

## Parents' Personality and Infants' Temperament as Contributors to Their Emerging Relationship

Grazyna Kochanska, Amanda E. Friesenborg, Lindsey A. Lange, and Michelle M. Martel  
University of Iowa

The authors examined the contributions of infant's temperament and parent's personality to their relationship. In Study 1, 102 infants, mothers, and fathers were studied when infants were 7 months; in Study 2, 112 infants and mothers were followed from 9 to 45 months. Infants' temperament (joy, fear, anger, and attention) was observed in standard temperament paradigms. Parents' personality measures encompassed the Big Five traits and Empathy in Study 1 and Mistrust, Manipulativeness, Aggression, Dependency, Entitlement, and Workaholism in Study 2. Parent-child relationship (shared positive affect and parental responsiveness in Studies 1 and 2 and parental tracking of the infant in Study 1) was observed in naturalistic contexts. In Study 1, mothers' Neuroticism, Empathy, and Conscientiousness and fathers' Agreeableness, Openness, and Extraversion related to the relationship with the infants. All measures of infant temperament also related to the emerging relationship. In Study 2, maternal Mistrust, Manipulativeness, Dependency, and Workaholism predicted the relationship with the child.

Why study individual differences in personality? Perhaps the most important reason is to test the often implicit assumption that personality traits influence people's behavior and lives in relatively stable, predictable, and meaningful ways. Such links have been amply demonstrated in psychopathology (Rothbart & Ahadi, 1994; Watson & Clark, 1994), job performance (Barrick & Mount, 1991), delinquency (Caspi et al., 1994; Sanson & Prior, 1999), and relationships with peers and romantic partners (Asendorpf & Wilpers, 1998).

Research on personality and parenting has been less extensive (Halverson & Wampler, 1997), but the interest in how parents' personality may influence their emerging relationship with their young child has been growing. Early relationships are critical for both parents and children. Belsky and Barends (2002), in their

review of the history and current state of research on personality and parenting, articulated the most needed directions for the future. We report two studies that address several goals from that agenda.

### PARENTS' PERSONALITY AND THE PARENT-INFANT RELATIONSHIP

Belsky and Barends (2002) called for research that includes both mothers and fathers. Most studies of parenting involve only mothers, despite the growing recognition of the role multiple early relationships play in development (Parke & Buriel, 1998). We present one study involving mothers, fathers, and their infants (Study 1) and one involving mothers and their young children, followed from infancy to preschool age (Study 2).

Belsky and Barends (2002) also urged scholars to draw from recent research on personality, mostly by adopting the Big Five approach. This would allow the field to move beyond the relatively well established relations between parental depression (or neuroticism) and parenting and to elucidate less understood roles of other personality traits—Extraversion, Openness, Agreeableness, and Conscientiousness. In Study 1 we pursued this objective: We assessed parents' personality using an established instrument that measures the Big Five, the NEO Five Factor Inventory (Costa & McCrae, 1992).

Further, Belsky and Barends (2002) called for theoretically informed efforts to expand the repertoire of the studied parental traits beyond the Big Five. In our view, one important gap in research on personality and parenting is the relative lack of attention to traits that are particularly relevant to interpersonal relationships. Empathy is especially critical in the parent-infant relationship. Parents must read the infant's often unclear cues and signals and respond to them in a way that addresses the infant's needs

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Grazyna Kochanska, Amanda E. Friesenborg, Lindsey A. Lange, and Michelle M. Martel, Department of Psychology, University of Iowa.

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Correspondence concerning this article should be addressed to Grazyna Kochanska, Department of Psychology, University of Iowa, E18 SSH, Iowa City, IA 52242. E-mail: grazyna-kochanska@uiowa.edu

(Dix, 1992). The form of empathy that involves taking another person's perspective (Davis, 1983) may particularly facilitate the parent's ability and willingness to read and respond promptly, sensitively, and appropriately to the child's signals and cues. In our earlier study, more empathic mothers were indeed better able to form a close, mutually responsive relationship with their young children (Kochanska, 1997). We therefore included self-reported Empathy among the predictors of mothers and fathers' parenting in Study 1.

Research on personality traits pertinent to interpersonal relationships may profit from drawing from the area of personality disorders. Those disorders are salient in the realm of human relationships. In fact, serious interpersonal difficulties are among the criteria for the diagnosis. Study of the relevant personality traits may substantially inform research on parenting.

In Study 2, we adopted a conceptual view that forms of psychopathology relate to variations in normal-range personality traits and that there is a continuity between personality and personality disorder (Clark, 1993; Clark, Vorhies, & McEwen, 2002; Krueger, Caspi, Moffitt, Silva, & McGee, 1996; Watson, Clark, & Harkness, 1994). In community samples, such dimensional approach has an advantage over the categorical approach, which views personality disorders as qualitatively distinct from normal personality. We adopted a measure inspired by the dimensional approach, the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993), which has been used in normative and clinical samples.

#### INFANTS' TEMPERAMENT AND THE PARENT-INFANT RELATIONSHIP

We embrace a current view of both the parent and the child actively shaping their relationship. The ecological approach to development (Belsky, 1984) explicitly articulated the need to study both the parent and the child in the process of their emerging relationship, and it portrayed their relationship as representing joint contributions of both. Earlier top-down models that assigned the major role in development to the parent and more recent views that assigned it to the child (Bell, 1968; Lytton, 1990) have become integrated. In the current perspective, the parent and the child are active agents, who, by continuous transactions, cocreate their emerging relationship (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Maccoby, 1992).

Therefore, in both studies we examined how the personality of the parent and the individuality, temperament, or "protoperpersonality" of the infant contribute to their relationship. In Study 1, we focused on the just emerging mother-child and father-child relationships, during infancy. In Study 2, we examined the mother-child relationship from infancy to preschool age.

We grounded our assessment of infants in research on early temperament. Many scholars agree that early individuality encompasses positive emotionality (joy) and negative emotionality, shown by Belsky and colleagues to be separable (Belsky, Hsieh, & Crnic, 1996). Within negative emotionality, we distinguished between anger and fear, which may have different long-term implications (Caspi, 2000; Rothbart & Bates, 1998). We also assessed infants' focused attention, which has been linked to future restraint and self-regulation (Caspi, 1998; Kochanska, Murray, & Harlan,

2000; Kochanska, Tjebkes, & Forman, 1998; Rothbart & Ahadi, 1994; Rothbart & Bates, 1998; Shiner & Caspi, 2003).

Research on the links between child temperament and the parent-child relationship has been complicated by the causal processes operating in both directions. Easy, positive babies are thought to evoke different reactions from caregivers than difficult, negative babies (Scarr & McCartney, 1983). Empirical evidence, however, has been complex (Putnam, Sanson, & Rothbart, 2002). Proneness to anger, a typical core quality of "difficultness," often covaries with less responsive, negative parenting. Difficult babies pose more challenges than easy babies and may elicit more adversarial and less responsive parenting (Bates, Maslin, & Frankel, 1985; Bell, 1968; Lytton, 1990; van den Boom & Hoeksma, 1994). Affectively positive and well-focused infants may elicit more responsive, positive parenting (Kyrios & Prior, 1990). In both Study 1 and Study 2, we expected joyful, less angry, and better focused children to have a more positive relationship with the parents.

There is little research on how the child's fearfulness may impact the relationship with the parents. Some have suggested that fearful children may receive more protective and responsive parenting, but the data are far from clear (Rubin, Hastings, Stewart, Henderson, & Chen, 1997; Stevenson-Hinde, 1998). Owing to the dearth of research, our analyses of the links between infants' fearfulness and their relationships with parents were exploratory.

#### QUALITIES OF THE PARENT-CHILD RELATIONSHIP

Our measures of the emerging parent-child relationship were theoretically driven and fully comparable across the two studies. In both studies, we assessed positive affective ambience within the relationship and parental responsiveness to the child. In Study 1, we also measured parental tracking of the infant.

Affective ambience has been seen as an important dimension of parent-infant interaction (Dix, 1992; Kochanska, 1997; Radke-Yarrow, Richters, & Wilson, 1988). We proposed that shared positive affect—the times when both parent and child experience positive emotions—has broad adaptive consequences for development, including promoting children's security, early morality, and eagerness to imitate the parent (Kochanska, 1998; Kochanska, Aksan, & Koenig, 1995; Kochanska, Forman, & Coy, 1999).

Parental responsiveness, along with the related constructs of nurturance and warmth, has emerged as a core dimension of the early parent-child relationship along with the advent of attachment theory (Ainsworth, Bell, & Stayton, 1971). There is a consensus that parental responsiveness has modest but reliable effects on child security and other adaptive developmental outcomes (Belsky, 1999; M. H. Bornstein, 1989; De Wolff & van IJzendoorn, 1997; Thompson, 1998).

