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Maternal Personality: Longitudinal Associations to Parenting Behavior and Maternal Emotional Expressions toward Toddlers

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SYNOPSIS

Objective—Longitudinal associations among maternal personality, emotional expressions, and parenting were examined.

Design—Maternal parenting (sensitivity and intrusiveness) and positive emotional expressions were observed during a free-play session with toddlers at 18 (T1, $n = 246$) and 30 (T3, $n = 216$) months. Mothers completed a personality measure at T1 and a questionnaire measuring their emotional expressiveness (positive and negative) when toddlers were 24 months old (T2, $n = 213$).

Results—Dimensions of maternal personality and maternal emotional expressiveness were related to individual differences in maternal parenting behaviors, in particular to maternal sensitivity. Conscientiousness and Agreeableness at T1 were positively associated with observed positive emotional expressions at T1. Agreeableness, Openness to Experience, and Extraversion at T1 also were positively related to positive emotional expressions reported by mothers at T2. Maternal positive emotional expressions (T1 and T2), in turn, were associated with more sensitive behavior observed with toddlers at T3.

Conclusion—In addition to direct effects of maternal personality on maternal parenting, mothers' emotional expressiveness was found to be a possible pathway for explaining relations of maternal personality and parenting.

INTRODUCTION

Maternal parenting interactions high in sensitivity and low in intrusiveness have been linked to a number of positive outcomes in children, such as secure parent - child attachment (Ainsworth, Blehar, Waters, & Wall, 1978; De Wolff & van IJzendoorn, 1997), more prosocial behavior (Janssens & Dekovic, 1997), fewer behavior problems (Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004), and more positive peer interactions (Mize & Pettit, 1997). Maternal parenting that is high in sensitivity and low in intrusiveness may be particularly important during toddlerhood. Toddlers are learning self-regulation and moving away from total reliance on external regulation from caregivers (Kopp, 1982). In addition to seeking more autonomy, toddlers exhibit dramatic increases in cognitive, language, and physical development (Kopp & Neufeld, 2003; Sroufe, 1995). Successful parenting during this period should focus on supporting toddlers' successful negotiation of these developmental tasks (Kopp, 1982; Sroufe, 1995). It appears to be especially important for mothers to meet their toddlers' needs for autonomy while recognizing when external control is needed and providing such control in a sensitive, non-intrusive manner.

Even though maternal parenting behaviors are important to toddlers' optimal development, factors associated with individual differences in levels of maternal sensitivity and intrusiveness

often are not considered. Belsky (1984) developed a model examining the determinants of sensitive, developmentally appropriate parenting and identified parent personality as one potential key determinant. Personality measures capture enduring patterns of thoughts, feelings, and actions (McCrae & Costa, 1999). These enduring patterns may be likely to influence the levels of sensitive and intrusive behaviors used by mothers. Thus, one goal of the current study was to determine direct relations between personality and maternal parenting behaviors.

Understanding the process underlying relations between personality and parenting is also important. This association may be mediated by maternal emotional expressiveness, which is also related to children's developmental outcomes (Halberstadt, Crisp, & Eaton, 1999). Individual differences in maternal emotional expressions during interactions with children may be associated with parent personality. Emotional expressiveness may be one of the pathways accounting for associations between maternal personality and parenting. The second goal of the current study was to examine the relation of maternal emotional expressiveness to maternal personality and parenting behaviors and to examine the potential mediating role of mothers' emotional expressions in the association of personality to parenting.

Maternal Personality

Personality researchers have developed a general taxonomy for classifying personality dimensions that has been labeled the Five-Factor Model or the Big Five (Costa & McCrae, 1997; John & Srivastava, 1999). The Big Five personality dimensions integrate previous research and classification systems to represent a diverse system of personality characteristics within a common framework (John & Srivastava, 1999). The five dimensions include Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience, although the labels of the dimensions often, vary depending on the instrument used. Some of these personality dimensions may promote sensitive, non-intrusive parenting, whereas other dimensions may be associated with problems in displaying responsive parenting (Belsky & Barends, 2002).

