .85, indicating a relatively high degree of stability in depressive symptoms over the course of pregnancy.

The 20-item Trait Anxiety scale of Spielberger's (1983) STAI was used to assess trait anxiety. Items were rated on a 4-point scale ranging from 1 (*not at all*) to 4 (*very much*). This measure was administered in the third trimester. The scale had high internal consistency ( $\alpha = .90$ ).

Because demographic characteristics are sometimes found to be related to psychological functioning, age, education, ethnicity, and parity (prior births/no prior births) were measured and treated as control variables in the analyses.

The intercorrelations among all predictor variables as well as their means and standard deviations are presented in Table 1. Most of the predictors are only weakly to moderately correlated, which indicates sufficient discrimination between the various constructs.

## RESULTS

### Prevalence of Postpartum Depressed Mood

Before examining the predictors of depression, we wanted to examine the prevalence of extreme levels of depressed mood in our sample. Scores on the CESD ranged from 0 to 43, with a mean of 13.34 ( $SD = 10.54$ ). Using Radloff's (1977) recommended cutoff criterion (a score of 16 or greater) to differentiate depressed from nondepressed individuals, our sample consisted of 67.6% (73) nondepressed and 32.4% (35) depressed women. This suggests that approximately one third of our sample reported fairly high levels of depressed mood in the postpartum period. Mean CESD scores for the depressed and nondepressed women were 7.18 and 26.20 respectively,  $t(106) = 16.52, p < .001$ .

Depressed and nondepressed respondents did not differ significantly in age ( $M_s = 27.28$  and  $28.46$ , respectively), years of education ( $M_s = 10.66$  and  $11.00$ , respectively), parity (36% of first-time mothers vs. 31% of multiparous), or ethnicity (29% among Latinas, 25% among African American women, and 43% among the few White women in the sample).

### Predicting Postpartum Depressed Mood

In the next stage of analysis, we computed bivariate correlations between all major predictor variables and postpartum depressed mood (using continuous scores on the CESD). As shown in the first column of Table 2, each predictor

TABLE 2  
Hierarchical Multiple Regression of Postpartum Depression on all Predictor Variables

Predictor Variable	<i>r</i>	<i>beta</i>	$r_p^2$	$R^2$	$R^2$ Change	<i>F</i> Change
1. Prenatal depressive symptoms	.45***	.45***	.204	.204	.204	27.16****
2. Prenatal social support				.324	.120	6.12****
Satisfaction with support	-.38***	-.21**	-.032			
Baby's father support	-.38***	-.16*	-.021			
Health-care provider support	-.24***	-.14	-.016			
3. Prenatal stress				.396	.072	2.92**
Life events distress	.38***	.24***	.041			
State anxiety	.49***	.27**	.031			
Perceived stress	.37***	-.07	.002			
Financial strain	.26***	.02	.000			
4. Labor & postpartum experience				.435	.039	2.23*
Satisfaction with labor & delivery	-.23***	-.18**	.027			
Adverse infant outcomes	.22**	.10	.009			
Baby's father involvement	-.21**	-.06	.002			

Note. *r* = zero-order correlation.  $r_p^2$  = squared part correlation. *beta* = standardized regression coefficient.  
\**p* < .10. \*\**p* < .05. \*\*\**p* < .01. \*\*\*\**p* < .001.

was significantly correlated with depression in the expected direction. Women who experienced higher levels of depressed mood were less satisfied with their social support (across all measures), experienced more prenatal stress (across all measures), were less satisfied with their labor experiences, and perceived less involvement on the part of the baby's father following childbirth. In addition, women whose babies had more adverse medical outcomes were more likely to feel depressed in the postpartum period.