Parental tracking of the child, to our knowledge, has been rarely studied in infancy, but in research with older children, parental monitoring has been viewed as an important protective factor against conduct problems (Crouter & Head, 2002; Dishion & McMahon, 1998; Pettit, Laird, Dodge, Bates, & Criss, 2001). We propose that parental monitoring or tracking may also be adaptive in infancy and that it is closely related to responsiveness or sensitivity. Keeping consistent track of the infant reflects proactive and responsive parenting. It allows the parent to prevent child

distress before it becomes intense, to anticipate child needs, to notice subtle cues, and to ensure safety.

In both studies, parental personality was assessed using self-reports, but all measures of child temperament and parent-child relationship were behavioral. We assessed infant temperament—joy, anger, fear, and attention—in standard paradigms from the Laboratory Temperament Assessment Battery (LAB-TAB; Goldsmith & Rothbart, 1999). The measures were fully comparable across Studies 1 and 2.

All measures of parent-child relationship were collected in multiple naturalistic interactions: in Study 1, in mother-child and father-child home sessions when the infant was 7 months old; in Study 2, in mother-child home and laboratory sessions at 9, 14, 22, 33, and 45 months old. Our research thus overcomes the limitations of studies in which both personality and parenting are self-reported (e.g., Losoya, Callor, Rowe, & Goldsmith, 1997; Metsapelto & Pulkkinen, 2003). Further, having multiple, aggregated measures of behavior rather than single behavioral observations increases the chances of finding trait-behavior relations (Epstein, 1983; Rushton, Brainerd, & Pressley, 1983).

All observational measures were coded from videotapes by independent teams. Reliability was established using 15%–20% of cases; coders then realigned to prevent drift. To ensure robustness, behavioral measures were standardized and substantially aggregated, across trials, contexts, and scores.

## STUDY 1

We grounded our hypotheses for Study 1 in past research, including our own research with large longitudinal samples, which has consistently shown parental Neuroticism and negative emotionality to be linked to less positive, responsive, and adaptive parenting (Belsky & Barends, 2002; Clark, Kochanska, & Ready, 2000; Goodman & Gotlib, 1999; Kochanska, Clark, & Goldman, 1997). In contrast, parental Conscientiousness and Agreeableness have been linked to more positive and adaptive parenting (Belsky & Barends, 2002; Cumberland-Li, Eisenberg, Champion, Gershoff, & Fabes, 2003; Losoya et al., 1997).

Findings regarding Extraversion have been mixed. Extraverted parents have been seen as upbeat and engaged (Belsky, Crnic, & Woodworth, 1995; Levy-Shiff & Israelashvili, 1988) and as endorsing nurturant, supportive parenting (Losoya et al., 1997; Metsapelto & Pulkkinen, 2003), but we found that highly extraverted mothers were power assertive with their toddlers (Clark et al., 2000). Those contradictions may be due to the multifactorial nature of Extraversion (Watson & Clark, 1997). Thus, our focus on Extraversion was exploratory.

Empathy was expected to be linked with more responsiveness (Dix, 1992; Kochanska, 1997). Openness has been posited as promoting adaptive parenting (Belsky & Barends, 2002), but it has rarely been studied in parent-child relationship. The limited data support such links (Levy-Shiff & Israelashvili, 1988; Losoya et al., 1997; Metsapelto & Pulkkinen, 2003).

## Method

### Participants

One hundred two intact families responded to advertisements in local communities or to letters sent to new parents on the basis of birth records.

All had healthy infants (51 girls, 51 boys) and were demographically diverse: 28% of mothers and 32% of fathers had no education beyond high school; 15% of mothers and 18% of fathers had an associate degree; 39% of mothers and 33% of fathers had a college degree; and 21% of mothers and 20% of fathers had education beyond college. Mothers' average age was 31 years, and fathers' was 32 years. Most infants were first (42%) or second (35%) born. Families' annual income varied: under \$20,000 (8%), \$20,001–\$30,000 (9%), \$30,001–\$40,000 (8%), \$40,001–\$50,000 (17%), \$50,001–\$60,000 (9%), and over \$60,001 (49%). Among mothers, 91% were White; 3% Hispanic; 1% each African American, Asian, and Pacific Islander; and 3% "other" non-White. Among fathers, 84% were White, 8% Hispanic, 3% African American, 2% Asian, and 2% "other" non-White. In 20% of the families, one or both parents were non-White.

### Procedure Overview

The families participated in two 2-hr home sessions, each involving the infant and one parent, conducted by a female visit coordinator (referred to hereinafter as "E") and videotaped by a cameraperson. Parents completed the personality self-reports prior to the sessions. Infants' temperament was observed in standard emotion-eliciting episodes, interspersed with other contexts. Parent-child relationship was observed in naturalistic contexts, encompassing multiple typical daily care activities, chores, and play routines. All descriptive statistics appear in Table 1.

Table 1  
Descriptive Data for the Measures in Study 1

Measure	<i>M</i>	<i>SD</i>	Range
Infant temperament, 7 months			
Joy <sup>a</sup>	0.00	0.52	–1.25–1.18
Anger <sup>b</sup>	4.56	1.83	1.00–8.00
Fear <sup>a</sup>	0.00	0.37	–0.78–0.92
Attention <sup>a</sup>	0.00	0.70	–1.28–1.61
Mother personality, 7 months			
Neuroticism	18.47	7.44	2.00–36.00
Extraversion	29.35	4.93	16.00–42.00
Conscientiousness	33.41	6.68	14.00–48.00
Agreeableness	34.45	4.92	22.00–46.00
Openness	26.11	5.99	9.00–41.00
Empathy	3.50	0.63	1.57–5.00
Father personality, 7 months			
Neuroticism	15.23	7.19	2.00–35.00
Extraversion	29.01	5.77	14.00–44.00
Conscientiousness	33.23	5.95	11.00–47.00
Agreeableness	31.55	6.18	11.00–44.00
Openness	26.36	6.77	12.00–39.00
Empathy	3.40	0.65	1.14–5.00
Qualities of mother-infant relationship, 7 months			
Shared positive affective ambience	0.69	0.14	0.34–0.98
Mother responsiveness	0.40	0.38	–1.02–1.11
Mother consistent tracking	0.53	0.12	0.23–0.76
Qualities of father-infant relationship, 7 months			
Shared positive affective ambience	0.62	0.16	0.24–0.98
Father responsiveness	0.22	0.48	–1.32–1.30
Father consistent tracking	0.52	0.13	0.11–0.76

<sup>a</sup> Scores represent means of standardized constituent variables. <sup>b</sup> The aggregation was slightly different than for the other infant temperament scores. The final score is an ordinal scale, ranging from 1 to 8, where infants who consistently responded with strong anger in all three episodes received higher scores.

### Assessment of Parents' Personality

Parents completed the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) and the Perspective Taking scale from the Interpersonal Reactivity Index (Davis, 1983). The NEO-FFI is a 60-item self-report that captures Neuroticism (proneness to negative affect), Extraversion (tendency to be sociable, assertive, active), Conscientiousness (tendency to be planful, organized, purposeful), Agreeableness (tendency to be prosocial, altruistic, kind), and Openness (tendency to demonstrate intellectual curiosity, active imagination, aesthetic sensitivity). Cronbach's alphas were .66–.85 for mothers and .75–.84 for fathers. The 7-item Perspective Taking scale assesses a tendency to adopt others' psychological point of view (i.e., Empathy; alphas were .79 for mothers and .76 for fathers).

### Relations Among Measures of Parental Personality

For mothers, 5 out of 15 correlations were significant: Neuroticism correlated with lower Extraversion and Conscientiousness (–.35 and –.28), Extraversion correlated with Conscientiousness (.23), and Empathy correlated with higher Openness and Agreeableness (.28 and .27). For fathers, 10 correlations were significant: Neuroticism correlated with lower Extraversion, Conscientiousness, and Agreeableness (.35, –.24, and –.25), and Extraversion correlated with higher Conscientiousness and Agreeableness (.28 and .27). Empathy correlated with all NEO-FFI traits: with lower Neuroticism (–.23) and with higher Extraversion, Openness, Conscientiousness, and Agreeableness (.23, .27, .23, and .59). Conscientiousness and Agreeableness correlated with each other (.22).

Among the correlations between each mother's and father's scores, only one was significant. The two spouses' Openness scores were modestly correlated.

### Assessment of Infants' Temperament: Joy, Anger, Fear, and Attention

The measures, based on the LAB-TAB (Goldsmith & Rothbart, 1999) and our own paradigms, included joy,<sup>1</sup> anger, fear, and attention episodes. They were scripted, mostly multitrial paradigms, employing emotion-eliciting stimuli in the emotion episodes and interesting toys in the attention episode.