Compared to the other Big Five dimensions, Neuroticism has received the most attention in the literature with regard to parenting behaviors (Belsky & Barends, 2002). People high in neuroticism tend to be easily distressed, anxious, tense, nervous, and lack emotional stability. These characteristics are likely to interfere with sensitive parenting because parents high in neuroticism may become focused on themselves and their own distress, which may not allow them to be sensitive to their children's needs and may even be related to intrusive parenting. Often researchers examining relations between Neuroticism and parenting have focused on samples with depressed mothers; however, researchers studying non-clinical samples generally have found that higher levels of maternal neuroticism were related to lower levels of warmth and sensitivity and higher levels of intrusiveness or power assertion (Belsky, Crnic, & Woodworm, 1995; Clark, Kochanska, & Ready, 2000; Kochanska, Clark, & Goldman, 1997; Losoya, Callor, Rowe, & Goldsmith, 1997).

Mothers high on extraversion may be expected to be more sensitive to their toddlers' cues because people high in extraversion tend to be affectionate, optimistic, talkative, and energetic. Rothbart, Ahadi, and Evans (2000) found that individuals high in extraversion were high in an adult temperament factor that included sociability, high intensity pleasure, activity level, and pleasure reactivity. Extraverted individuals enjoy social interactions, which could include interactions with children, but findings in the research on the relation of Extraversion to parenting have been mixed. Belsky and Barends (2002) reviewed research supporting a positive relation between Extraversion and responsive care; however, Kochanska and colleagues (Clark et al, 2000; Kochanska, Friesenborg, Lange, & Martel, 2004; Kochanska et al, 1997) have generally not found relations between Extraversion and maternal responsiveness. Although

parenting interactions are a social activity, social exchanges with young children may not be stimulating enough to meet the needs for social interaction for mothers high in extraversion (Belsky & Barends, 2002). Kochanska and colleagues (Clark et al., 2000; Kochanska et al., 1997) even found a positive relation between Extraversion and maternal power assertion. These researchers speculated that extraverted mothers may be more engaged in interactions with children, even, though that engagement includes power assertive behaviors, whereas mothers low in extraversion are more withdrawn during interactions with children. The mixed findings on the association of Extraversion to maternal parenting behavior also may be because another factor mediates the association.

Social behavior also is related to the Big Five factor of Agreeableness. This personality dimension includes traits such as being good-natured, cooperative, trustful, and forgiving, and prosocial tendencies are often seen as one form of Agreeableness (Graziano & Eisenberg, 1997). Graziano and colleagues (Graziano, Hair, & Finch, 1997; Jensen-Campbell & Graziano, 2001; Tobin, Graziano, Vanman, & Tassinari, 2000) have proposed that the social behaviors associated with Agreeableness are quite different from those related to Extraversion. According to their model, Extraversion is related to the impact of social behaviors (i.e., extraverts are high in sociability, tend to actively seek out social interactions, and are more likely to have an impact on others in social situations), whereas Agreeableness is related to desires to maintain positive social relationships and act in ways that promote those relationships. Graziano and colleagues have found that college students and adolescents high in agreeableness were less competitive and were more likely to endorse strategies focused on compromise than were those low in agreeableness. These findings support the idea the personality dimension of Agreeableness fosters behaviors to support social relationships. Parents high in agreeableness would be expected to engage in more sensitive and less intrusive behaviors because they seek to have harmonious interactions with children, are better able to follow others' cues (an index of sensitivity), and strive to maintain positive social interactions with their children. Consistent with this view, researchers have found Agreeableness to be positively related to sensitivity and warmth and negatively related to detachment and power assertion (Belsky et al., 1995; Kochanska et al., 1997).