In the next stage of data analysis, we conducted a series of hierarchical regression analyses to examine the extent to which each set of variables accounted for unique variance in depressed mood. The first analysis included four blocks of variables. The order of the blocks was based on temporal sequence and presumed causal order (J. C. Cohen & P. Cohen, 1983). Depressive symptomatology during pregnancy served as a control variable and was therefore entered on the first step.<sup>1</sup> Prenatal social support variables were entered on Step 2, and the prenatal stress variables were entered on Step 3. Finally, labor and postpartum experiences were entered. The results of this analysis are shown in Table 2. As expected, women who experienced depressive symptoms during pregnancy were much more likely

<sup>1</sup>We first ran all regression models while including the following control variables in the first step along with prenatal depression: age, education, ethnic group, and parity. None of these variables made a significant contribution to the equation, and their addition did not change the pattern of results for the psychosocial variables. We therefore excluded them from further analyses to retain power for hypothesis testing.

to experience depressed mood in the postpartum period. As shown in the first row of Table 2, prenatal depressive symptoms accounted for over 20% of the variance in postpartum depression. In the next two steps, prenatal social support and stress each added significant increments to the explained variability. The set of social support variables accounted for 12% of the variance, and the block of stress variables added 7% to the explained variability. Finally, the labor and postpartum variables accounted for an additional 4% of the variance in depressed mood, although the change in  $R^2$  for this block was only marginally significant. The overall model explained 43.5% of the variability in postpartum depressed mood.

As we had no clear theoretical basis for entering the block of social support variables prior to the stress variables, we ran the same model but reversed the order of the social support and stress blocks. Once again, prenatal depressive symptoms were entered first as a control variable. This model yielded a significant contribution of stress on Step 2,  $R^2$  change = .136,  $p < .001$ , and a significant contribution of social support when added on Step 3,  $R^2$  change = .055,  $p < .05$ . Thus, although prenatal support and stress were moderately correlated, each accounted for a significant amount of unique variance in postpartum depression.

Although each block of variables contributed to the prediction of depressed mood, not all variables within each block were equally important. This is illustrated in Table 2 by the standardized regression coefficients, shown in column 2, and the squared part correlations, shown in column 3. The squared part correlations reflect the percentage of variance in depressed mood that is uniquely accounted for by each predictor variable (at the point at which it first enters the equation). To determine which variables within each block would be sufficient for explaining postpartum depressed mood, we conducted a forward stepwise regression analysis. This analysis enters variables one by one, allowing in only those variables, within each block, that significantly add to the prediction of CESD scores.

As shown in Table 3, within the social support block, only satisfaction with prenatal support was a significant predictor (accounting for 8% of the variance in depressed mood), and support from the baby's father was marginally significant (accounting for an additional 2% of the variance). Within the stress block, only state anxiety and life events distress were significant (accounting for 4.2% and 3.7% of unique variance, respectively). Finally, within the block of postpartum variables, only satisfaction with labor and delivery made a significant unique contribution (accounting for an additional 3% of the variance). This reduced model, which includes only 5 of the 10 psychosocial predictors, explains almost the same amount of variance as the full model (42% vs. 43.5%).

We ran one additional model that included trait anxiety as a control variable in the first step. We conducted this analysis because trait anxiety has been shown to place women at risk for depression and may have affected self-reports of the other psychosocial constructs (namely, prenatal stress and



TABLE 3  
Stepwise Hierarchical Regression Predicting Postpartum Depression: Reduced Model

Predictor Variable	<i>r</i>	<i>beta</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> Change	<i>F</i> Change
1. Prenatal depressive symptoms	.45****	.45****	.204	.204	27.16****
2. Prenatal social support					
Satisfaction with support	-.38***	-.30**	.288	.084	12.40****
Baby's father support	-.38***	-.16*	.308	.020	3.02*
3. Prenatal stress					
Life events distress	.38***	.23***	.350	.042	6.70***
State anxiety	.49***	.26**	.387	.037	6.11**
4. Labor and postpartum experience					
Satisfaction with labor and delivery	-.23***	-.19**	.421	.034	5.95**

Note. *r* = zero-order correlation, *beta* = standardized regression coefficient.  
\**p* < .10. \*\**p* < .05. \*\*\**p* < .01. \*\*\*\**p* < .001.

social support). Unfortunately, we did not have trait anxiety scores for all the women in our sample, so we ran this analysis on a slightly reduced sample (*n* = 88). Results indicated that trait anxiety did not uniquely predict postpartum depressed mood when prenatal depression was in the model. Moreover, the addition of trait anxiety to the model did not alter the pattern of findings for the other psychosocial variables.