Coding followed common rules: Each episode was divided into short epochs determined by the given script (e.g., from the appearance of an emotion-eliciting stimulus to its disappearance, or a certain phase, such as a frightening monkey singing a song). The coding captured discrete emotion behaviors (e.g., for joy: clapping, laughing; for anger: kicking, banging; for fear: twisting or looking away); intensity of facial, vocal, and bodily expression of emotion; and the latencies to express emotion. In the attention episode, we coded intensity and duration of orienting behaviors (looking, manipulating) and latency to shift attention away.

The codes were then standardized and aggregated within and across episodes. The specific details varied by episode, but usually, the final episode score was a mean of standardized discrete emotion acts (facial, vocal, motor), their intensities, and latencies (reversed) to the first response. Ultimately, we produced overall scores, for joy, fear, anger, and attention. (Further details regarding those procedures, as performed in Study 2, can be found in Kochanska, Coy, Tjebkes, & Husarek, 1998; the approach in Study 1 was extremely similar.)

### Joy

*Procedures.* In three "peek-a-boo" games, mother, father, and a female stranger appeared in a plywood window, smiled at the infant, and exclaimed, "Peek-a-boo!" In the puppets episode, E enacted a playful dialogue using hand puppets; in the pop-up toy episode, the infant operated a jack-in-the-box toy for 2 min.

*Reliability of coding.* Kappas ranged from .91 to 1.00 for smiling, from .79 to 1.00 for laughing, from .82 to 1.00 for positive vocalizations, from .87 to 1.00 for discrete joy behaviors, and from .85 to 1.00 for intensity of smiling. Alphas were .99 for latency to smile and .99 for latency to reach for the joy-producing objects in the puppets and pop-up toy episodes.

*Data aggregation.* Cronbach's alphas were .79 for puppets, .70 for pop-up toy, .73 for peek-a-boo with mother, .72 for peek-a-boo with father, and .70 for peek-a-boo with stranger. The episode scores were intercorrelated ( $r$ s ranged from .16 to .62,  $p < .001$ ) and were aggregated into an overall joy score.

### Anger

*Procedures.* The three anger episodes included arm restraint (two trials), car seat (a 1-min confinement in a commercially available car seat), and toy retraction (taking away an attractive toy; three trials).

*Reliability of coding.* Kappas for discrete anger behaviors ranged from .63 to .85; for intensity of the expression of anger they ranged from .76 to .97. Alphas for the latencies to the first anger expression ranged from .94 to .99.

*Data aggregation.* Cronbach's alphas were .74 for arm restraint, .79 for car seat, and .69 for toy retraction. The episodes did not correlate, and thus we adopted a different method of aggregation. We first clustered infants into high (above 70th percentile), low (below 30th percentile), and average groups within each episode. We then computed an overall anger measure, in which infants who showed high anger in all three episodes received a score of 8 and those who showed low anger in all episodes received a score of 1.

### Fear

*Procedures.* The four fear episodes included stranger approach (in a graded approach, a female stranger speaks to, comes closer to, and finally picks up the baby), unpredictable toy (an unusual toy, a singing monkey, moves rapidly toward the baby; three trials), masks (E consecutively puts on frightening masks and leans toward the baby; four trials), and parasol opening (E opens an automatic umbrella in front of the baby; three trials).

*Reliability of coding.* Kappas for discrete fear behavior ranged from .52 to 1.00; for intensity of fear expression they ranged from .69 to .99. Alphas for the latencies to the first fear expressions ranged from .89 to .99.

*Data aggregation.* Cronbach's alphas were .75 for stranger approach, .72 for unpredictable toy, .69 for masks, and .70 for parasol. The episode scores, which intercorrelated weakly ( $r$ s ranged from –.15 to .23,  $p < .05$ ), were averaged into an overall fear score.

### Focused Attention

*Procedures.* In two blocks episodes, the infant was placed on a white blanket and given four colorful soft blocks to explore, for up to 5 min.

*Reliability of coding.* Kappas for the intensity for attentional behaviors (looking, manipulating, facial interest) ranged from .65 to .80. Alpha for latency to first look away was 1.00.

*Data aggregation.* The attentional behaviors, intensity, and latency were aggregated; alphas were .85 and .87. The episode scores correlated,  $r(102) = .39$ ,  $p < .001$ , and were aggregated into an overall focused attention score.

<sup>1</sup> Although the episodes were designed on the basis of the assumption that certain stimuli evoke corresponding emotions, occasionally infants respond with different emotions than intended (e.g., smile to a fear stimulus or cry to a joy stimulus; see Kochanska, 2001). We captured those episode-inconsistent emotions in our coding but did not use them in this article.

### *Relations Among Measures of Infants' Temperament*

There was only one significant correlation, between fear and anger,  $r(102) = .24, p < .05$ . The remaining intercorrelations ranged from  $-.02$  to  $-.12$ .

### *Assessment of the Parent–Child Relationship*

All measures of parent–child relationship were based on the observations of 45 min of mother–child interaction and 45 min of father–child interaction in a variety of naturalistic contexts during the home sessions: preparing and having a snack with the baby, free play, play with toys, giving the infant a bath, changing the infant's clothes, and other routine daily activities.

### *Shared Positive Affective Ambience*

The parent's and infant's emotions were coded for each 30-s segment of interactions. All discrete positive and negative emotions were coded (more than one could be coded in a segment, but each only once); if there was no clear discrete emotion, the prevalent mood was coded as "neutral positive" or "neutral negative." Reliabilities, kappas, ranged from .65 to .87. We then tallied all of the segments in which both parent and infant expressed a positive emotion or mood and neither expressed a negative emotion or mood, and divided by the total number of segments, to create a shared positive affect (or positive ambience) score, one with each parent.

### *Parental Responsiveness to the Child*

*Coding and reliability.* This combination of a time-sampled and event-triggered approach entailed two passes through a videotape. In the first pass, the coders decided, for each 60-s interval, whether the child directed a signal to the parent that required a response (reliability, kappa = .82). Each signal was coded as negative (e.g., crying), neutral or positive (e.g., social bids), and physiological (e.g., coughing) (kappa = .77). If the infant produced no signals, one of several global codes was given (not further considered here).

In the second pass, the coders evaluated the parent's response to each signal using one of four mutually exclusive codes: poor, fair, good, or exceptional (kappas = .79–.80). The code reflected an integration of multiple dimensions of responsive parenting (e.g., promptness, engagement, sincerity, and other aspects of sensitivity, acceptance, and cooperation; emotional availability; following child lead and/or focus of attention; adjusting stimulation to child state; De Wolff & van IJzendoorn, 1997; Thompson, 1998).

*Data reduction.* We tallied all of the instances when the parent responded poorly, fairly, well, or exceptionally to the child's signals in each of the three categories, and each tally was divided by the total number of signals in that category. For example, for the child negative signals category, we calculated the proportions of instances of child negative signals to which the parent responded poorly, fairly, well, or exceptionally.

Next, we computed four composite scores: a poor, fair, good, and exceptional response pattern, each the average of the relevant responses across all three types of child signals (e.g., average of all proportions of poor responses, across negative, neutral/positive, or physiological signals). Then, for each parent, we created an overall responsiveness score by weighing the poor response pattern by  $-2$ , the fair by  $-1$ , the good by  $1$ , and the exceptional by  $2$  and then summing these scores (Kochanska, 1998).

### *Parental Consistent Tracking of the Child*

For each 60-s interval, the coder rated the parent's tracking of the child using one of three codes: inattentive to child, occasionally tracking, or tracking for most of the interval (kappa = .89). The instances of the latter

code were summed to reflect the parent's consistent tracking and then divided by the number of coded intervals.

### *Correlations Between Mother–Child and Father–Child Relationships*

The characteristics of the infant's relationship with the mother and father correlated: shared positive ambience,  $r(102) = .26, p < .01$ ; responsiveness,  $r(102) = .44, p < .001$ ; and consistent tracking,  $r(102) = .33, p < .001$ , even when all four qualities of the infant's temperament were partialled out.

## Results

First, we examined preliminary correlations between children's temperament and the parents' personality traits. We followed with hierarchical multiple regressions. We constructed six equations (three for mothers and three for fathers) to examine the infant's and the parent's contributions to the outcomes (shared positive affective ambience, responsiveness, and consistent tracking of the child; each outcome assessed for the infant with each parent). In each equation, child gender was entered in Step 1, child temperament measures (joy, anger, fear, and attention) in Step 2, and the parent's personality measures (Neuroticism, Extraversion, Conscientiousness, Agreeableness, Openness, and Empathy) in Step 3. Finally, we conducted model-fitting analyses to examine two issues: (a) whether the differences in the prediction for the mothers and fathers were statistically significant and (b) whether, when both parents' traits were considered simultaneously, one parent's traits predicted the other parent's relationship with the infant.

