

The Role of Prenatal Expectations in Parents' Reports of Infant Temperament

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The associations were examined among parents' characteristics, their prenatal expectations for and postpartum perceptions of infant temperament, and observers' ratings of temperament. During pregnancy and at 3 months postpartum, 70 primiparous women and their husbands completed several mood and anxiety questionnaires. Women completed prenatally Tellegen's Multidimensional Personality Questionnaire. Prenatal expectations for temperament were assessed with use of a modified version of Bates' Infant Characteristics Questionnaire (ICQ). At 3 months postpartum, parents and observers rated infant temperament on the ICQ. Results indicated that mothers and fathers shared expectations for the emotional expressivity of their infant, but differed in expectations for unpredictability and unadaptability. Parents' postpartum ratings of temperament were much more similar than their expectations. Observers' ratings of temperament were modestly correlated with parents' ratings. Regression analyses showed that the best predictors of parents' postpartum ICQ ratings were their prenatal expectations.

Parental interviews and questionnaires have been commonly used to assess infant temperament (Bates, Freeland, & Lounsbury, 1979; Persson-Blenow & McNeil, 1979; Rothbart, 1981; Thomas, Chess, & Birch, 1968;

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Thomas, Chess, Birch, Hertzog, & Korn, 1963). Researchers have attempted to understand what exactly parental reports of temperament measure. Bates (1980) suggested that parents' reports of temperament contain both subjective and objective components. The objective component reflects the infant's actual, objectifiable behavior, whereas the subjective component reflects characteristics of the parents such as social desirability biases, mood, and personality. In fact, data from a number of different types of studies support Bates' claim that there are indeed subjective and objective components in parental reports of infant temperament. These studies are of three types, those in which (a) a correlation was found between parental reports of temperament and parental personality characteristics, (b) how parental reports relate to other more objective reports was addressed, and (c) parental expectancies for infant temperament were examined. Each group of studies will be discussed in turn.

A number of studies have documented that maternal personality is related to maternal perceptions of infant temperament. Specifically, researchers have found that maternal negative affect and depression are related to descriptions of babies as more difficult (Cutrona & Troutman, 1986; Hopkins, Campbell, & Marcus, 1987; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990; Vaughn, Bradley, Joffe, Seifer, & Barglow, 1987; Ventura & Stevenson, 1986), and maternal extroversion and positive emotionality are related to more positive descriptions of infant temperament (Bates et al., 1979; Goldsmith, Losoya, Bradshaw, & Campos, 1994).

The second set of studies have explicitly examined the objective and subjective components of parental ratings of temperament. Bates and Bayles (1984) examined the relationship between objective ratings of infant behavior, parental reports of infant temperament, and parental personality characteristics such as anxiety and defensiveness. They found that fathers' ratings, observers' ratings, psychological measures of the mother, and demographic variables predicted mothers' ratings of infant temperament. Matheny, Wilson, and Thoben's (1987) findings also indicate that there are both objective and subjective components to parents' ratings. They collected data on self-reported maternal temperament, maternal reports of infant temperament, and laboratory assessments of infant temperament and found that both maternal personality characteristics and laboratory observations predicted maternal ratings of infant temperament.

A final set of studies which are important for understanding the subjective and objective components of parents' perceptions of infant temperament are those in which parents' prenatal expectancies for infant

temperament were examined (Mebert, 1989; Mebert & Kalinowski, 1986; Zeanah & Anders, 1987; Zeanah, Keener, & Anders, 1986). For example, Zeanah and his colleagues asked parents to rate their expectations for infant temperament during the third trimester of pregnancy, and then to rate their child's temperament at 6 months postpartum. Mothers' prenatal expectations for their infants' rhythmicity, mood, and activity were moderately correlated ($r = .35$ to $.50$) with their ratings of temperament at 6 months; for fathers, prenatal expectations of activity were associated ($r = .35$) with their postpartum ratings. Thus, prenatal expectations for temperament related to parents' postpartum perceptions of their infants. Moreover, mothers and fathers clearly differed in some important ways concerning their expectations and perceptions of infant temperament.