Finally, we tested stress-buffering models to determine if the effects of social support were more pronounced among women experiencing high levels of life stress. To accomplish this, a series of hierarchical regression analyses were conducted to examine the interactions of social support and life events, which is the conventional method of testing stress-buffering effects (S. Cohen & Wills, 1985). For each support index, prenatal depression, labor and postpartum experiences, and the main effects of social support and life events were entered first, followed by the interaction term. No significant interactions were found between stress and social support for any of the three social support indices.

## DISCUSSION

Results of the current study indicate that, in the early postpartum period, low-income women were more likely to feel depressed if they were less satisfied with the social support they received during pregnancy, if they experienced prenatal anxiety and distressing life events, and if they were dissatisfied with their labor and delivery experiences. As expected, women who experienced depressive symptoms during their pregnancy were also much more likely to be depressed 1 to 2 months after birth. Our multivariate model, which employed several multidimensional constructs, enabled us to identify the unique contributions of these predictors. For example, we found

that social support and stress each explained a unique portion of the variance in postpartum mood, highlighting the value of studying these variables concurrently. Finally, we were able to identify the elements within each factor that were more closely associated with depressed mood. With respect to stress, for example, distressing events and localized emotional responses were significant predictors in the model, whereas the more stable aspects of stress, such as financial strain and chronic stress, did not provide additional information once other variables were in the equation.

The factors examined in our model accounted for over 43% of the variance in postpartum depressed mood. Of the few studies that have prospectively examined the contribution of several psychosocial factors in the same investigation, this degree of prediction is comparable to the predictions of Whiffen (1988), O'Hara et al. (1984), and O'Hara, Schlechte, Lewis, and Varner (1991).

Although we did not obtain clinical diagnoses of depression in this sample, the CESD is a validated instrument that identifies individuals who are at risk for clinical depression. Using Radloff's (1977) scoring criteria, we found that as many as one third of our sample experienced moderate to severe depressive symptomatology 4 to 8 weeks postpartum. It should be noted that Radloff and Locke (1986) reported the cutoff score of 16 as corresponding to the 80th percentile. However, in our sample, this cutoff point corresponded to the 67th percentile, suggesting that the experience of childbirth may place low-income women such as these at elevated risk for depression.

Because our sample was composed primarily of Latino women, it is useful to examine levels of depression in a relevant comparison group. Garcia and Marks (1989) administered the CESD to a community sample of Latino adults. The average CESD score for the women in their sample was 9.27, with 17.3% of them scoring above the cutoff criterion. These values are well below those obtained in our sample ( $M = 13.3$ , and 32.4% scored above the cutoff), suggesting, once again, that women in this ethnic group may be more distressed at the postpartum period than otherwise. This also indicates that depressed mood in the postpartum period is not simply a phenomenon exclusive to middle class or White women (Cutrona, 1984; Gotlib et al., 1991; O'Hara et al., 1984; O'Hara, Schlechte, Lewis, & Varner, 1991; Whiffen, 1988); rather, it may also affect a sizable portion of low-income women and Latinas, groups not studied previously.

Note that we assessed depressed mood on a single occasion 4 to 8 weeks following birth. This was sufficient to measure depressed mood beyond the initial mood swings and postpartum blues (Hopkins, 1984), but without further follow-up we have no way of determining how many women remained depressed or how severely they were depressed. In future studies it would be useful to include longitudinal measurement in the postpartum period so that researchers can examine issues of recovery (Gotlib et al., 1991) and prolonged depression, as well as the effects of postpartum depression on the developing relationship between a mother and her infant.

