

ANGER AFTER CHILDBIRTH: AN OVERLOOKED REACTION TO POSTPARTUM STRESSORS

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Other than postpartum depression, little is known about women's emotional responses to childbirth and subsequent stressors. Anger was explored on the basis of theory and evidence that it is a likely emotional response in this context. During their third trimester of pregnancy and approximately six weeks after delivery, 163 participants completed the Beck Depression Inventory and the anger subset of the Affect Balance Scale. A number of childbirth-relevant variables were examined as predictors of postpartum emotional response, controlling for prepartum levels and for the association between anger and depressed mood. As expected, a substantial group of women reported high levels of anger irrespective of depressed mood. Although the majority of variables predicted depressed mood, childcare stress, age, and religious self-identification were independently predictive of postpartum anger (all p values < .05). Implications for research and clinical intervention are discussed.

The typical woman presented in psychological literature has a restricted range of responses to negative experiences: She is often presented as inwardly focused, depressed, and ineffectual. Particularly striking is the inattention to emotional responses other than depression. In comparison, the emotion of anger has been remarkably understudied (Kassinove & Sukhodolsky, 1995; Thomas, 1995), which may be due in part to lingering stereotypes about women's emotional responses to negative experience. Anger in women is often seen as both unusual and inappropriate (Kopper & Epperson, 1991; Miller, 1991). Moreover, the majority of studies of anger employ clinically depressed or anxious participants (Thomas, 1995), limiting understanding of the causes and implications of anger itself (Eckhardt & Deffenbacher, 1995).

The focus on depression to the exclusion of other emotional responses such as anger is particularly striking in re-

search on pregnant and postpartum populations. Although a few studies exist on postpartum reactions such as disappointment, satisfaction, and frustration (e.g., DiMatteo et al., 1996; Green, Coupland, & Kitzinger, 1990; Hyde, Klein, Essex, & Clark, 1995; Mackey, 1995), the vast majority of studies of emotional responses to childbirth focus on depressed mood (DiMatteo, Kahn, & Berry, 1993; Nicolson, 1999). It seems likely that there are even stronger social restrictions against anger in postpartum women, for there is a general perception that the process of becoming a mother should be and is a solely happy event (Nicolson, 1999) and that mothers are particularly selfless and nurturing (Thomas, 1991). Whereas depressed mood is typically seen (often erroneously) as either hormonally inevitable or representative of pathology on the part of the mother (Nicolson, 1999), anger in particular implies that there is something to be angry about, which starkly challenges the stereotype of new mothers. Despite such stereotypes, pregnancy and childbirth present a unique opportunity to study women's anger. First, events during pregnancy, delivery, and the surrounding time period comprise a relatively finite set of stressors experienced by many healthy women (Lobel, 1998; O'Hara, 1995). In addition, there are sound theoretical reasons to expect that such stressors would cause anger. According to cognitive models of emotion (e.g., Weiner, 1985), anger typically results from attributions of controllability and accountability for negative or aversive events (Averill, 1983; Lazarus, 1991, chap. 6). Childbirth is associated with significant changes and disruptions in one's familial, work, and other roles (Neter, Collins, Lobel, & Dunkel-Schetter, 1995; Nicolson, 1999; Wells, Hobfoll, &

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Lavin, 1999), many of which may reasonably be attributed to others, including one's spouse or partner, family members, employers, or health care providers. Such changes are often frustrating, threatening, and anger-provoking for postpartum women (Hyde et al., 1995). In addition, anger is sometimes an automatic reaction to aversive situations (Berkowitz, 1990), which may occur in response to the pain, exhaustion, and discomfort common to delivery and the postpartum period.

There are a number of reasons why it is crucial to study anger in the postpartum period. Unless it represents a chronic, debilitating pattern, experiencing anger in and of itself is not pathological but rather a normal response to a negative occurrence (Lazarus, 1991). It is likely that postpartum anger is adaptive to the extent that it is expressed constructively and helps with goal achievement (Lazarus, 1991). Thus, one motivation for identifying women's anger during the postpartum period is to increase awareness and acceptance of anger as a normal experience during what can be a difficult as well as joyous time. In addition, since anger is often the result of a particular stressor (Averill, 1983), understanding anger can provide information about what types of experiences contribute to it, suggesting relevant interventions to reduce the aversiveness of childbirth and the postpartum period. Finally, theory and research in general populations suggest that there may be profound negative repercussions of habitual or unresolved state anger for both a woman and her infant. Trait anger, which is a tendency to experience frequent and intense state anger (Deffenbacher et al., 1996), and patterns of negative anger expression have been linked conclusively to elevated blood pressure and coronary heart disease (Miller, Smith, Turner, Guijarro, & Hallet, 1996; Spielberger, 1999). Preliminary research also suggests that very high levels of state anger may be associated with rejecting or aggressive behavior towards infants (Colin, 1996; Dix, 1991), with implications for infant attachment and health. Anger in pregnancy may also affect the health of the mother or fetus, perhaps via avoidant coping behavior, which is high in angry women (Rusting & Nolen-Hoeksema, 1998) and predictive of greater maternal distress (Lobel, Yali, Zhu, DeVincent, & Meyer, 2002). Like other negative emotional responses to prenatal maternal stress, anger may also elicit unhealthful behaviors such as smoking and poor eating habits, which adversely affect fetal health (Dunkel-Schetter, Gurung, Lobel, & Wadhwa, 2001). Clearly, more information is needed about women's anger during the critical time surrounding pregnancy and childbirth.