Mebert (1989, 1991) also has explored parents' prenatal expectations of infant temperament. For example, she assessed parental expectations for infant temperament twice during pregnancy and found that prenatal expectations were significant predictors of postpartum Infant Characteristics Questionnaire (ICQ) scores, as were prenatally reported anxiety/depression scores. Based on these data, which indicate that parents' psychological characteristics are separate from parental expectancies for infant temperament, Mebert proposed that the subjective component of Bates and Bayles' model (1984) should be further differentiated to include both parental psychological characteristics and their expectancies for their infant. Her work reveals that expectancies are a separate dimension of subjectivity, reflecting more than simply projected psychological characteristics. In addition, Mebert (1991) found that mothers had more differentiated and more positive expectations of their babies prenatally than did fathers.

Although previous research has been informative regarding the meaning of parental reports of infant temperament, past work has not enabled researchers to examine the relative contribution of various subjective and objective factors in parents' perceptions of temperament. In this study, several dimensions of subjectivity were assessed, including three mood measures, prenatal expectations for temperament, and maternal personality. Unlike previous research on expectations, in this study an objective measure of infant temperament was also included in which observers rated infants using the same questionnaire the parents completed. The inclusion of measures of parental expectancies, personality, mood, and objective infant behavior in a single study afforded an evaluation of the relative contribution of each of these factors in parental perceptions of infant temperament.

In light of previous findings regarding the associations between parental personality and parents' perceptions of temperament, we

predicted that (a) greater parental positive affect would be related to more positive expected and perceived temperament ratings, whereas negative affect would be associated with negative expected and perceived temperament ratings. Given the research on the subjective and objective components of parental reports, it was predicted that (b) parents' and observers' ratings would be only modestly correlated. In addition, because parents and observers completed the same questionnaire, it was possible to explore the similarity of the structure of their ratings. It was expected that (c) mothers and fathers would share some expectations, but that mothers' expectations would be more positive. Finally, we predicted that (d) parents' prenatal expectations for their infants would be associated with their postpartum temperament ratings.

METHOD

Participants

The participants in this investigation were 70 primiparous married women, their husbands, and their infants (27 girls and 43 boys). The couples were recruited during pregnancy from Lamaze classes (29%), obstetricians' offices (9%), newspaper advertisements (40%), maternity clothing stores (8%), and by word of mouth (14%). Three families had premature infants, one moved, and one failed to complete the second phase of the study. Thus, of the 75 women initially recruited, 70 completed both phases of this study, a 93% completion rate. Of the 75 husbands, 58 completed both phases of the study for a 77% completion rate. There were no differences between those who participated and those who did not. As determined by the Hollingshead Social Status Index (Hollingshead, 1975), this sample was middle class: 6% of the fathers were unskilled workers, 12% owned small businesses, 13% were technicians, and 67% were working as professionals, administrators, or executives. The mean length of marriage was 4.1 years. The sample was 98% Caucasian and 2% African American.

Procedure

During the third trimester of pregnancy, expectant parents were sent a packet of questionnaires (described later) and a consent form that they completed and returned by mail before the birth of their baby ($M = 32$ nd week of pregnancy, $SD = 3.7$ weeks). It was requested that the parents complete the questionnaires independently. The women provided the demographic information and were encouraged to participate even if

their husbands did not. Home observations were conducted at 3 months postpartum (± 10 days). Prior to the home visits, parents were sent questionnaires which were collected at the time of the visit (completed at $M = 12$ weeks postpartum, $SD = 1.9$ weeks).

Measures

Personality questionnaire. Tellegen's (1982) Multidimensional Personality Questionnaire (MPQ), designed to assess individual differences in personality in normal populations, was included in the prenatal packet. This is a 300-item forced-choice questionnaire that yields three second-order factors, Positive Affectivity, Negative Affectivity, and Constraint. Positive Affectivity is similar to the extroversion-introversion factor on other personality measures (Tellegen et al., 1988) and is thought to reflect positive mood states and temperamental characteristics. Negative Affectivity has been described as a neuroticism factor that assesses anger, anxiety, and related negative mood states. The third factor, Constraint, assesses traditionalism, risk-taking, and rigidity. The scales possess good internal consistencies (alphas range from .76 to .89) and retest reliabilities (30-day test-retest correlations average .89) (DiLalla, Gottesman, & Carey, 1993). Given the difficulty in recruiting fathers and the time involved in answering this questionnaire, fathers were not asked to complete the MPQ.

The following questionnaires were administered during both the pregnancy and postpartum phases. Means and standard deviations for all measures are reported in Table 1.