### *Correlations Between Infants' Temperament and Parents' Personality*

There were no significant links between infants' temperament and their fathers' personality traits. There were a few modest correlations between mothers' and infants' traits. More agreeable mothers had infants who were more able to focus attention,  $r(101) = .24, p < .05$ , and more fearful,  $r(101) = .25, p < .05$ . More empathic mothers' infants were better focused,  $r(101) = .30, p < .01$ , and less prone to anger,  $r(101) = -.26, p < .01$ . The infants of mothers higher on Openness were more joyful,  $r(101) = .23, p < .05$ .

### *Infants' Temperament and Mothers' Personality as Contributors to Their Relationship*

The results appear in Table 2. The statistics for each step ( $R^2$ ,  $\Delta R^2$ , and  $F_{ch}$ ) are presented, along with  $F$  and beta values for each predictor (based on the final equation with all predictors entered).

For each of the three dimensions of the mother–infant relationship, the child's temperament and the mother's personality jointly explained a significant portion of the total variance, ranging from 22% to 30%. There was consistent evidence of the significance of both child and maternal effects. Child temperament made a significant contribution to each of the relationship dimensions, explaining between 10% and 20% of variance, and maternal personality made a significant contribution to shared positive affective ambience (11%) and responsiveness (14%), and a marginal con-

Table 2  
*Child's Temperament and Mother's Personality as Contributors to Their Relationship in Infancy (Study 1)*

Step and variable	Dependent variables: Qualities of mother-child relationship								
	Shared positive ambience			Mother's responsiveness			Mother's consistent tracking		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Step 1: Child gender	.09	.00	.00	.12	.00	.00	.10	.00	.00
Step 2: Child temperament		.20	.20***		.12	.12*		.11	.10*
Joy	.29**			.25**			.24*		
Anger	-.32**			-.08			-.15		
Fear	.32**			.14			.12		
Attention	-.08			.02			.16		
Step 3: Mother personality		.30	.11*		.27	.14*		.22	.11
Neuroticism	-.24*			-.13			-.12		
Extraversion	-.17			.13			-.06		
Conscientiousness	.15			-.17			.25*		
Agreeableness	-.13			.11			.06		
Openness	-.12			.00			-.17		
Empathy	.09			.23*			.09		
Overall	$F(11, 89) = 3.55***$			$F(11, 89) = 2.92**$			$F(11, 89) = 2.25*$		

Note. Beta values are from the final equations (with all predictors entered).

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

tribution to consistent tracking (11%). There were no effects of child gender.

#### *Shared Positive Affective Ambience*

Each of the three dimensions of the infant's temperament made a significant contribution to affective ambience in the dyad. The infant's proneness to joy and to fear were linked to more positive ambience, and proneness to anger was linked to less positive ambience.

Among maternal personality traits, only one made a unique contribution. Dyads with mothers who reported high Neuroticism had a less positive affective ambience than dyads with mothers low on that trait.

#### *Mothers' Responsiveness*

One infant characteristic accounted for the overall effect of the infant's personality: More joyful infants received more responsive parenting. One maternal personality trait was significantly linked to responsiveness: More empathic mothers were more responsive.

#### *Mothers' Consistent Tracking*

Mothers tracked more joyful infants more consistently. Mothers who were more conscientious tracked their children more consistently, but the overall effect of maternal personality was marginal.

#### *Infants' Temperament and Fathers' Personality as Contributors to Their Relationship*

The results appear in Table 3. Again,  $R^2$ ,  $\Delta R^2$ , and  $F_{ch}$  are shown for each step;  $F$  and betas are shown for each predictor, based on the final equation.

As with mothers, for each of the equations describing the three dimensions of the father-infant relationship, child temperament and father personality jointly explained a significant portion of the total variance (20% to 43%). The child effects were significant for shared positive ambience (29%), marginal for consistent tracking (9%), and not significant for father responsiveness (6%). The effects of the father's personality were very similar to those of the mother's: from 14% for shared positive ambience to 14% for responsiveness and 11% (marginal) for tracking. Child gender again had no effects.

#### *Shared Positive Affective Ambience*

Three dimensions of child temperament explained unique variance: Dyads with more joyful, less angry, and better focused infants (marginally) had a more positive affective ambience. Two paternal personality traits were significant predictors: Dyads with fathers higher on Agreeableness and Openness had a more positive ambience.

#### *Fathers' Responsiveness*

Only the block with the father's personality traits was significant, because of Openness, which predicted more responsiveness.

#### *Fathers' Consistent Tracking*

The infant's temperament and the father's personality each explained a marginally significant amount of variance; the overall equation was significant. Fathers' Extraversion was associated with less consistent tracking.

Table 3  
*Child's Temperament and Father's Personality as Contributors to Their Relationship in Infancy (Study 1)*

Step and variable	Dependent variables: Qualities of father-child relationship									
	Shared positive ambience			Father's responsiveness			Father's consistent tracking			
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	
Step 1: Child gender	.10	.01	.01	.04	.00	.00	.02	.00	.00	
Step 2: Child temperament		.29	.29***		.06	.06		.09	.09	
Joy	.29**			-.06			.17			
Anger	-.37***			-.22*			-.18			
Fear	-.00			.00			.02			
Attention	.14			.00			.10			
Step 3: Father personality		.43	.14**		.20	.14*		.20	.11	
Neuroticism	-.15			.04			-.02			
Extraversion	-.11			.07			-.31**			
Conscientiousness	-.10			-.05			.01			
Agreeableness	.24*			.43***			.19			
Openness	.25**			.13			.15			
Empathy	-.03			-.20			-.05			
Overall		$F(11, 87) = 6.05***$			$F(11, 87) = 1.97*$			$F(11, 87) = 1.99*$		

Note. Beta values are from the final equations (with all predictors entered).

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

### *Mother-Infant Versus Father-Infant Dyad: Comparison of the Contributors to the Relationship*

Model-fitting analyses examined whether the apparent differences in the predictors of infants' relationship with the two parents were statistically notable. We asked whether the impact of child temperament and parent personality on shared positive ambience, parent responsiveness, and tracking was different for mothers versus fathers. Because our sample sizes did not allow more comprehensive and rigorous tests, we tested any potential differences separately for the effects of child temperament and of parent personality.

For all three outcomes, we modeled measures from mother and father sessions as correlated endogenous variables. Infants' temperament and parents' personality served as freely intercorrelated exogenous variables, in which we constrained their respective effects on endogenous measures from mother and father sessions to be equal.

#### *Shared Positive Affective Ambience*

The model that assumed that infant temperament (joy, anger, fear, and attention) influenced shared positive affect with mothers and fathers similarly showed adequate overall fit,  $\chi^2(8) = 12.0$ ,  $p = .15$ ; 90% Confidence Interval (CI) for Root-Mean-Square Error of Approximation (RMSEA) was .04-.19, Comparative Fit Index (CFI) was .87. However, several standardized residuals were elevated, and modification indices suggested that allowing infant fear and attention to have differential effects on shared positive affect with mothers and fathers would lead to a significant improvement in fit. When those equality constraints were removed, overall model fit improved significantly:  $\Delta\chi^2(2) = 11.25$ ,  $p < .05$ . The model that assumed that each parent's personality influenced that parent's shared positive affect with the infant in similar ways

also showed adequate overall fit,  $\chi^2(30) = 29.85$ ,  $p = .47$ ; 90% CI for RMSEA = .09-.16; CFI = 1.0. Modification indices suggested that allowing maternal and paternal Openness and Agreeableness to have differential effects on shared positive affect would result in a significant improvement in fit. When those equality constraints were removed, overall model fit indeed improved significantly:  $\Delta\chi^2(2) = 6.72$ ,  $p < .05$ .

Additionally, we explored whether one parent's traits influenced the infant's shared positive affect with the other parent. There was no evidence to support such a "crossover" effect, as indicated by the modification indices.

#### *Parental Responsiveness*

The model that assumed that infants' temperament influenced maternal and paternal responsiveness similarly showed adequate overall fit:  $\chi^2(8) = 8.58$ ,  $p = .38$ ; 90% CI for RMSEA = .00-.15; CFI = .96. However, modification indices suggested that allowing infants' joy to have differential effects on maternal and paternal responsiveness would result in a significant improvement of fit. When the equality constraints from infants' joy were removed, overall fit of the model improved significantly:  $\Delta\chi^2(1) = 5.78$ ,  $p < .05$ .

The model that assumed that each parent's personality characteristics influenced their own responsiveness toward the infant similarly also showed adequate overall fit,  $\chi^2(30) = 16.65$ ,  $p = .98$ ; 90% CI for RMSEA = .00-.07; CFI = 1.0. Not surprisingly, modification indices did not indicate that removal of equality constraints would lead to improvement in overall fit. Additional exploration of whether one parent's traits influenced the other parent's responsiveness to the infant, based on the modification indices, did not indicate that such a crossover effect was likely.