Prevalence of Anger and Depressed Mood

The current study focuses on state anger rather than hostility or related constructs. Although sometimes used interchangeably with anger, hostility is a more stable cognitive tendency towards negative beliefs and attitudes, particu-

larly cynicism and mistrust (Miller et al., 1996). Anger is more relevant to the current study as it is instead a reactionary state, consisting of feelings such as irritation, annoyance, and fury (Spielberger, Jacobs, Russell, & Crane, 1983). Anger can be particularly adaptive when it is expressed constructively. However, as the primary goal of this study was not to document the consequences of postpartum anger but to establish that it exists, we focus on state anger rather than on expressed, suppressed, or other behavioral manifestations of anger. Furthermore, we use the term postpartum anger throughout this article to refer to the time period in which anger occurs and to contrast this emotion with postpartum depressed mood. We are not suggesting that postpartum anger is a syndrome or pathological condition or that anger experienced in the postpartum period is qualitatively different from that which occurs at other times in a woman's life.

A large number of scales used to measure anger and related constructs make it difficult to judge the prevalence with which people experience angry emotions (Miller et al., 1996). Adding to such difficulties, most studies of angry emotions have been conducted with male-only samples (Thomas, 1995; Miller et al., 1996). Recent studies, however, are beginning to provide information about the prevalence of anger in women. In one of the very few methodologically sound studies incorporating a measure of postpartum anger (Wells et al., 1999), for example, participants scored on average approximately half a standard deviation above means for their age group (Spielberger et al., 1983). This study found that women who perceived a loss of resources following childbirth experienced an increase of anger from the prepartum to postpartum period (Wells et al., 1999). Postpartum women have also been shown to have elevated anger in response to inadequacy of parental leave from paid employment (Hyde et al., 1995).

In contrast to the limited research on state anger, there is an immense body of research on the prevalence of depression (Kassinove & Sukhodolsky, 1995), including a substantial amount on postpartum depression. Depression during pregnancy is one of the strongest predictors of clinically defined postpartum depression (O'Hara & Swain, 1996), which is characterized by two or more weeks of symptoms including anxiety, irritability, dysphoria, fatigue, poor appetite, and insomnia, and which affects approximately 10% of childbearing women (O'Hara, 1995) at 2 to 11 weeks postpartum. An additional 20–25% (Hopkins, Marcus, & Campbell, 1984) of women experience mild to moderate levels of depressed mood within this same period. Such moderate levels of depressed mood are distinct from a phenomenon known as the postpartum blues, which is characterized by mood swings, anxiety, tearfulness, and irritability, affects between 50–80% of all women in the first 10 days after childbirth (Hopkins et al., 1984), and which is thought to be caused by extreme fatigue, sleep disruption, and recovery from delivery (Levy, 1987).

Association Between Depressed Mood and Anger

It is necessary to examine whether anger exists independently of depressed mood in order to determine whether those who experience the former may compose a neglected group of individuals in distress. Most studies of the relationship between depressed and angry emotions reveal a moderate to high correlation, although the majority have focused on hostility rather than state anger (Riley, Treiber, & Woods, 1989). While some researchers have argued for a broader construct such as neuroticism or negative affect that subsumes constructs such as anxiety, depression, and anger (McCrae, 1991; Watson & Clark, 1984), the majority of research supports the conceptualization of anger and depression as distinct constructs. For example, depression and anxiety have been found to be more highly associated with each other than with anger (Bridewell & Chang, 1997). That the correlation between anger and depression is less than perfect has also been taken as evidence that "anger and depressed mood represent distinguishable constructs" (Wells et al., 1999, p. 1176). In addition, the degree and even existence of the association between angry emotions and depression seems to be inconsistent across different studies, perhaps due to differences in the way anger is measured or what type of anger experience or expression is examined (Riley et al., 1989).

Goals and Hypotheses of the Current Study

The primary goals of the current study were to determine the prevalence of state anger and to examine the relative independence of anger and depressed mood in the context of delivery and related stressors. We expected that a substantial group of women would experience anger due to such stressors and that their anger would be correlated with, but largely independent from depressed mood. An additional and secondary goal of this study was to explore which psychosocial and demographic variables function as predictors of postpartum anger after controlling for the impact of prepartum levels as well as the association between anger and depressed mood. We examined the independent impact of a number of variables that have been used in previous studies of postpartum adjustment; as this research has historically been limited to postpartum depression, the inclusion of these variables offers an opportunity to examine whether the same factors are associated with anger. A few additional variables were included that have not previously been examined in relation to postpartum adjustment but for which there was some reason to expect an association with emotional adjustment. One set of variables pertained to labor and delivery and included the degree to which women experienced control over their body, environment, and degree of information during delivery, and the degree to which they were satisfied with their childbirth experience. Another set of variables focused on the postpartum environment and included childcare-related stress and so-

cial support. Personal and demographic characteristics included self-esteem and religious self-identification.