Predictions for the remaining two Big Five factors, Conscientiousness and Openness to Experience, are not as straightforward (Belsky & Barends, 2002). The dimension of Conscientiousness includes constraint, control, being orderly, responsible, dependable, organized, and following rules and norms. High Conscientiousness has been found to be associated with more maternal responsiveness and support and less power assertion with toddlers (Clark et al., 2000). Losoya et al. (1997) also found that high levels of conscientiousness were associated with more positive support and less negative control reported by parents of older children. These findings support the idea that organized, purposeful, and skilled personality traits may facilitate responsive parenting. Whereas more organization and a more structured, less chaotic environment may promote more effective childrearing strategies, extremely high levels of conscientiousness may place too many demands on young children (Belsky & Barends, 2002) and thus may be linked with intrusive or over-controlling behaviors. Rothbart et al. (2000) found that individuals high in conscientiousness were high in the adult temperament factor of effortful control, which can include focusing and shifting attention and controlling behavior (Ahadi & Rothbart, 1994; Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Rothbart et al., 2000). Higher levels of effortful control may allow mothers to be more effective in their parenting techniques with children because they can effectively control their attention and behaviors depending on what is necessary in mother - child interactions. Alternatively, mothers who demonstrate too much control over their own behaviors may be likely to display high levels of control in their parenting behaviors, which may relate to more intrusive and less sensitive parenting.

Finally, people high in openness to experience are those high on originality, open-mindedness, intellectual interests, imagination, broad interests, and enjoyment of new experiences. Mothers who are more open-minded, reflective, and imaginative may be able to be more sensitive as parents; however, mothers too high on Openness may be more focused on new experiences and interests instead of being a sensitive, non-intrusive mother. Again, in the few studies that have considered this aspect of personality, findings have been mixed. Losoya et al. (1997) found that Openness to Experiences was associated with more positive support and less negative control reported by parents of school-aged children, but Clark et al. (2000) found that Openness to Experience was not associated with observed responsiveness or power assertion with toddlers.

The literature on the associations between personality and parenting has not produced a consistent overall picture of how personality dimensions relate to parenting behavior. The literature also has been criticized for several reasons. Investigators examining the association of parenting with personality often have not used a systematic measure of personality (Belsky & Barends, 2002) and instead have extrapolated personality characteristics from other measures. Because the Big Five is generally accepted within the field of personality psychology, Belsky and Barends (2002) advocated for the use of the Big Five factors to allow for comparison across studies and, hopefully, a more consistent picture of findings. Often investigators who have examined links between maternal personality and parenting have relied on extreme and psychopathological samples (i.e., depressed mothers; Belsky & Barends, 2002). More work is needed to examine how variations within the normal range relate to individual differences in parenting behaviors. In the current study, we focused on the relations of maternal personality to parenting behavior in a longitudinal sample of toddlers. In addition to observing maternal sensitivity and intrusiveness during interactions with toddlers at both 18 and 30 months of age, we used a standardized measure of the Big Five factors.

Maternal Emotional Expressions

Maternal, emotional expressiveness can play a large role in emotion socialization (Eisenberg, Cumberland, & Spinrad, 1998) and thus is most likely related to parenting behaviors. Positive emotions are likely to allow for more sensitive, non-intrusive parenting interactions, whereas negative emotions may be related to more intrusive and less sensitive parenting behaviors. If maternal negative emotions have been aroused, the ability to display sensitive, non-intrusive parenting is likely to become increasingly more difficult; however, sensitive and non-intrusive parenting may be easier to use if maternal positive emotions are more prevalent (Dix, 1991). Emotions expressed by mothers during interactions with children are most likely tied to their personality; therefore, the relation between maternal personality and parenting behavior may be mediated by maternal emotional expressiveness (Belsky & Barends, 2002).