### *Consistent Tracking*

The models that assumed that the infant's temperament and the parent's personality influenced maternal and paternal consistent tracking similarly also showed adequate overall fit: For infant temperament,  $\chi^2(8) = 3.00$ ,  $p = .93$ ; 90% CI for RMSEA = .00–.04; CFI = 1.0. For parent personality,  $\chi^2(30) = 20.86$ ,  $p = .98$ ; 90% CI for RMSEA = .00–.11; CFI = 1.0. Not surprisingly, modification indices did not indicate that removal of equality constraints for either set of variables would lead to a significant improvement in respective overall model-fit statistics. Again, on the basis of modification indices, there was no support for a view that one parent's traits influenced the other parent's consistent tracking.

### Discussion

This study makes several contributions. It provides support for the approach to the emerging parent–infant relationship as cocreated by both partners. It reveals the unique links between the specific dimensions of both parental and child individuality and the quality of their relationship.

#### *Mother–Infant Relationship*

The infant's temperament, assessed in the standardized paradigms, was a significant contributor to all three dimensions of the mother–infant relationship: shared positive ambience, responsiveness, and consistent tracking of the infant. Joyful infants enjoyed a relationship with their mothers that was affectively positive, responsive, and attuned to the child, as indexed by the consistent tracking of the infant.

Affective ambience in mother–infant dyads with fearful babies was more positive, consistent with studies that have found that mothers tend to be protective toward fearful infants (Rubin et al., 1997; Stevenson-Hinde, 1998). But infant anger, another facet of negative emotionality, had a different effect: Ambience in dyads with anger-prone infants was less positive (Bates et al., 1985; Putnam et al., 2002; van den Boom & Hoeksma, 1994). These data further argue for separating those two forms of negative affectivity.

The mother–infant relationship was further determined by maternal personality. As a whole, maternal personality made a significant contribution to shared affective ambience and maternal responsiveness, and a marginal contribution to maternal consistent tracking of the child. Three maternal traits were uniquely significant, but each for a different aspect of parenting.

As expected, mothers high on Neuroticism cocreated a less positive affective ambience with their infants, consistent with a large literature on maternal depression (Belsky & Barends, 2002; Cummings & Davies, 1994; Goodman & Gotlib, 1999). It was interesting, however, that maternal Neuroticism was unrelated to responsiveness or tracking, consistent with our earlier work (Clark et al., 2000). Perhaps a mother's ability to maintain a positive emotional ambience is particularly easily undermined by her elevated negative emotionality. Many existing measures of parenting combine responsiveness and affective positive ambience; in view of our findings, such approach might obscure the specific links between parental personality and parenting.

Also as anticipated, and consistent with previous research (Kochanska, 1997), maternal Empathy was associated with responsive parenting. The ability and willingness to adopt another's perspective is a natural facilitator of an ability to respond promptly, sensitively, and appropriately to the infant's cues. And as expected, maternal Conscientiousness predicted the “executive” aspect of parenting—a more sustained and consistent tracking of the infant.

#### *Father–Infant Relationship*

The infant's individuality was a significant factor determining the affective ambience between infant and father, relatively more so than between infant and mother (29% vs. 20% of variance). A more positive ambience emerged in dyads with more joyful, less angry, and better focused babies (marginally). In contrast to the mother–infant relationship, for fathers infant fearfulness had no effect. Also in contrast to the findings for the mothers, infant temperament as a whole was not a significant contributor to the other two aspects of the relationship with the father, although the fathers were less responsive to their more anger-prone babies.

The *overall* effects of the contributions of fathers' personality to their relationship with their infants were strikingly similar to those of mothers. The specific traits uniquely linked to the shared positive ambience, responsiveness, and tracking, however, were different.

Fathers who were highly agreeable were more responsive and cocreated a more positive ambience interacting with their children. Fathers high on Openness were also able to accomplish a more positive ambience. Those results are consistent with Belsky and Barends's (2002) review and the extant literature.

High Extraversion interfered with fathers' ability to track the infants (but recall that, as for the mothers, personality as a whole had only marginal effect). This is consistent with our work (Clark et al., 2000), but it contradicts other evidence (Belsky et al., 1995). Extraversion is not a homogeneous trait (Watson & Clark, 1997), and its various aspects may be differentially linked to parenting, thus accounting for the contradictions. Extraversion encompasses affiliation, warmth, assertiveness, energy, ambition, sociability, ascendance, venturesomeness, and positive affect (Watson & Clark, 1997). Perhaps the “communal” traits of warmth and positive affect predict adaptive—whereas “agentic,” assertive, dominant subtraits predict maladaptive—parenting. These findings suggest different determinants of parenting behavior in men and women. Women low on Neuroticism, or negative emotionality, create a more positive affective ambience. For men, however, Neuroticism relates only marginally to such ambience, whereas their Agreeableness and Openness—the overall tendencies of being kind, trusting, good natured, open to new experiences, and imaginative—are associated with parenting that is infused with positive emotion. Further, more empathic women are more responsive, and thus, for them, responsive parenting may reflect a child-centered attitude and a focus on the child's cues and needs (Dix, 1992). For men, however, responsiveness is unrelated to Empathy but is linked to Agreeableness—an easygoing, kind, good-natured approach to relationships (Graziano & Eisenberg, 1997).

The model-fitting analyses, complementing the regression analyses, further informed our conclusions regarding the determinants of the mother–infant and father–infant relationships. We evaluated



whether the effects of infant temperament and parent personality were significantly different for mothers and fathers.

The findings are a source of caution and indicate the need for more research. In each case (when predicting shared positive affective ambience, responsiveness, and tracking), overall, the models assuming a similarity of prediction for the two parents showed adequate fit. This suggests that any reliable differential effects of infant or parent individuality on the emerging parent–infant relationship for mothers versus fathers are likely to be small, and that more research is needed to replicate the current findings. Caution notwithstanding, the analyses did indicate that allowing for differential effects of some of the predictors for the two parents resulted in a significant improvement of fit in two out of three outcome measures. Infant temperament differently influenced the two parents: Fear and attention differently predicted shared positive ambience, and joy differently predicted responsiveness. Parental personality traits—Openness and Agreeableness—were also differentially predictive of mothers' and fathers' responsiveness.

In summary, more research is needed to replicate and explain the possible role of the parent's gender as moderating the relation between personality and parenting. The existing evidence is very limited (owing to mothers far surpassing fathers as research participants) in addition to being quite mixed. For example, Belsky et al. (1995) found that Agreeableness predicted more positive and sensitive parenting for mothers but not fathers, in contrast to our data.

Future research should further address more complex causal dynamics within a family. For example, are there interactions between the two parents' personalities, or between parents' and children's personalities?<sup>2</sup> Does one parent's personality predict the other parent's relationship with the child? The model-fitting analyses indicated—in an exploratory way—the absence of such cross-over effects. In all models, we constrained maternal personality to affect only infant–mother relationship measures and paternal personality to affect only infant–father relationship measures. The model-fit statistics did not indicate substantial sources of misfit that could be attributed to the presence of links between one parent's personality and the other parent's relationship with the infant. Naturally, lack of positive evidence in this study, where we observed the child with only one parent at a time, does not generalize to triadic relationships typical for most family interactions.

The concurrent assessment of parents, children, and their relationship was a limitation of this study. As always when contemporaneous data are involved, inferences regarding causation are limited. Parental personality likely precedes and influences parenting behavior, and not vice versa (Asendorpf & Wilpers, 1998). In the case of the infant's personality and the infant–parent relationship, however, the direction of causation cannot be assumed. In fact, whether child emotionality should be viewed as an organismic, temperamental, inherent quality of the infant or, at least in part, as an outcome of the quality of care the infant has received is one of the most controversial issues in developmental psychology (Rothbart & Bates, 1998; Thompson, 1998; Vaughn & Bost, 1999). Over time, transactions between the child's and the parent's characteristics likely unfold as a bidirectional process within the dyad (Maccoby, 1992). For example, parental personality may influence parenting, which in turn, over time, influences child characteristics, as in Belsky's (1984) ecological model. Belsky,

Fish, and Isabella (1991) showed that parents' personality prior to the birth of the child and parenting at 3 months predicted changes in infants' emotionality in the first year. Thus, parenting might mediate the link between earlier parental personality and child future individuality.

## STUDY 2

In Study 2, we examined the links between mothers' interpersonal personality traits and their parenting. We focused on six traits from the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993) that are most relevant to a person's functioning in the social context: Mistrust, Manipulativeness, Aggression, Dependency, Entitlement, and Workaholism.<sup>3</sup> Given our normative sample, we expected the scores to be below the clinical range. Nevertheless, we anticipated significant links between the variation in those scores and the variation in parenting.

Mistrust reflects a suspicious, insecure, and cynical approach to relationships, feelings of betrayal and being disappointed by others, and the wish to protect oneself. Manipulativeness is associated with little regard for the rights and feelings of others, accompanied by frequent exploitation of others. Aggression reflects one's bad temper and tendency to quarrel, hold grudges, and seek revenge. Dependency involves relying on others for decisions and approval, concern with pleasing others, and sensitivity to others' views and opinions. Entitlement pertains to one's sense of being unique, superior, and deserving of favors and special treatment. Workaholism reflects one's desire for achievement and perfection, often to the detriment of relationships.