Because of the limited research on postpartum anger, we did not have strong expectations about its association with any of the predictor variables. Given the apparent impact of resource loss on postpartum anger (Wells et al., 1999), however, social support and childcare stress were expected to be inversely and positively associated, respectively, with postpartum anger. Moreover, on the basis of research in general populations, self-esteem and age were expected to be inversely associated with anger (Spielberger, 1999; Zuckerman, 1989), and pain was expected to be positively associated with anger (Berkowitz, 1990). In addition, we had some expectations on the basis of attribution theory: Events that are likely to have been perceived as negative and attributable externally were expected to be associated with anger. For example, perceived threat to self and fetus, overall childbirth satisfaction, having had an unplanned cesarean section, and the amount of time following delivery until the baby was first held were expected to be positively associated with anger, as they represent experiences that typically rely on the actions of others.

Although there is considerably more research to guide expectations about which variables are likely to predict postpartum depression, a thorough review of this literature is not within the scope of the present study. Briefly, self-esteem, social support, childbirth satisfaction, experienced control, and, to a lesser degree, expected control, were all expected to be inversely associated with postpartum depressed mood (Fontaine & Jones, 1997; Green et al., 1990; Neter et al., 1995), whereas childcare stress, women's perceived health of their infant, and neuroticism were expected to be positively correlated with depressed mood (Affleck & Tennen, 1991; Neter et al., 1995; O'Hara, Schlechte, Lewis, & Varner, 1991; Penderson, Bento, Chance, Evans, & Fox, 1987; Roberts & Kendler, 1999). We did not expect mode of delivery or the time until a mother first held her infant to be predictive of depressed mood, as they have been found to be associated with depressed mood only indirectly, via variables related to childbirth satisfaction (DiMatteo et al., 1996). We also had no strong expectations about the degree to which religious self-identification would be associated with depressed mood or anger, although some religious beliefs are associated positively with emotional well-being (for a review, see Gartner, 1996) and inversely with trait anger (Exline, Yali, & Lobel, 1999).

METHOD

Participants

The current study was part of a larger investigation of postpartum adjustment. The sample consisted of 163 pregnant women living in a middle to upper class suburban area. Women were eligible to participate if they were at least 18 years of age; this requirement was established because

unique psychosocial and medical issues apply to adolescent pregnancy (e.g., Coley & Chase-Lansdale, 1998). In addition, women were not eligible if they were scheduled for a planned cesarean delivery, as a goal of the larger investigation was to examine adjustment to vaginal and unplanned cesarean deliveries.

Participants ranged in age from 18 to 43 years ($M = 30$, $SD = 4.7$) and the majority (96%) were White. Almost all (96%) were high school graduates, with approximately half having completed college and 23% holding graduate degrees. The majority (87%) identified themselves as a member of a particular religion; of these, 57% identified as Catholic, 20% Protestant, 7% Jewish, and 3% with a variety of other religions. The majority of study participants (95%) were either married or living with the baby's father as if married. Average annual household income was above \$35,000 per year, with approximately two-thirds (62%) of households earning over \$50,000 per year. Over half (59%) of respondents maintained full-time jobs while pregnant, 14% were employed part-time, and 27% were not employed. About half of the participants had been pregnant before and 23% had previously given birth. Three-quarters (76%) delivered vaginally, while the rest delivered by an unplanned cesarean section.

The majority of women delivered at one of three hospitals; 43% delivered at Hospital A, 18% at Hospital B, and 32% at Hospital C. The remaining 7% of participants delivered at eight other hospitals in the same region. Analyses revealed no significant differences in anger or depressed mood between the participants from each hospital. Participants were recruited by mailings to a private obstetrics practice, advertisements in local newspapers, and presentations to local childbirth education classes. Women recruited from these three sources were similar on most dimensions except that women recruited from childbirth education classes were less likely to have been pregnant before, $t(160) = 4.00$, $p < .001$, were less likely to have given birth previously in comparison to the other two groups, $t(160) = 7.63$, $p < .001$, and were more likely to have been working full-time during pregnancy than the others, $t(159) = 3.73$, $p < .001$. Neither parity nor employment was significantly correlated with anger or depressed mood.