Beck Depression Inventory (BDI; Beck, 1967). Seven items were dropped from the long version of the BDI because they were inappropriate for use during pregnancy. For example, items that asked about weight gain or physiological changes associated with pregnancy were deleted (Cutrona & Troutman, 1986).

Spielberger's State-Trait Anxiety Questionnaire (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1977). This 40-item measure uses a 4-point Likert scale and yields a state and a trait anxiety score. The norms for working adults ages 19–39 years provided by Spielberger et al. indicate state anxiety means of 36.2 and 36.5 and trait anxiety means of 36.2 and 35.6 for women and men, respectively. As can be seen in Table 1, parents' mean scores on the STAI were generally a few points lower than these norms (with the exception of fathers' trait anxiety).

Fordyce Emotions Questionnaire (Fordyce, 1988). This questionnaire is a brief measure of subjective well-being. The subject is asked to report how happy/unhappy he or she is on average and the percentage of time

Table 1. Means (and Standard Deviations) of all Prenatal and Postpartum Variables

Measure	Mothers			Fathers			Observers	
	Prenatal	Postpartum	<i>t</i>	Prenatal	Postpartum	<i>t</i>		
State anxiety	31.6 (8.0)	30.6 (7.0)		33.9 (7.8)	33.6 (7.8)			
Trait anxiety	33.7 (7.0)	33.5 (7.2)		35.4 (8.5)	35.9 (9.2)			
BDI	3.7 (2.8)	2.8 (2.5)	2.0*	2.5 (2.9)	2.1 (3.0)			
Percent happy	63.7 (20.5)	67.9 (19.7)		61.4 (23.2)	59.3 (25.9)			
Percent unhappy	15.6 (11.6)	15.0 (13.1)		10.9 (7.4)	14.1 (12.7)			
Fussy (ICQ)	26.6 (3.4)	21.5 (5.4)	7.4***	28.0 (4.5)	23.5 (5.8)	7.1***	24.9 (9.8)	
Unadaptable (ICQ)	13.3 (2.7)	8.4 (2.9)	10.3***	14.0 (3.1)	9.2 (3.6)	8.0***	10.4 (3.4)	
Unpredictable (ICQ)	10.5 (2.4)	8.4 (2.9)	5.6***	12.1 (2.6)	9.4 (3.1)	6.7***		
Dull (ICQ)	8.6 (2.0)	6.9 (2.7)	5.0***	8.8 (2.5)	7.5 (2.5)	3.7**	11.5 (4.3)	
Negative mood							37.2 (12.9)	
Activity							11.7 (3.5)	

Note: *t* Tests are two-tailed. Degrees of freedom vary from 56 to 66 for mothers and from 48 to 52 for fathers due to missing data. BDI, Beck Depression Inventory; ICQ, Infant Characteristics Questionnaire.

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

he or she feels happy, unhappy, and neutral. For this study only the percentages of feeling happy and unhappy were included. This scale shows 1-month test-retest reliabilities of .81. It appears that the subjects in the current investigation reported being happier than the community college sample on which Fordyce's normative data were based. The mean for "happy" reported by Fordyce was 54%, whereas the mean for the current sample across parents and time periods was 63%. The percentage means for "unhappy" and the standard deviations for both percentages, however, were comparable to those he reported.

Infant temperament questionnaire. A modified version of the ICQ (see Mebert & Kalinowski, 1986) was sent in the prenatal packet to assess parental expectations for infant temperament. Mebert (1991) and Mebert and Kalinowski (1986) found a fairly high degree of stability of expectations during pregnancy; thus, parental expectations were assessed only once during pregnancy. This expectation questionnaire was replaced by the Bates' (Bates et al., 1979) ICQ in the postpartum packet. The Bates' ICQ is a 28-item questionnaire that assesses parental perceptions of infant temperament on 7-point scales, with 7 being the most negative for each item. The ICQ yields four subscales: Fussy, Unadaptable, Unpredictable, and Dull. Infants high on the Dull scale are those who do not laugh and smile very much. In order to compare the data with Bates et al.'s normative data, parents' ICQ ratings were subjected to principal components analysis (PCA) with varimax rotation. These analyses yielded the same four factors as Bates et al.'s and were very similar for mothers and fathers. Cronbach's alphas for mothers' prenatal expectations for Fussy, Unadaptable, Unpredictable, and Dull scales were .69, .79, .72, and .69, respectively. For fathers' prenatal expectations, they were .79, .70, .75, and .83, respectively. For mothers' postpartum scales of Fussy, Unadaptable, Unpredictable, and Dull, Cronbach's alphas were .79, .81, .69, and .76, and for fathers', they were .83, .80, .70, and .68, respectively.