### Individual Differences and Personality Attributes

Although this study examined a set of social and environmental factors that contribute to postpartum depressed mood, prenatal depression accounted for nearly half of the explained variance. This finding is consistent with previous investigations (Gotlib, 1991; O'Hara, 1984; O'Hara, Schlechte, Lewis, & Wright, 1991), which indicate that an elevated level of depression during pregnancy may be the most powerful risk factor for postpartum depression. An additional personality measure (trait anxiety) did not add uniquely to the prediction of postpartum depression. Similarly, we found that major sociodemographic variables including ethnic group, education, age, and parity did not significantly predict depressed mood. This can be partially attributed to the restricted range in this sample on some of these variables. Most women in our sample had little education, and we did not study teenagers under 18 or many women over 35. Our sample was also predominantly Latino, with a relatively low percentage of African American and White women, limiting our ability to test for ethnic differences. Nevertheless, our findings are consistent with previous work (Gotlib, 1989; O'Hara, Schlechte, Lewis, & Wright, 1991), which suggests that variables such as age and education are not strongly predictive of postpartum depression.

### Prenatal Social Support

Most previous investigations of prenatal social support in pregnancy have focused on marital functioning and have found that poor relationship quality is associated with maternal depression following childbirth. Our assessment of prenatal social support used a broader conceptualization that focused on the quality of social support received from a variety of sources—husband or partner, kin, friends, health care providers, and others. Our results indicate that women who were more satisfied with the support they received during pregnancy were less likely to be depressed after childbirth. Although support from the baby's father and from health care providers were negatively correlated with postpartum depressed mood, these factors did not uniquely predict depression once the more global variable was in the regression model. These results suggest that the quality of support a woman receives during pregnancy may be the critical element in protecting her from emotional distress and that the source of the support appears to be less critical.

Although the baby's father is often viewed as the primary source of support, there are several reasons why this variable may not have emerged as a significant predictor in this sample. First, the scale that measured support from the baby's father was administered on only one occasion. In contrast, satisfaction with received support (from any source) was measured on multiple occasions throughout pregnancy. As a result, mean ratings of support satisfaction are likely to have been measured more reliably. Second, when

we examined the sources of received support more closely, we found that the primary sources of material, instrumental, and informational support for women in our study were relatives other than the baby's father. The baby's father was the primary source of emotional support only. This is understandable given that more than one third of the women in our sample were not married to the baby's father and many seemed to depend on other members of their social network for support. Consequently, the global support measure, which allowed women to describe the support that they received from any source, was a stronger predictor of postpartum distress. Results of other studies, which have found the marital relationship to be a significant buffer for postpartum depressed mood, may be attributed to the characteristics of their samples: mostly married, White women of higher socioeconomic status. In fully understanding postpartum depression in women with low income, researchers must expand their frameworks for considering sources of social support and must be sensitive to cultural issues as well.

### Stress

State anxiety and life events distress contributed to the prediction of postpartum distress, after controlling for prenatal depressive symptomatology and prenatal social support. Financial strain and perceived chronic stress, reflecting the more stable and structural aspects of stress, were not significant contributors when the other stress variables were in the regression model, most likely due to shared variance among them.

### Labor and Postpartum Experiences

Satisfaction with labor and delivery, which measures appraisal processes and emotional responses to birth, emerged as the only postpartum variable that significantly predicted depression. This finding, which is consistent with prior research (Green et al., 1990), suggests that dissatisfaction with one's labor and delivery experience may contribute to depressed mood. It is noteworthy that two of the three items comprising this construct in our study concern the conduct of health care professionals. This suggests that interactions with health care providers may contribute substantially to patients' subsequent emotional well-being. This finding may have important implications for health care delivery procedures at the time of birth. However, it is important to note that this variable was measured concurrently with depressed mood, thus, we cannot rule out reverse causality or response bias. Nevertheless, the importance of health care provider support is an important issue that merits further investigation.