Procedure

Prepartum data were collected with questionnaires administered between seven to nine months of pregnancy ($M = 8.8$, $SD = .50$), the timing of which was not significantly correlated with anger or depressed mood. By this time, women have formed some opinions about what childbirth will be like and are spending great amounts of time focusing on the event as it draws near (Lobel, 1998). The second questionnaire was mailed to participants at four weeks postpartum. By four weeks, postpartum blues have dissipated (O'Hara, 1995) and the postsurgical pain of women who delivered by cesarean is largely diminished. While close

enough to the delivery that women would still have strong, detailed memories of childbirth, this time was also chosen so women would have the distance necessary to relate negative as well as positive impressions of their delivery. There is evidence that women are reluctant to speak negatively about their experience immediately after childbirth (Shearer, 1983). The number of weeks at time of postpartum data collection ($M = 6.2$, $SD = 2.0$) was also not significantly related to anger or depressed mood.

Participation rates varied by method of recruitment. Of the 353 women approached in childbirth education classes, 38% completed both prepartum and postpartum data, as compared to 15% of the 189 women who were mailed invitations to participate, and 64% of the 14 who responded to advertisements. For the majority of variables, analyses revealed no significant differences between women who completed both questionnaires and those who completed the first questionnaire only. Although women completing both questionnaires had slightly higher average annual household income, $t(234) = 2.07$, $p < .05$, it seems unlikely that this difference influenced results as neither income nor other indicators of socioeconomic status were significantly correlated with anger or depressed mood. Analyses were based on the 163 women who completed both questionnaires.

Measures

Depressed mood. Severity of depressed mood over the past week was measured by the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), which was administered in both questionnaires to allow for control of prepartum levels. Responses are provided on a scale from 0 to 3, with 3 representing the greatest intensity of depressed mood. Scores are added to create a total score. The BDI has been shown to have high convergent validity with ratings of depression severity in both psychiatric samples and nonclinical student samples (Beck et al., 1961; Bumberry, Oliver, & McClure, 1978) and has been used extensively in research on postpartum depression (O'Hara, 1995). Several items in the BDI are somatically oriented, however, and may produce inflated scores in postpartum women because of bodily changes normally occurring at this time (O'Hara, 1995). Therefore, a subset consisting of 15 cognitive depression items was identified. This cognitive subset, hereafter referred to as the BDIcog, has been used in previous research with various populations and has been shown to have acceptably high internal consistency (Eitel, Hatchett, Griffin, & Wadhwa, 1995). In this study, the alpha coefficient for both the BDI and the BDIcog was .87.

Anger. Measures of prepartum and postpartum state anger were taken from the Affect Balance Scale (ABS; Derogatis, 1975), which consists of subscales measuring both positive and negative affect dimensions. The abbreviated version of the ABS used in the present study included

the negative dimensions of depression, anxiety, and hostility, all of which were validated with a sample of 417 psychiatric outpatients (Derogatis & Coons, 1993). The four adjectives from the "hostility" subscale—angry, annoyed, resentful, and irritable—were used to assess anger in this study because face validity suggests that they are appropriate indicators of state anger. Participants indicated the degree to which each adjective described the way they felt at the moment on a scale from 0 (*not at all*) to 4 (*extremely*) and the four anger items were summed to create a State Anger score. Cronbach's alpha coefficients were .75 and .74 for prepartum and postpartum anger, respectively.

Experience of control during childbirth. The degree of control women perceived during labor and delivery was measured in the postpartum questionnaire with 11 items ranging from control over behavior and decisions to informational control. The items were adapted from those used in prior control research and in qualitative studies of control during cesarean deliveries (DeLuca, 1999). Included were statements such as, "I had very little say over the way my labor and delivery went," or, "during labor, I was able to position my body in the way that was most comfortable," which were rated on a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Experienced control was scored by reversing responses on the two negative items and summing across all 11 items. The reliability of this scale was high ($\alpha = .89$).

Expectations of control during childbirth. This scale, administered prepartum, included statements similar to those in the experienced control scale but which were phrased to measure women's expectations before delivery. This measure was also reliable ($\alpha = .80$).

Childbirth satisfaction. A measure was developed to assess global satisfaction with childbirth experience. It consisted of two items adapted from the Childbirth Perception Questionnaire (Padawer, Fagan, Janoff-Bulman, Strickland, & Chorowski, 1988) and six original items such as, "I am happy with my childbirth experience," and, "I wish my labor and delivery had gone differently than they did." A scale from 1 (*strongly disagree*) to 5 (*strongly agree*) was used. Childbirth satisfaction was scored by reversing responses on one negative indicator and summing across all items; the scale exhibited excellent reliability ($\alpha = .93$).

Mode of delivery and time until held baby. Mode of delivery and the amount of time following delivery until the baby is first held are two correlates of childbirth satisfaction (DeLuca, 1999; Fawcett, Polio, & Tully, 1992), which were included for their possible impact on postpartum anger. Women were asked, "how long after you delivered did you hold your baby for the first time?" Subject responses were coded into categories from 1 (*0–30 minutes*) to 5 (*4 or more hours*). Participants specified whether their mode of deliv-

ery was either vaginal or cesarean. Mode of delivery was also verified from medical records whenever possible.

Perceived threat to health of self and fetus during delivery. Participants were asked to rate two statements on a 5-point Likert scale of agreement or disagreement: "during labor and delivery, I feared for my life," and, "during labor and delivery, I feared for my baby's life." These items were incorporated in random order into the childbirth satisfaction scale.