Observers' ratings of infant temperament. Home observations were scheduled at 3 months postpartum (± 10 days) for a time when the mother believed her infant would be awake and alert. The observations lasted 50–85 min, and included a 13-min structured play interaction between the mother and infant and at least 37 min of unstructured activity. In the 10 cases where the infant fell asleep before a total of 50 min had been observed, another visit was scheduled later that day or within the following week. For one infant, the experimenters made three visits in order to observe the baby awake for 50 min.

For the structured activity, each mother was given a series of toys. First, she held her infant and showed him/her a colorful rattle for 3 min.

Next, the mother put the baby in an infant seat and was asked to interest the infant in a soft book for 5 min. The final toy was a bouncy infant seat that had an attached bar with colorful toys on it. The mother was asked to put her infant in it and to show the baby the toys for 5 min. For the next 35 to 45 min the mother was instructed to do whatever she normally would do at that time of the day.

Observations focused on how the infant reacted to being confined in the seat and to the new toys and people and on how expressive the infant was during the games with the mother. In addition, the infant's general mood, affect intensity, amount of activity, and soothability were observed. Notes were also taken with regard to amount of infant crying, smiling, and mood changes.

As soon as the observations were completed, the experimenters independently completed the relevant items on the ICQ (see Table 1). The raters were unable to rate Unpredictability because that scale included questions regarding consistency over time. Thus, the following items were deleted from the observers' ICQ: (1) "How easy or difficult is it for you to predict when your baby will go to sleep and wake up?" (2) "How easy or difficult is it for you to predict when your baby will be hungry?" (3) "How easy or difficult is it for you to know what's bothering your baby when he/she cries or fusses?" For the observers' Fussy, Unadaptable, and Dull scales, Cronbach's alphas were .94, .76, and .86, respectively. Interrater agreement was calculated from 46% of the visits when both raters went to the home and was $r(32) = .94, p < .001$ for the Fussy scale; $r(36) = .87, p < .001$ for the Unadaptable scale; and $r(35) = .91, p < .001$ for the Dull scale. Discrepancies were resolved in conference immediately after the home observation. Observers were blind to parents' expected and perceived temperament ratings.

Because the normative data for the ICQ were based on parents' rather than observers' ratings of temperament, it was necessary to explore whether the ICQ had a similar factor structure when used by observers. An exploratory PCA was conducted on observers' ICQ ratings. This analysis revealed three factors that accounted for 65% of the variance. The first factor was termed Negative Mood (eigenvalue of 8.8, accounting for 42% of the variance) and was composed of Bates et al.'s (1979) Fussy and Unadaptable items. The second factor was equivalent to Bates' original Dull factor (eigenvalue of 3.0, accounting for 14% of the variance) and reflected an absence of positive expressivity. The third factor was called Activity (eigenvalue of 1.9, accounting for 9% of the variance) and was composed of three items asking about the infant's activity level "in general," the infant's reaction to diaper changing, and how much the infant cuddled when being held.

In summary, the results of the PCA indicated that the factor structure of observers' ratings on the ICQ differed somewhat from the structure of the parents' ratings. Specifically, observers' ratings of negative mood were less differentiated than parents' ratings, and observers' ratings revealed a separate dimension (activity) not found in parents' ratings. However, for both observers and parents the Dull factor was comparable. Thus, in subsequent analyses Bates et al.'s (1979) original scales (Fussy, Unadaptable, and Dull) were used, as well as the new scales called Negative Mood and Activity. The Negative Mood and Activity composite scores were computed by summing all items that clustered together on those factors in the PCA. Cronbach's alphas for these scales were .93 and .70, respectively. Interrater agreement was $r(30) = .94$ for Negative Mood and $r(22) = .73$ for the Activity scale. (See Table 1 for means and standard deviations on these scales.)