Our hypotheses were tentative because of the dearth of research on personality traits relevant to interpersonal functioning and parenting. We anticipated higher scores on Mistrust, Manipulativeness, and Aggression to be linked to less adaptive parenting. At high levels, those traits describe a suspicious, self-centered, and hostile person, poorly suited to a relationship that requires a focus on another individual and a capacity to provide warmth and protection (Dix, 1992). Further, in normative samples, those traits relate to Big Five low Agreeableness and high Neuroticism (Clark, 1993).

Our analyses of Entitlement, Dependency, and Workaholism were exploratory. To our knowledge, Entitlement has not been studied in relation to parenting, but it has been often associated with several facets of Extraversion, which in turn has had mixed links to parenting. Dependency has been linked to low self-reliance and confidence (Clark, 1993), but it has also been seen as reflecting a person's fundamental motivation to form and maintain close, nurturing relationships (R. F. Bornstein, 1992). It was therefore conceivable that in the realm of the parenting of young children, maternal dependency may predict a closer, warmer, more responsive relationship. Workaholism is defined as high commitment to perfectionism, work, and achievement that surpasses commitment to relationships and thus might be linked to an impoverished

<sup>2</sup> We tested many potential interactions between the mother's and father's personality traits in Study 1 but failed to find significant effects. Further, interactions between parents' and children's temperament, in both studies, were by and large not significant.

<sup>3</sup> We appreciate Lee Anna Clark's guidance regarding the selection of traits.

relationship with the infant. In normative samples, however, Workaholism correlated with Big Five Conscientiousness and with positive temperament (Clark, 1993), and those traits have been associated with more responsive, positive parenting (Belsky & Barends, 2002; Clark et al., 2000).

### Method

Because many empirical details were very similar to those in Study 1 (recruitment, assessments of infants' individuality and mother-child relationship, data aggregation, etc.), their description will be brief. All details are available from Grazyna Kochanska.

The mothers' personality self-reports and the infants' temperament measures were collected when the children were 9 months old. Observations of the mother-child relationship in naturalistic contexts were collected at 9, 14, 22, 33, and 45 months. All descriptive data appear in Table 4.

### Participants

Mothers ( $N = 112$ ) of 9-month-old infants (56 girls) were recruited from the same community as in Study 1. The socioeconomic and demographic characteristics of the sample were also similar, except that ethnicity was less diverse (here, 97% of mothers were White; see Kochanska et al., 1998, for details). The mothers and children returned for multiple assessments over the next 5–6 years; here, we report the data collected when children were 9 months, 14 months ( $N = 108$ , 53 girls), 22 months ( $N = 106$ , 53 girls), 33 months ( $N = 104$ , 52 girls), and 45 months ( $N = 101$ , 49 girls). The 2-hr session at 9 months took place in the home; all other sessions (one at 14 months, two at each of the following assessments, 2–3.5 hours) were in the laboratory.

### Assessment of Mothers' Personality

The mothers completed the SNAP (Clark, 1993), a factor-analytically derived self-report designed to assess trait dimensions important in the domain of personality disorders. The SNAP includes 12 specific or primary trait scales and three temperament scales that capture more general affective traits. In this article, we used the scales of Mistrust, Manipulativeness, Aggression, Dependency, Entitlement, and Workaholism. Their reliabil-

ties (Cronbach's alpha), in six different samples with sizes varying from 76 to 523, ranged as follows: .79–.88 for Mistrust, .76–.84 for Manipulativeness, .84–.89 for Aggression, .76–.86 for Dependency, .73–.83 for Entitlement, and .76–.84 for Workaholism (Clark, 1993). In a sample of 561 community-dwelling adults from the same town as the mothers, the respective alphas were as follows (with all adults first and women only in parentheses): .85 (.82), .76 (.76), .84 (.85), .77 (.82), .76 (.70), and .78 (.78).

### Relations Among the Measures of Maternal Interpersonal Traits

Among the 15 correlations, 7 were significant: Mistrust correlated with higher Manipulativeness, Aggression, Dependency, and Workaholism (.25, .35, .19, and .41). Aggression correlated with Workaholism (.20). Dependency related to lower Entitlement (.21).

### Assessment of Infants' Temperament: Joy, Anger, Fear, and Attention

The paradigms, coding, measures, and data aggregation procedures were extremely similar to those in Study 1 (for details, see Kochanska et al., 1998) and so are described only briefly. There were three joy episodes, three anger episodes, four fear episodes, and one attention episode. Episodes were administered during the home session at 9 months, interspersed with other contexts.

### Joy

The three joy episodes included puppets, peek-a-boo with mother, and pop-up toy. The procedures, coding, and data aggregation (within and across episodes, to produce one final joy score) were analogous to those in Study 1. Reliabilities, kappas, ranged from .85 to .98 for discrete behaviors and intensity judgments; latency to smile was coded within 1-s difference for 94% of judgments. Cronbach's alpha for the puppets overall score was .91; for peek-a-boo, .87; and for pop-up toy, .92. The three scores were modestly interrelated: Correlations ranged from .17 (marginal) to .35 ( $p < .001$ ). They were aggregated into an overall joy score.

### Anger

The three anger episodes included arm restraint, car seat, and toy retraction. The kappas for the discrete anger behaviors ranged from .63 to 1.00, and for the intensity codes, from .62 to .83; 97% of the latencies to the first anger expression were within 1-s difference. Upon the aggregation of codes, Cronbach's alphas were .87 for arm restraint, .81 for car seat, and .74 for toy retraction. Episode scores were weakly interrelated, with  $r$ s ranging from .05 to .18 (marginal). Nevertheless, to be consistent with the other temperament scores, they were aggregated into an overall anger score.

### Fear

The fear episodes included stranger approach, unpredictable toy (three trials), masks (four trials), and parasol opening (three trials). The reliabilities of coding, kappas, ranged from .63 to 1.00 for the discrete fear behaviors and from .64 to .85 for the intensity codes; 94% of latencies to the first fear expression were coded within 1 s. Once the codes were aggregated, Cronbach's alphas were .79 for stranger approach, .77 for unpredictable toy, .77 for parasol opening, and .81 for masks. Episode scores were interrelated: Correlations ranged from .20 ( $p < .05$ ) to .47 ( $p < .001$ ), and the scores were aggregated to produce an overall fear score.

Table 4  
Descriptive Data for the Measures in Study 2

Measure	<i>M</i>	<i>SD</i>	Range
Infant temperament, 9 months <sup>a</sup>			
Joy	0.00	0.62	–1.66–1.28
Anger	0.00	0.48	–1.50–1.09
Fear	0.00	0.47	–1.14–1.41
Attention	0.00	0.78	–1.29–3.11
Mother interpersonal traits, 9 months			
Mistrust	3.59	3.50	0–17
Manipulativeness	2.48	2.23	0–13
Aggression	3.73	3.16	0–14
Dependency	4.85	3.69	0–16
Entitlement	6.78	2.97	0–15
Workaholism	6.63	3.56	1–15
Qualities of mother-infant relationship, 9–45 months <sup>b</sup>			
Shared positive affective ambience	.73	.11	0.36–0.92
Mother responsiveness	–.04	.37	–1.23–0.78

<sup>a</sup> Scores represent means of standardized constituent variables. <sup>b</sup> Means across the assessments at 9, 14, 22, 33, and 45 months.

### *Focused Attention*

The attention episode was assessed in the blocks paradigm, analogous to Study 1. Reliabilities, kappas, for the intensities of attentional behaviors ranged from .81 to .93; 93% of the latency judgments were coded within 1 s. Those were aggregated into an overall focused attention score.

### *Relations Among the Measures of Infants' Emotionality and Focused Attention*

By and large, the three emotion scores and attention were unrelated. The intercorrelations ranged from .02 to .14.

### *Assessment of the Mother–Child Relationship*

#### *Shared Positive Affective Ambience*

The procedures and coding, which were analogous to those in Study 1, were applied at 9, 14, 22, 33, and 45 months. Approximately 200 min cumulatively were coded for each mother–child dyad, during multiple naturalistic interactions at home and in the laboratory.

Average kappas at each assessment ranged from .68 to .87 for mother affect and from .68 to 1.00 for child affect. Shared positive affect scores were longitudinally stable from 9 to 45 months. Correlations were as follows: from 9 to 14 months, .25 ( $p < .01$ ; for all other correlations,  $p < .001$ ); from 14 to 22 months, .35; from 22 to 33 months, .62; and from 33 to 45 months, .59 (all other correlations—among the nonconsecutive assessments—were also significant,  $ps < .001$ ). Thus, the scores were aggregated across all assessments (Cronbach's alpha was .78).