Childcare stress. The Childcare Stress Inventory (CSI; Cutrona, 1983) was developed to index stressful postpartum events, including health and feeding problems with the baby and satisfaction with social support provided by spouse and family. The first two items were removed with the author's permission (C. Cutrona, personal communication, May 13, 1997) because they focus on satisfaction with labor and delivery, a construct that was measured separately in this study. The total number of items endorsed constitutes the participant's score on the inventory. Cronbach's alpha for the CSI as used in this study was .73.

Perceived health of baby. Participants were asked to rate the current health of their infant on a scale from 1 (*poor*) to 4 (*excellent*).

Current pain. Intensity of postpartum pain was measured by the Present Pain Intensity Scale (PPI) of the McGill Pain Questionnaire (MPQ; Melzack, 1975), a single item which asks respondents to rate their current pain on a scale from 0 (*no pain*) to 5 (*excruciating*). The PPI has been used to evaluate pain in many studies and has acceptable validity and reliability (Melzack & Katz, 1992).

Social support from partner and social support from others. Receipt of four types of social support—material, instrumental, emotional, and informational—was measured postpartum. Participants were asked whether they received each type of social support from either their spouse or partner or from others. Responses were added to form two indices: average social support received from the partner and from others. This instrument is based on a measure developed by Collins, Dunkel-Schetter, Lobel, and Scrimshaw (1993) for a pregnant population, which has been shown to have sufficient variability and predictive validity (Collins et al., 1993). The Cronbach's alpha coefficients for the scales as used in this study were .81 for social support from partner and .58 for social support from others. The low internal consistency of the latter scale is reasonable, given that it combines a variety of sources whose provision of support would not be expected to correlate.

Self-esteem. Trait self-esteem was assessed using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Prepartum and postpartum administrations of the scale were

highly correlated ($r = .77$); the postpartum data were used in all analyses.

Neuroticism. The NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992) was administered prepartum. This shorter version of the NEO-PI-R is a reliable and valid measure (John, 1990) that provides global information about personality. The NEO-FFI contains 60 items that constitute several subscales, one of which is a 12-item measure of neuroticism. Participants rate on a 5-point Likert scale the degree to which they agree or disagree with statements like, "I often feel tense and jittery," and, "I rarely feel fearful or anxious" (reverse scored). This scale was highly reliable ($\alpha = .84$).

Religious self-identification. Participants were asked with one item (responses were yes or no) if they considered themselves to be a member of a particular religion, and, if so, which.

RESULTS

Prevalence of Anger and Depressed Mood

Means, standard deviations, and response ranges for prepartum and postpartum anger and depressed mood are presented in Table 1. Within-subjects analysis revealed that postpartum levels of anger were not dissimilar from prepartum levels, $t(162) = 1.25$, $p = .21$. Median splits were conducted to create groups experiencing "high" and "low" anger at each time point. The median for both prepartum and postpartum anger was 1. As the variable was considerably skewed to the left, scores exactly at the median were included in the low anger group so as not to accentuate this skew; scores above the median were included in the high anger group.

Postpartum levels of depressed mood as measured by the BDIcog were also not different from prepartum levels, according to a within-subject analysis, $t(162) = .26$, $p = .80$. When measured by the BDI with somatic items included, however, postpartum levels were significantly higher than prepartum levels, as would be expected because of the physical condition of women following birth, $t(162) = .247$, $p < .01$. Further analyses were based on the BDIcog.

A score of 10 on the BDI has traditionally been considered to be the minimum score needed to qualify for a diagnosis of borderline clinical depression (Beck & Steer, 1987) and has been used by many researchers as a cutoff for postpartum depression (O'Hara & Swain, 1996). Similarly, a cutoff of 10 was used for the BDIcog in the present study. Beck and colleagues (Beck, Steer, & Brown, 1996) have determined on the basis of clinical interviews and theory that the BDI somatic items are less effective at estimating depression. Therefore, the same cutoff is appropriate irrespective of whether the measure includes somatic items, and is consistent with Beck's more recent criteria (Beck

Table 1

Means, Standard Deviations, and Numbers of Women Reporting Low vs. High Anger and Depressed Mood

	Prepartum				Postpartum			
	M	SD	Range	n	M	SD	Range	n
Anger	1.7	2.0	0–11		1.5	1.9	0–10	
Low	0.5	0.5	0–1	101	0.4	0.5	0–1	107
High	3.7	2.1	2–10	62	3.5	1.9	2–10	56
Depressed Mood	4.0	3.8	0–17		4.0	4.2	0–22	
Low	3.2	2.6	0–9	149	2.8	2.6	0–9	145
High	13.0	2.6	10–17	14	13.2	3.6	10–22	18

et al., 1996) for using this measure to identify clinically relevant levels of depression. However, because our focus was not on determining clinical depression and because clinical norms are not as well established for the BDIcog, women with BDIcog scores greater than 10 in this study are considered to have reported high depressed mood rather than clinically defined depression. Fourteen women (8.6%) reported high levels of prepartum depressed mood based on this criterion. At the postpartum measurement, 18 (11%) reported high levels of depressed mood.