RESULTS

Demographics

Correlations were performed to examine whether expected and perceived temperament ratings were related to the demographic variables.¹ Mothers' education was not significantly related to expected temperament, but was related to fathers' perceptions of Dullness, $r(58) = .32$, $p < .05$, two-tailed. Age was related to fathers' expectations for infant Unpredictability, $r(60) = -.41$, $p < .001$, two-tailed. Older husbands expected to be able to predict their infants' behavior better. One-way analyses of variance (ANOVAs) showed that whether the pregnancy was planned was not related to parents' expected or perceived temperament ratings, nor was maternal employment status. One-way ANOVAs also showed that the sex of the infant was not related to parental perceptions of infant temperament.

Personality

Correlations were performed to examine the associations between maternal personality variables and mothers' expected and perceived temperament ratings. Negative Affect was significantly associated with expectations for fussy babies, $r(61) = .22$, $p < .05$, one-tailed. In addition,

¹Degrees of freedom vary across analyses due to missing data.

women higher on Negative Affect perceived their babies as more Unadaptable postpartum, $r(52) = .36, p < .005$, one-tailed. Constraint was negatively associated with perceptions of infant Dullness, $r(63) = -.29, p < .05$, two-tailed. Women higher on Constraint (i.e., more traditional, reflective, and cautious) perceived their infants as smiling and laughing more than women lower on Constraint. Positive Affect was not related to mothers' expected or perceived temperament ratings.

Mood

One-tailed correlations were computed to examine the associations among mood and parental expected and perceived temperament ratings. Mothers' reports on the Fordyce questionnaire of prenatal and postpartum percentage of time happy were negatively related to their expectations for and postpartum perceptions of the Dull factor, $r(59) = -.27, p < .05$; $r(67) = -.29, p < .01$, respectively. As predicted, happier mothers expected to have babies who would laugh and smile more and perceived their infants as smiling and laughing more. Fathers' expectations on the Fussy scale were negatively related to percentage of time happy, $r(58) = -.36, p < .005$, and positively related to percentage of time unhappy, $r(58) = .30, p < .05$. Fathers expectations for Unadaptability also were significantly associated with percentage of time happy, $r(57) = -.34, p = .005$, and percentage of time unhappy, $r(57) = .24, p < .05$. As predicted, happier fathers expected less fussy and more adaptable babies than did fathers who reported feeling less happy. Fathers' percentage of time happy was also related to their postpartum perceptions on the Dull scale, $r(57) = -.31, p < .01$, and on the Unpredictable factor, $r(57) = -.24, p < .05$. Fathers who reported being happier a greater percentage of the time postpartum were better able to predict their infants' behavior and reported that their infants smiled and laughed more than did fathers with lower happiness scores. Anxiety and depression scores were not significantly associated with parents' expected or perceived temperament ratings.

Observers' Ratings of Infant Temperament

Correlations revealed that, in accordance with our predictions, the observers' ratings of infant temperament were modestly related to parental ratings. Mothers' perceptions on the Dull scale were associated with observers' ratings on that scale, $r(64) = .22, p < .05$, one-tailed. Observers' ratings on the Dull and Unadaptable scales were negatively associated with fathers' perceptions of Unpredictability, $r(54) = -.38, p < .005$, two-tailed, and $r(54) = -.44, p < .001$, two-tailed. Infants

who were rated as low on smiling and laughter and as less adaptable by observers were more easily predicted by their fathers. None of the 16 correlations between observers' negative mood and activity scales and parents' ratings were significant. To examine whether the patterns of correlations with observers were significantly different for mothers and fathers, significance tests were performed with use of Fisher's r to Z transformations. These tests indicated that there was only one of four significant differences between the relations of mothers' and observers' and fathers' and observers' ratings. The association between observers' ratings of Unadaptability and fathers' ratings of Unpredictability differed significantly from the corresponding observer/mother correlation, $Z = 1.96$, $p < .05$.

Mother/Father Comparisons

Correlations were performed examining the associations between mothers' and fathers' expected and perceived temperament ratings on the four temperament scales (see Table 2). The results indicated that mothers' and fathers' expected temperament ratings were significantly related, especially on the Dull scale. In addition, mothers' and fathers' postpartum perceptions of infant temperament were significantly related (see Table 2). Specifically, mothers' and fathers' ratings of Fussiness, Unadaptability, Unpredictability and Dullness were significantly correlated.

In order to examine whether mothers' and fathers' expected and perceived temperament ratings differed significantly, t tests were performed. Results indicated that mothers expected to be able to predict their babies' behavior better than did fathers, $t(58) = 3.34$, $p = .001$. Expectant parents did not differ on the other three scales. In terms of perceived temperament, fathers rated their babies as more fussy, $t(51) = 2.1$, $p < .05$, less adaptable, $t(56) = 2.2$, $p < .05$, and less predictable, $t(57) = 2.3$, $p < .05$ than did mothers.