Infant medical outcomes are typically conceptualized in the literature as a potentially stressful event (O'Hara et al., 1984; O'Hara, Schlechte, Lewis, &

Varner, 1991), and prior findings concerning its effect on depression are inconsistent. Although our adverse infant outcomes index was positively correlated with postpartum depression, it did not significantly add to the equation in multivariate analyses. This is not surprising considering the relatively low level of adverse outcomes in our sample. The average score on this index was .27 (the score could range from 0 to 4), and only 30% of the infants had any adverse medical outcome. However, the fact that even this infrequent event was correlated with depression suggests that poor infant health may be an important contributor to a new mother's emotional well-being, and this topic deserves further attention. Mothers of such infants are likely to be concerned about their child's prognosis and about how the family will care for a sick child (Calhoun & Selby, 1980). Future studies may benefit from using a more comprehensive and sensitive index of infant outcomes in a larger sample to achieve greater variability in medical outcomes.

The baby's father's involvement after birth with the mother and infant was not a significant predictor of postpartum depressed mood either, although it approached significance,  $.05 < p < .10$ . This may be due to the fact that our measure for this construct was exploratory. We believe that it would be worthwhile to expand the measurement of parental involvement in future studies. Baby's father's involvement provides one potentially important form of postpartum social support, and there is an obvious need to measure other aspects of postpartum social network support as well. On the whole, variables examining the labor and postnatal period (such as postnatal social support and stress) have rarely been studied as predictors of postpartum depressed mood. Longitudinal research that examines the effects of these variables on both early and prolonged depression is needed.

#### Can the Results Be Attributed to Negative Affectivity?

Most of the variables that uniquely predicted postpartum depression were self-reported perceptions (e.g., satisfaction with received support, life events distress, satisfaction with labor and delivery). This raises the possibility that links between postpartum depression and psychosocial factors are simply reflections of a larger unmeasured third variable, such as negative affectivity (D. Watson & Pennebaker, 1989). However, various features of our study, and certain findings, suggest that this is unlikely. First, our longitudinal design, although not completely eliminating response bias, reduces its impact because mood-congruent response sets operating in the postpartum period could not influence the key psychosocial factors (such as stress and support) that were assessed prenatally. Second, only some perceptual variables were significant contributors to depressed mood (e.g., perceived chronic stress was not), suggesting that it is not perceptual style per se that relates to postpartum depression, but rather the specific constructs. Most important is that the effects of prenatal depression

(and also trait anxiety for the portion of our sample that completed this measure) were partialled out. Thus, the contribution of perceptual variables such as perceived stress, satisfaction with social support, and satisfaction with labor and delivery, are sufficiently independent of dispositional variables likely to overlap with negative perceptual style.

To conclude, although most new mothers do not become severely distressed, it is not uncommon for women to experience feelings of sadness and depression in the early months following childbirth. Understanding the factors that contribute to depressed mood during this period is essential for identifying women who are at risk and for designing interventions to promote maternal well-being. Taken together, the results of this study suggest that low-income and ethnic-minority women would benefit from interventions aimed at reducing environmental stressors, promoting supportive social relationships, and providing caring and responsive health care environments.

#### ACKNOWLEDGMENTS

Funding for the UCLA Psychosocial Factors in Pregnancy Project was provided by grants from the March of Dimes Foundation (#12-130) and NIH Biomedical Research Support Grant Funds (RR07009-19). The second and third authors received support during work on this project from National Institute of Mental Health Training Grant MH 15750.

We thank our interviewers, many undergraduate research assistants, and the staff of the UCLA Prenatal and Family Planning Clinics for their assistance or encouragement in the conduct of this research. We also express our gratitude to the women who participated in this project.