Although mean levels of anger and depressed mood were comparable over time, for many participants these levels were not static but changed from prepartum to postpartum. Of the 56 women who reported high postpartum anger, 43% had reported low anger prepartum. Of the 18 women who reported high levels of postpartum depressed mood, 58% had reported low depressed mood prepartum.

Independence of Anger and Depressed Mood

As expected, anger and depressed mood were strongly but far from perfectly correlated ($r = .53$, $p < .01$, and $r = .47$, $p < .01$ for the prepartum and postpartum variables, respectively). Moreover, the women who experienced high anger postpartum were predominantly separate from those who experienced depressed mood, with 82% reporting low postpartum depressed mood.

Predictors of Anger and Depressed Mood

Because a study goal was to examine which psychosocial and demographic variables differentially predict postpartum anger and postpartum depressed mood, it was necessary to control for prepartum levels of affect and for the association between depressed mood and anger. To this end, we conducted a series of three-step hierarchical regression analyses. In the first step, prepartum levels of the dependent variable were entered. In the second step, the association between postpartum anger and depressed mood was added to the regression model as a control variable. In the third

Table 2
Predictors of Postpartum Anger and Depressed Mood After Control for Prepartum Affect and Association Between Depressed Mood and Anger

Variable	Postpartum Anger			Postpartum Depressed Mood		
	β	ΔR^2	ΔF	β	ΔR^2	ΔF
Delivery Environment						
Expected Control	0.04	0.00	0.35	-0.19***	0.04***	12.16***
Perceived Threat	0.07	0.00	0.75	0.19**	0.03**	8.70**
Experienced Control	-0.06	0.00	0.74	-0.18**	0.03**	9.75**
Childbirth Satisfaction	-0.05	0.00	0.47	-0.14**	0.02**	5.78**
Postpartum Environment						
Childcare Stress	0.16*	0.02*	4.23*	0.18***	0.03***	0.83***
Current Pain	0.13 [†]	0.02 [†]	3.66 [†]	-0.01	0.00	0.03
Partner Social Support	0.04	0.00	0.24	-0.18**	0.03**	9.52**
Personal Characteristics						
Self-Esteem	-0.13	0.01	2.42	-0.26***	0.05***	14.93***
Neuroticism	-0.01	0.00	0.00	0.17*	0.02*	5.08*
Demographics						
Marital Status	0.11	0.01	2.38	-0.17**	0.03**	8.29**
Age	0.19**	0.03**	7.64**	-0.14*	0.02*	5.40*
Religious Identification	-0.23***	0.05***	12.47***	0.04	0.00	0.55

Note. The following were not predictive of anger or depression after control variables were included: mode of delivery, time until held baby, social support from others, and perceived health of baby.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

step, one of the 16 predictors related to delivery environment, postpartum environment, personal characteristics, or demographic background was entered.

Because both dependent variables had skewness values over 1.0, they were transformed by calculating their square root. As this technique did not alter the results of the regression analyses, we report the untransformed results for simplicity. The R^2 for the model with both the first and second terms (i.e., the two control variables) was highly significant, $R^2 = .27$, $p < .001$, and $R^2 = .48$, $p < .001$ for anger and depressed mood, respectively. Results of the independent variance added by the last variable in each model are of primary interest and are shown in Table 2. Only models that were significant after the first and second step for either dependent variable are included in Table 2. Models examining the impact of mode of delivery, time until the baby was first held, and social support from others were not significant for either dependent variable after the first control variable (prepartum affect) was entered; the model examining impact of health of the baby was not significant after the second control variable (correlation between depressed mood and anger) was entered.

All four of the delivery environment variables—expected control, experienced control, perceived threat, and childbirth satisfaction—were independent predictors solely of depressed mood. Of the postpartum environment variables, social support from a partner also had an independent association solely with depressed mood. Childcare stress, however, was independently associated both with anger and depressed mood. Neither of the remaining postpartum en-

vironment variables had a significant association with either mood variable after controlling for prepartum levels and for the correlation between anger and depressed mood, although the association of pain with anger was marginally significant.

Both of the two personal characteristics examined—self-esteem and neuroticism—were independent predictors solely of depressed mood. Of the demographic variables, marital status was an independent predictor solely of depressed mood. Religious self-identification, on the other hand, was an independent predictor solely of anger and was the strongest predictor of anger of all variables tested; women who identified with a particular religion reported lower anger. Moreover, a one-way analysis of variance comparing religious groups was also significant, $F(4, 158) = 4.64$, $p < .001$, with Protestants and Catholics less likely to report anger than those who considered themselves to be either Jewish or not a member of any religion, $t(158) = -3.73$, $p < .001$. Finally, age was an independent predictor of both anger and depressed mood. The direction of prediction was different for the two dependent variables, with older women more likely to report high levels of anger but less likely to report high levels of depressed mood. Because this result was unexpected, we ran a series of regression analyses (cf. Baron & Kenny, 1986) to examine whether the relation between age and depressed mood and anger (over and above the control variables) was mediated by any of four variables significantly correlated with age in this study: self-esteem, neuroticism, marital status, and parity. These analyses indicated that the association between age

and postpartum depressed mood (but not anger) was mediated by self-esteem and marital status: Older women had higher self-esteem, were more likely to be married, and as a result, experienced lower depressed mood after delivery.