Relations Between Expected and Perceived Temperament Ratings

Parental expectations for infant temperament were more negative than were their actual ratings of infant temperament (see t tests, Table 1). Both mothers and fathers perceived their babies as less fussy and as showing more positive affect than they had expected prenatally. They also expected their babies to be more Unadaptable than they perceived them to be at 3 months, and they were able to predict their babies' behavior better than they had expected.

In order to reduce the data and to parallel Mebert's methodology, the prenatal variables were subjected to a principal components analysis with varimax rotation. Mothers' variables yielded four factors that

Table 2. Correlations Between Mothers' and Fathers' Scores on the Infant Characteristics Questionnaire

Scale	Mothers			
	1	2	3	4
	<i>Prenatal expectations</i>			
Fathers				
1. Fussy	.29*	.30*	.20 [†]	.48***
2. Unadaptable	.13	.09	.18 [†]	.33**
3. Unpredictable	.04	.11	.07	.16
4. Dull	.03	.10	.23*	.55***
	<i>Postpartum ratings</i>			
Fathers				
1. Fussy	.69***	.28*	.37**	.13
2. Unadaptable	.42***	.67***	.26*	.08
3. Unpredictable	.14	.06	.25*	-.11
4. Dull	.23*	.20	.34**	.50***

Note: *N*s varied from 52 to 59 due to missing data.

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

together accounted for 67% of the variance. These factors were labeled Mothers' Prenatal Negative Mood, Mothers' Expectations, Mothers' Constraint, and Mothers' Expressivity. Fathers' variables yielded two factors called Fathers' Prenatal Negative Mood and Fathers' Expectations that accounted for 60% of the variance. Results of these analyses are presented in Table 3.

In addition, the postpartum mood scores were subjected to principal components analyses. Mothers' mood variables yielded one factor that accounted for 55.6% of the variance. This factor was called Mothers' Postpartum Mood. Fathers' mood scores also yielded one factor, called Fathers' Postpartum Mood, that accounted for 62.2% of the variance. Composites created from the PCA were used in the subsequent regression analyses.

Stepwise regression analyses were performed to predict parental ratings of infant temperament. Separate analyses were conducted with use of the four scales of infant temperament as the dependent variables. Predictors for these analyses were the prenatal factors, the postpartum mood factor, and the corresponding observers' scale. In predicting fathers' Unpredictable scale, observers' ratings on the Dull and Unadaptable scales were entered because they correlated with that scale, and there was no corresponding observers' rating of Unpredictability. Mothers' ratings of Unadaptability were predicted by Mothers' Prenatal Mood and Mothers' Expectations, $R^2 = .18$, Adjusted $R^2 = .14$, $F(2, 41) = 4.60$, $p = .05$. Mothers' Prenatal Negative Mood entered the equation first. Mothers'

Table 3. Principal Components Analysis of Mothers' and Fathers' Prenatal Variables

<i>Measure</i>	<i>Mother's Components</i>				<i>Fathers' Components</i>	
	<i>I</i> <i>Negative mood</i>	<i>II</i> <i>Expectations</i>	<i>III</i> <i>Constraint</i>	<i>IV</i> <i>Expressivity</i>	<i>I</i> <i>Negative mood</i>	<i>II</i> <i>Expectations</i>
Trait anxiety	.77				.86	
Percent happy	-.73				-.69	
Percent unhappy	.70				.78	
State anxiety	.67				.81	
BDI	.68				.69	
Negative affect (MPQ)	.65			.59	—	—
Fussy (ICQ)		.83				.86
Unpredictable (ICQ)		.83				.53
Unadaptable (ICQ)		.57				.76
Dull (ICQ)		.47	-.59			.73
Constraint (MPQ)			.77		—	—
Positive affect (MPQ)				.82	—	—

Note: Eigenvalues and percentage variance accounted for by each of the mothers' components are 3.32 (27.7%), 2.17 (18.1%), 1.29 (10.8%), and 1.22 (10.2%), and by fathers' components 3.15 (35.0%) and 2.26 (25.2%), respectively. BDI, Beck Depression Inventory; MPQ, Multidimensional Personality Questionnaire; ICQ, Infant Characteristics Questionnaire.