#### REFERENCES

- Atkinson, A. K., & Rickel, A. U. (1984). Postpartum depression in primiparous parents. *Journal of Abnormal Psychology, 93*, 115-119.
- Blumberg, N. L. (1980). Effects of neonatal risks, maternal attitude, and cognitive style on early postpartum adjustment. *Journal of Abnormal Psychology, 89*, 139-150.
- Boyce, P., Hickie, I., & Gordon, P. (1991). Parents, partners or personality? Risk factors for post-natal depression. *Journal of Affective Disorders, 21*, 245-255.
- Calhoun, L. G., & Selby, J. W. (1980). Psychological reactions to preterm birth. In J. W. Selby, L. G. Calhoun, A. V. Vogel, & H. E. Kings (Eds.), *Psychology and human reproduction* (pp. 112-126). New York: Free Press.
- Carver, C. S., & Gaines, J. G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research, 11*, 449-462.
- Cogill, S. R., Caplan, H. L., Robson, K. R., & Kumar, R. (1986). Impact of maternal postnatal depression on cognitive development of young children. *British Medical Journal, 292*, 1165-1167.
- Cohen, J. C., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Cohen, S., & Williamson, G. M. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oscamp (Eds.), *The social psychology of health* (pp. 31-67). Newbury Park, CA: Sage.
- Cohen, S., & Wills, T. A. (1985). Issues in the study and application of social support. In S. Cohen & S. L. Syme (Eds.), *Social support and health* (pp. 3-22). Orlando, FL: Academic.
- Collins, N. L., Dunkel-Schetter, C., Lobel, M., & Scrimshaw, S. C. M. (1993). Social support in pregnancy: Psychosocial correlates of birth outcomes and postpartum depression. *Journal of Personality and Social Psychology, 65*, 1243-1258.
- Cox, J. L., Connor, Y., & Kendell, R. E. (1982). Prospective study of the psychiatric disorder of childbirth. *British Journal of Psychiatry, 140*, 111-117.
- Cutrona, C. E. (1983). Causal attributions and perinatal depression. *Journal of Abnormal Psychology, 92*, 161-172.
- Cutrona, C. E. (1984). Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology, 91*, 378-390.
- Cutrona, C. E., & Troutman, B. R. (1986). Social support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. *Child Development, 57*, 507-518.
- Dunkel-Schetter, C., & Bennett, T. L. (1990). Differentiating the cognitive and behavioral aspects of social support. In B. R. Sarason & G. R. Pierce (Eds.), *Social support: An interactive view* (pp. 267-296). New York: Wiley.
- Dunkel-Schetter, C., Lobel, M., Collins, N., Hobel, C., & Scrimshaw, S. M. (1993). *Psychosocial risks in adverse birth outcomes: Effects of prenatal stress and social support in low income women*. Manuscript submitted for review, UCLA.
- Fechner-Bates, S., Coyne, J. C., Schwenk, T. L. (1994). The relationship of self-reported distress to depressive disorders and psychopathology. *Journal of Consulting and Clinical Psychology, 62*, 550-559.
- 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.
- Folkman, S., & Lazarus, R. S. (1988). Coping as a mediator of emotion. *Journal of Personality and Social Psychology, 54*, 466-475.
- Garcia, M., & Marks, G. (1989). Depressive symptoms among Mexican-American adults: An examination with the CES-D Scale. *Psychiatry Research, 27*, 137-148.
- Golding, J. M. (1989). Role occupancy and role-specific stress and social support as predictors of depression. *Basic and Applied Social Psychology, 10*, 173-195.
- Gotlib, I. H., Whiffen, V. E., Mount, J. W., Milne, K., & Cordy, N. I. (1989). Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. *Journal of Consulting and Clinical Psychology, 57*, 269-274.
- Gotlib, I. H., Whiffen, V. E., Wallace, P. M., & Mount, J. W. (1991). Prospective investigation of postpartum depression: Factors involved in onset and recovery. *Journal of Abnormal Psychology, 100*, 122-132.
- Graham, S. (1992). "Most of the subjects were White and middle class": Trends in published research on African Americans in selected APA journals, 1970-1989. *American Psychologist, 47*, 629-639.
- Green, J. M., Coupland, V. A., & Kitzinger, J. V. (1990). Expectations, experiences, and psychological outcomes of childbirth: A prospective study of 825 women. *Birth, 17*, 15-24.
- Grossman, F. K., Eichler, L. S., & Winickoff, S. A. (1980). *Pregnancy, birth, and parenthood*. San Francisco: Jossey-Bass.
- Hayworth, L., Little, C., Carter, S. B., Raptopoulos, P., Priest, R. G., & Sandler, N. (1980). A predictive study of postpartum depression: Some predisposing characteristics. *British Journal of Medical Psychology, 53*, 161-167.