#### *Maternal Responsiveness to the Child*

Procedures, coding, and data aggregation were analogous to those in Study 1. Maternal responsiveness was coded for each 60 s in mother–child interactive contexts at 9, 14, 22, 33, and 45 months (a total of 326 min per dyad), using a comparable coding system; although more types of child signals were coded than in Study 1, this had no impact on the final score.

Reliabilities, kappas, for the judgments of the presence of child signals in a segment were .62–.96; for identifying the type of signal, .60–.83; and for the quality of maternal response, .68–.81. Using similar tallying and weighing procedures, we created one composite score for each time of assessment.

The responsiveness scores were longitudinally stable. Correlations were as follows: from 9 to 14 months, .28; from 14 to 22 months, .42; from 22 to 33 months, .32; from 33 to 45 months, .40 (five of the six correlations among the nonconsecutive assessments were also at least marginally significant, and ranged from .18,  $p < .10$ , to .36,  $p < .001$ ). Thus, the scores were averaged into one overall maternal responsiveness score from 9 to 45 months (Cronbach's alpha was .65) to be used in most analyses.

## Results

We first examined the correlations between maternal interpersonal traits and child temperament. We followed with two regressions, predicting, respectively, shared positive affect and responsiveness (each the cumulative 9–45-month measure). Predictors included child gender, early temperament, and maternal SNAP scores on the interpersonal dimensions. Finally, we explored developmental patterns of the prediction: We examined how infant gender and temperament and the maternal SNAP scores at 9 months predicted their relationship at each assessment (9, 14, 22, 33, and 45 months).

### *Correlations Between Infants' Temperament and Mothers' Personality*

There was only one significant correlation between mothers' interpersonal SNAP traits and infant temperament. Infants of mothers high on Mistrust were less fearful,  $r(111) = -.27$ ,  $p < .01$ .

### *Infants' Temperament and Mothers' Personality as Contributors to Their Relationship*

The results, shown analogously to Study 1, appear in Table 5 ( $R^2$ ,  $\Delta R^2$ , and  $F_{ch}$  are shown for each step;  $F$  and beta are shown for each predictor in the final equation).

For each of the two dimensions of the mother–infant relationship, the child's temperament and the mother's personality jointly explained a significant portion of the variance (17% and 23%). Contrary to Study 1, there was no evidence of significant child temperament effects on the cumulative measures of shared positive ambience and maternal responsiveness across the first 4 years (9 to 45 months). Maternal interpersonal personality traits made a significant contribution to shared positive affective ambience (17%) and to responsiveness (22%). There were no effects of child gender.

#### *Shared Positive Affective Ambience*

Two maternal traits predicted shared positive affective ambience from 9 to 45 months. In dyads where mothers were highly mistrustful, ambience was less positive, and in those where they were high on Workaholism, ambience was more positive. There were also two marginal effects: Dependency predicted more positive ambience, and Manipulativeness predicted less positive ambience.

#### *Maternal Responsiveness*

Four maternal traits significantly predicted responsiveness from 9 to 45 months. Again, mothers who were highly mistrustful and manipulative were less responsive. Mothers who were high on Dependency and on Workaholism were more responsive to their children.

### *A Developmental Approach to Prediction: A Descriptive Analysis*

To explore how infants' and mothers' individualities predict their relationship over the first 4 years, we first created an overall measure of "positive relationship"—a composite of (standardized) shared positive ambience and maternal responsiveness at each of the assessment points. We then conducted five regressions; in each, gender was entered first, followed by a block with the infant temperament scores and then a block with the interpersonal SNAP scales. The percentage of variance ( $\Delta R^2$ ) in the positive relationship explained by infant temperament remained low through the first 4 years: at 9 months, 3%; at 14 months, 6%; at 22 months, 2%; at 33 months, 4%; and at 45 months, 1% (none significant). In contrast, the percentage of variance explained by maternal personality showed an upward trend: 13%, 7%, 21%, 24%, and 18%, respectively (all significant except at 14 months).

Table 5  
*Child's Temperament and Mother's Interpersonal Traits as the Predictors of Their Relationship From 9 to 45 Months (Study 2)*

Step and variable	Dependent variables: Qualities of mother-child relationship						
	Shared positive ambience			Mother's responsiveness			
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	
Step 1: Child gender	-.07	.01	.01	.00	.00	.00	
Step 2: Child temperament (at 9 months)		.04	.03		.04	.04	
Joy	-.01			-.12			
Anger	-.14			.03			
Fear	-.03			.01			
Attention	-.05			.03			
Step 3: Mother interpersonal traits		.21	.17**		.27	.23***	
Mistrust	-.36**			-.38***			
Manipulativeness	-.19			-.22*			
Aggression	-.01			-.04			
Dependency	.17			.24**			
Entitlement	-.08			.10			
Workaholism	.24*			.22*			
Overall		$F(11, 99) = 2.34^*$			$F(11, 99) = 3.28^{***}$		

Note. Beta values are from the final equations (with all predictors entered).

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

## Discussion

In Study 2 we adopted a theoretical perspective that assumes continuity between personality disorders and normative individual differences in personality. We relied on the assessment instrument developed within that approach. To our knowledge, this is the first time the SNAP (Clark, 1993) has been used in research on parenting.

Given that personality disorders are clearly reflected in interpersonal functioning, the dearth of information on how they impact parenting is a surprising and significant gap. The extant research is based on case studies (Norton & Dolan, 1996) or on work on mothers with comorbid affective disorders (DeMulder, Tarullo, Klimes-Dougan, Free, & Radke-Yarrow, 1995). Our study included a community sample of well-functioning mothers, whose scores on the interpersonal traits were even lower than those obtained in normative female college samples (Clark, 1993); therefore, the findings may potentially bridge research on personality disorder and that on personality.

We found meaningful links between four, out of the studied six, mothers' interpersonal traits and their relationship with their children across the first 4 years. The dimensional nature of the assessment instrument allows for making tentative hypotheses for future research with clinical samples, where the SNAP scales' scores would be both higher and more variable.

The findings were relatively consistent across both assessed parameters of the mother-child relationship. Mothers who described themselves as mistrustful, cynical, and suspicious developed less positive and less responsive relationships with their children. These findings support and complement two non-mutually exclusive bodies of research.

Psychometric data in personality research indicate that Mistrust is strongly related to negative temperament, negative emotionality, Neuroticism, and low Agreeableness (Clark, 1993). Multiple studies have shown that those traits, in turn, predict less adaptive

parenting (Belsky & Barends, 2002; Cummings & Davies, 1994; Goodman & Gotlib, 1999). This relation was also found in our sample, for which NEO-FFI data were available:<sup>4</sup> Mistrust correlated with Neuroticism and Agreeableness at .51 and  $-.43$  ( $p < .001$ ).

The attachment tradition provides a convenient perspective on Mistrust. High scorers are suspicious of others, expecting to be disappointed or betrayed; are alert for signs of threat and betrayal; and often distance themselves from relationships and avoid intimacy. From the attachment perspective, their behavior, affect, and cognition reflect internal working models of relationships that lack fundamental security. In contrast, low scorers are trusting, stable, and secure in their relationships, and confident that they can count on their partners. They have secure internal models of relationships, which they see as a reliable source of comfort and support. Growing research on intergenerational transmission of attachment links parents' internal working models of self and relationships with their functioning in the parental role (Vondra & Belsky, 1993). Insecure parents often fail to be warm, responsive, and affectively positive, and they in turn promote insecure attachment in their children.

Workaholism was linked to positive outcomes in both aspects of the mother-child relationship. In nonclinical samples, across multiple studies, Workaholism has been consistently related to Conscientiousness in measures based on Big Five traits (Clark, 1993), although this link was not found in our sample. The essential dimensions of Conscientiousness—responsible, well-organized, planful, and purposeful—are all related to adaptive parenting (Belsky & Barends, 2002; Clark et al., 2000; Cumberland-Li et al.,

<sup>4</sup> The NEO-FFI data for mothers in Study 2 were not included in this article, because their links to mothers' responsiveness at 14 months have been published in Clark et al. (2000). Thus, it would have been inappropriate to include them again.

2003). Further, in nonclinical samples, Workaholism has also been linked to Positive Temperament, describing an energetic, enthusiastic, cheerful, and optimistic approach to life (Clark, 1993), traits also associated with adaptive parenting (Belsky & Barends, 2002). Perhaps at very high levels, Workaholism may interfere with satisfying social relationships, owing to a person's supreme commitment to professional goals. In this study, however, the average scores were relatively low.

Mothers' Manipulativeness related to lower responsiveness and (marginally) less positive ambience. A self-oriented and self-promoting approach to relationships and a disregard for the welfare of others, typical for high scorers, interfere with the parental role, which requires selflessness and concern for another (Dix, 1992). Further, SNAP validation work has revealed that Manipulativeness is consistently associated with low Agreeableness in measures based on Big Five traits (in our sample,  $r = -.27$ ,  $p < .01$ ), with psychoticism in the Eysenck Personality Questionnaire (Clark, 1993), and with disinhibition in the General Temperament Survey (Clark & Watson, 1990). All of those traits, in turn, have been linked to maladaptive parenting.