Costa and McCrae (1980) found that Extraversion was related to the display of positive emotions and that Neuroticism was associated with the display of negative emotions. The association of these two personality dimensions to emotional expressions has received strong support in the literature (e.g., Gross, Sutton, & Ketelaar, 1998; McCrae & Costa, 1991; Shiota, Keltner, & John, 2006; Watson, Wiese, Vaidyn, & Tellegen, 1999). Links between emotions and the other personality dimensions have not received as much attention, but McCrae and Costa (1991) reported that Openness to Experience was positively correlated with both positive and negative emotions and that Agreeableness and Conscientiousness were associated positively with positive emotions and negatively with negative emotions. Shiota et al. (2006) also found that Agreeableness, Conscientiousness, and Openness to Experience were each positively related to aspects of positive emotion. As done in many of the studies reported above (Costa & McCrae, 1980; McCrae & Costa, 1991; Shiota et al., 2006; Watson et al., 1999), researchers often use self-reports of emotional experiences to explore the association between

personality and emotional expressiveness. One of the reasons for relying on self-reports is that the individuals reporting have more access to their feelings than may be observed in the laboratory (Rothbart et al., 2000); thus, we chose to examine the relation of personality to both self-reports and observations of emotional expressiveness in a sample of mothers.

Within the parenting literature, research examining relations of personality to maternal displays of either positive or negative emotions in observations of parent - child interactions or in self-reports of maternal emotional expressiveness within the family has provided additional support for links between maternal emotional expressions and parenting behaviors. Using parents' report of negative affect displayed within the family, Losoya et al. (1997) found that negative affect was negatively related to parent reports of Agreeableness and Emotional Stability (low Neuroticism) but not to Conscientiousness, Extraversion, and Openness to Experience. Belsky et al. (1995) found that Neuroticism was positively related to negative mood reported by mothers and to negative affect displayed by mothers when interacting with toddlers. Additionally, Agreeableness, but not Extraversion, was negatively related to reports of negative mood and observed negative affect with toddlers. These findings seem to indicate that mothers who either report or display more negative emotions *may* be higher on neuroticism and lower on agreeableness. In terms of the relations between parent personality and positive emotional expressions, Belsky et al. (1995) found that both Extraversion and Agreeableness were positively related to maternal reports of positive mood and positive affect displayed by mothers when interacting with toddlers, and Neuroticism was negatively related to positive mood and positive affect. Kochanska et al. (2004) found that maternal reports of Neuroticism, but none of the other Big Five factors, were related to less shared positive affect with infants, after controlling for child sex and child temperament. Following from this literature, maternal emotional expressiveness may be one pathway through which personality relates to parenting behaviors. Personality may be related to emotional expressiveness, and these patterns of emotional expressiveness may, in turn, predict mothers' ability to display more sensitive, non-intrusive parenting behaviors.

The Current Study

The first goal of the current study was to examine the relation of maternal personality to observed maternal sensitivity and intrusiveness with toddlers. Because the sample was a longitudinal sample with three time points, we could examine concurrent and longitudinal relations between maternal personality and parenting behaviors. We expected that Extraversion would be associated with maternal parenting behaviors high in sensitivity and low in intrusiveness, whereas Neuroticism would be related to lower levels of sensitivity and higher levels of intrusiveness. We tentatively hypothesized that Agreeableness, Conscientiousness, and Openness to Experience would be associated with more sensitivity and less intrusiveness observed during interactions with toddlers.

Given associations found between personality and emotional expressions, the second goal of the current study was to examine relations between personality and maternal emotional expressions, both in observations of mother - child interactions and in maternal report of emotional expressiveness within the family. We hypothesized that Neuroticism would be positively related to negative emotions and negatively related to positive emotions, and that Extraversion, Agreeableness, and Conscientiousness would be positively associated with positive emotions and negatively associated with negative emotions. We tentatively hypothesized that Openness to Experience would be positively associated with both positive and negative emotions.