Expectations predicted her ratings on the Unpredictable scale, $R^2 = .09$, Adjusted $R^2 = .07$, $F(1, 45) = 4.46$, $p < .05$, and on the Fussy scale, $R^2 = .17$, Adjusted $R^2 = .14$, $F(1, 43) = 8.63$, $p < .01$. Fathers' Expectations predicted their ratings on the Unadaptable scale, $R^2 = .09$, Adjusted $R^2 = .07$, $F(1, 43) = 4.11$, $p < .05$, and on the Dull scale, $R^2 = .22$, Adjusted $R^2 = .21$, $F(1, 43) = 12.10$, $p < .01$. The observers' Unadaptable scale predicted fathers' Unpredictable ratings, $R^2 = .19$, Adjusted $R^2 = .17$, $F(1, 44) = 10.31$, $p < .01$. As predicted, parents' prenatal expectations were related to their postpartum ratings.

DISCUSSION

This research clearly indicates the importance of understanding parents' pre-birth expectations for their children. During pregnancy, mothers and fathers shared expectations for infant expressivity. Mothers and fathers perceived their infant similarly postpartum. Parents' prenatal expectations for their infants' temperament were generally the best predictors of their postpartum perceptions of temperament. Prenatal mood and observers' ratings, however, also predicted parents' postpartum perceptions of temperament.

Personality variables. Women who were higher on Negative Affect expected more fussy babies. Because the infant was not yet born, and the mother had no children, it can be inferred that maternal personality must be influencing these expectations. Maternal personality also was associated with mothers' postpartum perceptions of infant temperament. Mothers high on Negative Affect perceived their babies as more Unadaptable. Women higher on Constraint (more traditional, reflective, and cautious) rated their babies as smiling and laughing more. There are three possible mechanisms to explain these associations between maternal personality and maternal perceptions of infant temperament: (a) mothers' interpretations and perceptions of their infants' temperament are affected by their own personalities, (b) mothers with different personalities elicit different behavior from their infants (Rothbart & Goldsmith, 1985), and finally, (c) there may be a genetic link between maternal and infant characteristics (Goldsmith et al., 1994).

Mood. Parental prenatal mood was not generally related to parental expectations for infant temperament. Mebert (1991) found modest associations among parental anxiety/depression and expectations. In our study, however, the BDI and the anxiety questionnaire failed to yield significant correlations with expectations for both the fathers and the mothers. Mood on the Fordyce questionnaire and expected temperament

were only modestly correlated. These findings support Mebert's (1991) claim that expectations are not simply a measure of parental mood, but rather reflect a separate component of parental characteristics. Future researchers should examine what factors in addition to mood influence parental expectations for their infants. It may be that extremes in mood, such as clinical depression, would be more related to expectations, but that within normal ranges parental mood is not a factor shaping expectations for infant temperament.

Unlike other studies reviewed earlier, we did not find that depression and anxiety scores were related to concurrent temperament reports post-partum. The generally positive mood scores in this sample may account for this finding. It may be that there is a threshold beyond which mood does not play a large role in influencing perceptions.

Observers' ratings of infant temperament. Exploratory principal components analyses showed that when the ICQ is used with impartial observers, a differentiated factor structure emerges. The factors, however, were slightly different for observers than for parents. Observers viewed negative mood as a less-differentiated construct than did parents, who perceived fussiness and unadaptability as separate dimensions. Activity seemed to be a salient characteristic for observers knowledgeable about temperament constructs but was not an independent dimension for parents. It may be that since the observers viewed the infants in confinement (in an infant seat and seat with toys), this drew attention to activity level as an individual difference dimension.

The level of convergence between parental and observers' perceptions of infant temperament on Bates' scales was similar to that found by Bates et al. (1979) using the ICQ. Had the observers rated infant temperament after multiple home visits, however, it is likely that greater convergence would have been obtained. One might anticipate that because observers' ratings of temperament were partially based upon observations of infant-mother interactions, there would be greater convergence between mothers' and observers' ratings than between fathers' and observers' ratings. This was not the case, however; there was a significantly greater negative association between fathers' and observers' temperament ratings than between mothers' and observers' ratings. Unexpectedly, infants rated by observers as Unadaptable (i.e., fussy in response to new events, people, and situations) and low on smiling and laughter were rated by their fathers as more predictable. Fathers of these unadaptable infants may just assume that their infants will predictably react negatively. Observers' and mothers' ratings of Dullness were also associated. This convergence may be because part of the observation involved play, and the Dull scale consists of questions

regarding play, smiling, and laughter. Thus, the structured interactions during the home visit may have elicited individual differences in positive affect. In contrast, observers' ratings of negative mood and activity were not associated with parents' perceived temperament ratings.