DISCUSSION

Prevalence and Independence of Anger and Depressed Mood

As predicted, a considerable number of women reported angry feelings at approximately six weeks postpartum, with 35% of the sample reporting moderate to high levels of anger. Although there are few data from similar samples, this rate is similar or slightly higher than that reported in studies of healthy adult women (e.g., Spielberger, 1999). Of those who reported high levels of postpartum anger, 43% reported low anger prepartum, suggesting that events in the approximately 13-week interim may have contributed to the anger of these women. Contributing to our confidence in the validity of these findings, the rate of postpartum depressed mood in the current study is similar to other research (O'Hara, 1995), with 11% of women reporting high levels of depressive symptomatology on the BDI-cog as determined using the BDI cutoff for borderline depression.

Also as predicted, anger and depressed mood were associated but relatively independent. Over 80% of women who reported high levels of anger reported low levels of depressed mood. In conjunction with the wide prevalence of postpartum anger, this finding suggests that there is a group of women, separate from those who experience postpartum depression, who experience anger after delivery. Given the almost complete lack of research on negative postpartum emotions other than depression, it seems likely that such women and their issues have been overlooked by both researchers and clinicians.

Predictors of Anger and Depressed Mood

A number of social, experiential, and demographic characteristics were found to predict postpartum anger and depressed mood in this study. Fewer variables predicted anger than depressed mood. In particular, all of the delivery and postpartum environment variables that were predictive of at least one outcome variable, except for childcare stress, were predictive exclusively of depressed mood. The factors that were most predictive of anger were predominantly personality and demographic characteristics. Overall, these findings do not seem concordant with past research which has shown that difficult experiences, particularly those that are perceived as controllable by others, often serve as triggers for anger (Averill, 1983). It should be noted, however, that anger was assessed at an average of six weeks postpartum in order to avoid confounds with postpartum blues; it is possible that additional delivery variables would have been associated with anger if it had been assessed more closely to the birth experience. Our method of controlling for prepar-

tum anger may also have been overly conservative, resulting in insufficient power to detect small effects. Controlling for prepartum state anger may remove more than the trait aspects of anger intended and controlling for the association between anger and depressed mood no doubt also weakened our ability to find associations that may exist in reality.

More than any other group of variables tested, experiences related to delivery seem to be associated primarily with postpartum depressed mood. As expected, women who anticipated most control during delivery, subsequently experienced most control, perceived less threat to health, and were most satisfied with their childbirth overall were least likely to report high levels of depressed mood. It is important to note that we focused on women's perceptions of their delivery experiences; several studies have found that labor and delivery events are not directly related to postpartum depressed mood when measured by objectively defined events rather than women's perceptions of them (e.g., O'Hara et al., 1991; for a review, see O'Hara, 1995). Although some studies have also not found a direct association between perceived overall control and postpartum depression (e.g., Bradley, Ross, & Warnyca, 1983), lower perceived control has been associated consistently with less satisfied birth perceptions (Bradley et al., 1983; Green et al., 1990), which in turn have been associated with affective states (Green et al., 1990). There has been no prior documentation of an association between perceived threat and postpartum depressed mood to our knowledge, although this association is consistent with other work establishing a link between threat-based anxiety and emotional adjustment (Lazarus, 1991).

The group of postpartum variables studied was more promising than delivery variables with regard to predicting anger. As expected, women who experienced greater childcare stress in the postpartum period reported significantly higher levels of depressed mood and anger, suggesting that childcare stress has an independent association with both anger and depressed mood. In addition, women in greater pain during the postpartum period were marginally more likely to report higher levels of anger.

Several demographic variables also predicted anger. Controlling for the correlation between the two mood variables revealed that age had an opposite correlation with anger and depressed mood, with older women more likely to report anger but less likely to report depressed mood. This finding is somewhat surprising, as research with general populations has shown an inverse correlation between age and anger (Spielberger, 1999), whereas research on postpartum populations has not typically found an association between age and depressed mood (O'Hara, 1995). Post hoc mediation analyses revealed that the relation between age and depressed mood was primarily explained by the association of age with self-esteem and being married, which were in turn inversely associated with depressed mood. The relation between age and anger was not explained by these associations, however. It is possible that older women are

more able or willing to express their anger than younger women and to resolve issues which might otherwise lead to depression. If so, this is likely to be at least partly a function of our sample, which was comprised of well-educated and financially comfortable women who may be more likely to see anger as socially desirable and favorable than less advantaged groups (Ben-Zur & Zeidner, 1988; Deaux & Major, 1987); anger is also likely to be more effective for women with financial and educational resources (Miller, 1991). However, another study did not find a significant association between postpartum anger and age in a comparable sample (Wells et al., 1999).