Mothers who described themselves as higher on Dependency were more responsive to their children and created a (marginally) more positive affective ambience when interacting with them. In his review, R. F. Bornstein (1992) argued that evidence from developmental, social, and clinical studies suggests that dependency is associated with affiliative behavior and sensitivity to interpersonal cues, both serving the central goal of dependent persons: to maintain nurturant, supportive relationships. Although maladaptive in social contexts that require autonomy and self-reliance, dependency may be quite adaptive in the context of forming a close, mutually binding, and warm relationship with a young child.

We found no evidence of the anticipated associations between Aggression and Entitlement and the qualities of the mother-child relationship. This may have been due to the shared variance among the traits, particularly regarding Aggression, which was associated with both Mistrust and Manipulativeness, as in other female samples (Clark, 1993). Because both Mistrust and Manipulativeness predicted the outcome measures, once their effects were controlled, the impact of Aggression disappeared.

The descriptive developmental analyses showed that the effects of maternal personality were remarkably long lasting. Mothers' interpersonal scale scores, obtained during the first year of parenting, predicted the quality of their relationship with their children well into the preschool years. The relations did not diminish—on the contrary, they appeared to grow stronger—with the passage of time, as the dyadic relationship pattern coalesced.

Surprisingly, we did not find links between the characteristics of infants' individuality and the mother-child relationship. This may have been due to the fact that the latter was assessed over an extended period (from 9 to 45 months). Stability of early temperament in the first years of life is modest (Kochanska, 2001; Rothbart & Bates, 1998). Perhaps the concurrent effects of the infant's characteristics on the relationships are most salient. As a result of bidirectional transactions unfolding over time, which involve mother and child influencing each other, the effect of temperament assessed in infancy might no longer be detected after several years.

To examine this possibility, we explored the effects of the infant's personality in two additional regressions. We used only the 9-month measures of shared positive ambience and responsiveness as the dependent variables. Although as a block, the infant's characteristics explained 6% of variance in shared positive ambience at 9 months, which was not significant, the effects of each characteristic, although modest, were comparable to the findings for mothers in Study 1. Positive ambience was marginally higher in dyads with infants who were more joyful,  $F(1, 106) = 3.37$ ,  $\beta = .18$ ; less anger prone,  $F(1, 106) = 2.93$ ,  $\beta = -.17$ ; and more fearful,  $F(1, 106) = 2.59$ ,  $\beta = .16$ . There were no findings, however, for maternal responsiveness assessed at 9 months, which is difficult to interpret. And there was no evidence of the influence of child temperament on mother-child positive relationship examined at the successive assessments. Those analyses further illustrated the absence of associations between child's temperament in infancy, examined as a block, and quality of the mother-child relationship over time.

## GENERAL DISCUSSION

The measures of the parent-child relationship and children's individuality in the two studies were very similar: They were all based on behaviors observed in naturalistic yet scripted contexts, quantified using comparable coding systems. The approach to the assessment of parental personality was based on the Big Five in Study 1 and on the view of personality traits on a continuum linking adaptive and nonadaptive personality in Study 2. The two approaches are compatible: The Big Five model served as a conceptual framework for the development of the SNAP (Clark, 1993). The designs addressed complementary questions: Study 1 examined mothers, fathers, and their just emerging relationship with their 7-month-old children. Study 2 involved mothers only and examined their relationship with their children during the first 4 years (from 9 to 45 months).

Overall, cumulative findings regarding parental personality were straightforward. In both studies, parents' personality traits explained a significant proportion of variance in the shared positive affective ambience permeating their interactions with their children, and in their responsiveness to their children's cues. The effects were relatively similar across the studies and the outcome measures, ranging from 11% to 23% for mothers in Studies 1 and 2 and from 11% to 14% for fathers in Study 1.

The findings for the mothers in both studies further elucidate and support the conceptual and empirical kinship between the Big Five, explored in Study 1, and the interpersonal traits describing the continuum between adaptive and nonadaptive personality, explored in Study 2. Neuroticism in Study 1 and its conceptual and empirical cousin, Mistrust, in Study 2, predicted less positive affective ambience between mother and child. Empathy predicted maternal responsiveness in Study 1. Mistrust and Manipulativeness predicted less responsive parenting in Study 2; high scorers on both are unempathic and likely to disregard and dismiss others' feelings and welfare. Workaholism predicted more positive and more responsive parenting in Study 2, and Conscientiousness, its conceptually and empirically corresponding Big Five trait, predicted more consistent tracking in Study 1.

Do the interpersonal traits make unique contributions to parenting, over and above the Big Five, or are their effects merely a

reflection of their overlap with the Big Five? This is an important question for future research, one that can be answered only with both sets of measures examined together.

We preliminarily addressed this question, given that the data on the Big Five traits and Empathy had been collected along with the SNAP traits in Study 2 (although they were excluded from this article; see Footnote 4). We entered those Big Five traits and the interpersonal traits in two additional regressions, predicting mother–child shared positive ambience and responsiveness from 9 to 45 months. Child temperament and gender were not included.

The impact of the interpersonal traits was significant: They explained 12% of variance in positive ambience and 14% in responsiveness, above the impact of the Big Five and Empathy. In the final equation, Mistrust and Entitlement significantly predicted less positive ambience, and Workaholism and Dependency predicted more positive ambience. Mistrust predicted less responsive parenting, and Workaholism and Dependency predicted more responsive parenting.<sup>5</sup>

One striking difference in the two studies concerned the effects of infant temperament. In Study 1, infant qualities made a significant contribution to all three parameters of the relationship with the mother and shared positive ambience with the father. In Study 2, there were no effects. As we argued earlier, this may have been due to the difference in the timing of the assessment of the mother–child relationship—concurrent with the child personality measures in Study 1 but measured over the 3 years in Study 2 (there was some support for this explanation for the positive ambience). Also, the measures of joy differed: In Study 1, the five episodes may have yielded a more robust measure of joy than the three episodes in Study 2 (recall that joy was a significant predictor of all three aspects of mother–child responsiveness in Study 1). Future work should pursue further the joint contributions of parent and child characteristics.

Another important future question concerns differences between mothers and fathers, a pattern that has been reported by others as well (Levy-Shiff, 1999). Although the parent's personality as a whole had similar effects in women and men, different traits were salient: Neuroticism, Empathy, and Conscientiousness for mothers; Agreeableness, Openness, and Extraversion for fathers. Those effects were unlikely to be due to differences in the mean scores on the traits. There were few significant differences between men's and women's mean scores: Mothers had higher scores on Neuroticism and Agreeableness. Most likely, explanations will be linked to differences in mothers' and fathers' involvement with the young child (Parke & Buriel, 1998), considered within the ecological perspective on the family.

In this context, however, caution is needed. Our model-fitting analyses of the differential determinants of the child's relationships with the two parents indicate that the differences are likely small and need to be replicated. Those analyses, which complemented the multiple regressions, indicated that whereas assuming such differential effects significantly improved the fit of models predicting shared positive ambience and responsiveness, models that assumed similarity showed adequate fit.

Future research should focus on processes linking parental personality with the parent–child relationship, which may operate at several levels. Personality may operate through multiple psychological mediators within the parent (Belsky & Barends, 2002). Parents with different personality traits may be more or less prone

to positive or negative mood, which in turn influences their parenting (Dix, 1992; Goodman & Gotlib, 1999). Parental personality may influence their expressivity and, thus, the shared affective ambience within the parent–child dyad (Cumberland-Li et al., 2003).

Parents' personality traits may also influence their attributions for child behavior, and feeling efficacious or helpless as a parent, and this in turn impacts the relationship (Belsky & Barends, 2002; Bugental & Happaney, 2002). Further, parents' personality may affect their relationship with each other (Asendorpf & Wilpers, 1998). Many studies from the ecological perspective, viewing the family as a system of interlocking relationships (Belsky, 1984), have linked marital relationship with parenting (Parke & Buriel, 1998). Finally, heritability may play a role in any relation involving parents' and children's individualities and relationship (Deater-Deckard & O'Connor, 2000). Parental personality is a critical influence on socialization and parenting (Belsky, 1984). The integration of developmental and personality research holds promise for the future.

<sup>5</sup> We also conducted a regression in which we examined the impact of the SNAP specific interpersonal scales on shared positive ambience and responsiveness above and beyond the impact of three general temperament scales, which are also part of the SNAP: Negative Temperament, Positive Temperament, and Disinhibition. In the final equation, the temperament scales did not predict the outcomes, whereas the interpersonal scales, particularly Mistrust, continued to be significant predictors.

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