Mother/father comparisons. One aim of this study was to examine similarities and differences between mothers' and fathers' expectations for and perceptions of their infants' temperament. Mebert (1991) concluded that mothers have expectations for what their baby will be like in addition to expectations for parenting, whereas fathers have less-differentiated expectancies. Our principal components differed somewhat from Mebert's in that mothers' expectations were no more differentiated than were fathers'. This study included an additional mood measure and a personality measure, whereas Mebert's study included two measures regarding the planning and motivation for pregnancy. In addition, this sample was composed of primiparous parents only, whereas hers included both primiparous and multiparous parents. Our other results, however, point to differences between mothers' and fathers' expectations. In particular, mothers and fathers shared expectations for how much their baby would laugh and smile, and for how fussy their baby would be, but did not share expectations for either how adaptable or how predictable their baby would be. Mothers expected to be able to predict their babies' behavior better than did fathers. It may be that women generally have more experience with young children, and therefore their expectancies for their infants may differ from their husbands'.

Mothers' and fathers' ratings of their infants converged on all four scales. The level of agreement reported here is comparable or higher than that reported by other researchers using both the ICQ and other temperament questionnaires (e.g., Bates et al., 1979; Mebert, 1989). When parental agreement is obtained, it has been argued that either the mother is influencing the fathers' perceptions, or that they are reporting on objective infant characteristics based upon similar experiences (Bates & Bayles, 1984; Mebert & Kalinowski, 1986). The pattern of correlations postpartum was much more scale-specific and more differentiated than the relations between parents' prenatal expectations. Thus, one aspect of becoming parents seems to be an increasing similarity of views of their baby.

Predicting parental reports of temperament. Both mothers and fathers perceived their babies as less fussy, more adaptable, more predictable and as smiling and laughing more than they had expected. It could be that once parents actually have a baby, they become more invested in and captivated with their infant, and as a result, view the infant more

positively than they expected. It is also possible that the expectations questionnaire was tapping an anxiety specific to parenting that was not measured by the anxiety questionnaire. By 3 months postpartum, new parents may feel more competent about caring for an infant.

Mothers' ratings on the Unadaptable, Unpredictable, and Fussy scales at 3 months were predicted by their prenatal expectations. Their Unadaptable ratings were also predicted by Prenatal Negative Mood. Fathers' Expectations were the best predictors of their postpartum ratings on the Unadaptable and Dull scales. This provides support for the idea that parents have particular expectations for their infant prior to the infant's birth, and that these expectations are related to their subsequent perceptions of their infant.

In conclusion, the results of this investigation indicated that mothers and fathers shared expectations for the emotional expressivity of their infant, but differed in their expectations for predictability and adaptability. Mothers' and fathers' temperament ratings at 3 months converged on all of the temperament dimensions assessed. Although parents' perceptions of infant temperament at 3 months were associated with concurrent observer ratings, parents and observers found different infant behaviors salient. Observers trained in temperament constructs attended to activity as a separate dimension of infants' behavior, whereas parents did not. Parents' prenatal expected temperament ratings were the best predictors of their postpartum perceptions of infant temperament. The findings are consistent with Bates and Bayles' (1984) assertion that there are both subjective and objective components to parents' ratings of infant temperament. The objective component provided by parents is useful because it gives us valuable information about infant behavior. The findings also provide evidence that the subjective component of parental ratings includes separate dimensions, specifically mood, personality, and expectations (Mebert, 1991). These subjective components are interesting because they may reflect parents' internal working models of their infants (Zeanah & Anders, 1987). Such models may be as important as objective factors in determining how parents actually behave toward their infant. The person perception literature indicates that people attend to and act upon what they expect to perceive (e.g., Darley & Fazio, 1980).

Future research should include both mothers' and fathers' expectations and perceptions of their children's temperament. In addition, given the relevance of maternal personality to temperament ratings in this and prior research, paternal personality should be examined. How the subjective and objective components of infant temperament collectively contribute to later individual differences in children should be examined in future studies.

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