Finally, women who considered themselves to be a member of a religion were less likely to report high levels of anger. The specific type of religion was also associated with anger, although this unpredicted result was based on small numbers of women in each religious group and therefore may not be reliable. The association between anger and religious self-identification in general is not surprising as prior research has documented salutary effects of religious beliefs and practices on emotional well-being (see Gartner, 1996, for a review) and an inverse association between certain religious beliefs and trait anger (Exline et al., 1999). There are many possible explanations for a link between religious membership and anger. Those who are religious may be less likely to experience anger because they relinquish control to a deity (Rothbaum, Weisz, & Snyder, 1982), they may be more likely to express and resolve anger as a function of social support from their religious contacts, or they may feel less comfortable reporting anger. Furthermore, religious group membership may be more attractive to less angry individuals. In general, religious women may have different perceptions of motherhood than nonreligious women. Future research can be directed toward exploring which aspects of religious self-identification, participation, or beliefs are associated with anger in childbearing women and in other groups.

Limitations

Although the prospective design of this study provided some control for the direction of associations among study variables, it is impossible to ascertain whether the events, perceptions, and traits treated as predictor variables actually cause anger or depressed mood in this correlational study. Mood may also have influenced participants' responses to measures of the predictor variables.

These findings are intended to be applicable to pregnant and postpartum women in general. In support of this, levels of postpartum depressed mood were similar to those found in much larger studies of pregnant women (O'Hara, 1995). However, women in the current study were predominantly White and of middle to upper class socioeconomic status. Although there is not consistent evidence (O'Hara, 1995), several studies have suggested that socioeconomic variables affect postpartum depression via chronic life stressors,

social support, and related conditions (Nicolson, 1999; Séguin, Potvin, St-Denis, & Loiselle, 1999). Even less is known about the effect of such variables on anger experience. Future studies would benefit from including more diverse samples, both to establish validity of these results and to discover how postpartum anger may differ by ethnicity or social class. A related limitation of this study is that it is impossible to know how participants differed from women who chose not to participate. It may be, for example, that women who did not participate experienced more life stressors, resulting in less time to complete a survey. Alternatively, women with the greatest negative affect may have been most motivated to participate.

The measures employed in this study were well established and reliable. The measure of anger, however, was somewhat limited. For example, we were not able to determine at whom participants were angry. Moreover, as with most anger scales, participants were asked to report on current anger. In contrast, they reported levels of depressed mood over the past week in addition to current levels, a difference that may have resulted in lower levels of anger in comparison to depressed mood. Finally, it is notable that many of the predictions examined in this study involved negative or undesirable conditions and traits. The selection of predictor variables was based on those that have been examined previously in studies of emotional adjustment, and particularly depressed mood, in order to enable comparisons between postpartum anger and depressed mood. However, while it is reasonable to theorize that anger experience itself may predominantly be associated with negative conditions, anger can be expressed in constructive ways, and to favorable ends (Davidson, MacGregor, Stuhr, Dixon, & MacLean, 2000; Lazarus, 1991; Thomas, 1995). To explore this possibility further, future research should differentiate between experienced and expressed anger.

Future Directions

A number of important questions for further investigation are raised by the current study. First, at whom do women become angry following childbirth, and what triggers their anger? For example, women may become angry about the way they have been treated by their health care providers, angry at their spouse, partner, or family members for lack of support with childcare, or at society in general for the unrealistic expectations (Nicolson, 1999) often held about new mothers. As not all people become angry or express their anger in the same way, research should also be undertaken to explore what traits, beliefs, and situational forces moderate the experience and expression of anger. For example, women's families and health care providers alike may hold stereotypes that hinder effective anger expression. If so, childbearing women may benefit from the discussion and acknowledgement of anger as a normal reaction to stressful, uncontrollable events. Although anger expression in an environment that is not supportive of women's anger

can sometimes lead to negative consequences (Crawford, Kippax, Onyx, Gault, & Benton, 1992), the suppression of anger might lead to subsequent depression, chronic anger, or the maintenance of adverse situations (Crawford et al., 1992; Miller, 1991; Thomas, 1995). However, the duration and impact of postpartum anger experience and expression should also be thoroughly evaluated before changes in childbirth and postpartum experiences, or in women's reactions to those experiences, are recommended.

Although the majority of participants adjusted well following delivery, this study demonstrates that a substantial minority of women experience strong, negative emotional responses other than depressed mood during the postpartum period. Given the prevalence of anger during this critical time period, this study suggests a strong need for greater attention to postpartum anger from clinicians and researchers. In addition, this study should impart a more cautionary message echoed by other researchers (e.g., DiMatteo et al., 1993; Green et al., 1990; Hyde et al., 1995; Nicolson, 1999): The longstanding focus on postpartum depression seems too narrow and should be expanded to include a more comprehensive range of emotional experiences following childbirth.

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