- Hobfoll, S. E. (1989). Conservation of resources: A critical review of evidence. *American Psychologist*, *44*, 513-524.
- Hobfoll, S. E., & Lieberman, J. R. (1987). Personality and social resources in immediate and continued stress resistance among women. *Journal of Personality and Social Psychology*, *52*, 18-26.
- Holden, J. M. (1991). Postnatal depression: Its nature, effects, and identification using the Edinburgh postnatal depression scale. *Birth*, *18*, 211-221.
- Hopkins, J., Campbell, S. B., & Marcus, M. (1987). Role of infant-related stressors in postpartum depression. *Journal of Abnormal Psychology*, *96*, 237-241.
- Hopkins, L., Marcus, M., & Campbell, S. B. (1984). Postpartum depression: A critical review. *Psychological Bulletin*, *95*, 498-515.
- House, J. S., & Kahn, R. (1985). Measuring social support. In S. Cohen & S. L. Syme (Eds.), *Social support and health* (pp. 83-108). Orlando, FL: Academic.
- Kennerley, H., & Gath, D. (1989). Maternity blues: Association with obstetric, psychological and psychiatric factors. *British Journal of Psychiatry*, *155*, 367-373.
- Knights, R. G., & Thirkettle, J. A. (1987). The relationship between expectations of pregnancy and birth, and transient depression in the immediate post-partum period. *Journal of Psychosomatic Research*, *31*, 351-357.
- Kumar, R., & Robson, K. M. (1984). A prospective study of emotional disorders in childbearing women. *British Journal of Psychiatry*, *144*, 35-47.
- Lederman, R. G. (1984). *Psychosocial adaptation in pregnancy: Assessment of seven dimensions of maternal development*. Englewood Cliffs, NJ: Prentice-Hall.
- Lobel, M., & Dunkel-Schetter, C. (1990). Conceptualizing stress to study effects on health: Environmental, perceptual, and emotional components. *Anxiety Research*, *3*, 213-230.
- Lobel, M., Dunkel-Schetter, C., & Scrimshaw, S. C. M. (1992). Prenatal maternal stress and rematurity: A prospective study of socioeconomically disadvantaged women. *Health Psychology*, *11*, 32-40.
- Lum, C. U. (1990). The relationship of demographic variables, antepartum depression, and stress to postpartum depression. *Journal of Clinical Psychology*, *46*, 588-592.
- O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and postpartum. *Archives of General Psychiatry*, *43*, 569-573.
- O'Hara, M. W. (1987). Postpartum "blues", depression, and psychosis: A review. *Journal of Psychosomatic Obstetrics and Gynaecology*, *7*, 205-227.
- O'Hara, M. W., Neunaber, D. J., & Zekoski, E. W. (1984). Prospective study of postpartum depression: Prevalence, course, and predictive factors. *Journal of Abnormal Psychology*, *93*, 158-171.
- O'Hara, M. W., Rehm, L. P., & Campbell, S. R. (1982). Predicting depressive symptomatology: Cognitive-behavioral models and postpartum depression. *Journal of Abnormal Psychology*, *91*, 457-461.
- O'Hara, M. W., Schlechte, J. A., Lewis, D. A., & Varner, M. W. (1991a). Controlled prospective study of postpartum mood disorders: Psychological, environmental, and hormonal variables. *Journal of Abnormal Psychology*, *100*, 63-73.
- O'Hara, M. W., Zekoski, E. W., Phillips, L. H., & Wright, E. J. (1990). A controlled prospective study of postpartum mood disorder: Comparison of childbearing and non-childbearing women. *Journal of Abnormal Psychology*, *99*, 3-15.
- O'Hara, M. W., Schlechte, J. A., Lewis, D. A., & Wright, E. J. (1991b). Prospective study of postpartum blues: Biological and psychological factors. *Archives of General Psychiatry*, *48*, 801-806.
- Paykel, E. S., Emms, E. M., Fletcher, J., & Rassaby, E. S. (1980). Life events and social support in puerperal depression. *British Journal of Psychiatry*, *136*, 336-346.
- Radloff, L. (1977). The CESD scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385-401.