Our final hypothesis was that maternal emotional expressiveness would mediate the association between maternal personality and maternal parenting behaviors, specifically sensitivity and intrusiveness observed during interactions between mothers and their young children. Support

for the idea of parental emotions as a mediator of the association between personality and parenting can be found in Belsky et al. (1995). They examined maternal transient moods as a mediator of the association between maternal personality and parenting behavior. Their results provided some support for maternal positive mood mediating the influence of Agreeableness on maternal cognitive stimulation and detachment. Higher levels of agreeableness in mothers were associated with higher levels of maternal positive mood, which were, in turn, associated with higher levels of cognitive stimulation and lower levels of detachment. Higher levels of neuroticism were also associated with less positive mood, which in turn, was associated with less maternal cognitive stimulation. Although Belsky et al. observed parenting behavior and mood at different time points, composite scores were used, and mediation was not tested over time. In the current study, we used longitudinal data with three time points and tested mediational processes with some of the models using all three data points, which is recommended as a better test of mediation (Collins, Graham, & Flaherty, 1998).

METHODS

Participants

The sample consisted of mothers and their toddlers, who were participating in an on-going longitudinal study. At the 18-month assessment (T1; child mean age = 17.78 months, $SD = .51$; ranging from 16.83 to 19.97 months), 246 mother - child dyads (136 boys, 110 girls) participated, and the sample was representative of the demographics of the recruitment area. The majority of the sample, 80%, was married, and 56% of the mothers worked outside of the home. For maternal ethnicity/race, 71.1% of the mothers were European American, 15.5% were Mexican American/Hispanic, 4.1% were African American, 2.0% were Asian American, 2.0% were Native American, .4% reported other, and 4.9% did not report maternal ethnicity. Mean years of education for mothers was 4.28, $SD = 1.07$ (1 = grade school, 2 = some high school, 3 = high school graduate, 4 = some college, 5 = college graduate, 6 = master's degree, 7 = Ph.D. or M.D.). The median range for family income was \$45,000–\$60,000 per year (range was from less than \$15,000 to over \$100,000).

At T2 (24 months), 213 mothers (114 mothers of boys; 99 of girls) completed questionnaire measures. The participants at T1 were compared to the mothers who did not complete questionnaire measures at T2 in terms of the demographic variables as well as the T1 variables used in the study. Mothers who did not return the T2 questionnaires had less education and lower family income than did mothers who returned the questionnaires, $t_s(230 \text{ and } 218) = -4.45 \text{ and } -2.45, p_s < .01 \text{ and } .02$. Mothers who did not participate at T2 also were more likely to be minority participants, although the finding was marginal, $\chi^2(1, N = 234) = 2.97, p < .09$, and rated themselves lower on conscientiousness and higher on neuroticism, $t_s(242) = -2.76 \text{ and } 2.05, p_s < .01 \text{ and } .04$.

At the 30-month assessment (T3; child mean age = 29.77 months, $SD = .65$; ranging from 27.20 to 31.97 months), 216 mother - toddler dyads (119 boys, 97 girls) participated. Again, the participants at T1 were compared with mothers who discontinued participation at T3. Children not participating at T3 were older at the T1 visit, $t(244) = 2.02, p < .04$. Mothers who participated at T3 had a higher level of education than mothers who did not participate, $t(230) = -2.15, p < .03$. Mothers who participated at T3 also rated themselves higher on conscientiousness, $t(242) = -1.99, p < .05$, than did mothers who discontinued participation. No other differences between T1 and T3 were found in the demographic variables or measures used in the study.

Procedures

Participants were initially recruited from local hospitals in an urban southwestern city. Shortly after giving birth, parents were asked if they would be interested in participating in the study. The first laboratory assessment (T1) was when the children were 18 months of age, although questionnaire measures had been, previously sent to participants. The laboratory assessment was designed to assess the children's emotionality and emotion regulation, patterns of mother-child interaction, and children's early social competence. After completing seven emotion or social competence tasks (if necessary, time was allowed after each task to ensure that toddlers returned to a neutral state), maternal behavior and emotional expressions were observed during a free-play session in which mothers were given a set of attractive age-appropriate toys and were asked to play with their children as they normally would at home for 3 min. Mothers also completed the Big Five Personality Inventory (John, Donahue, & Kentle, 1991) during the 18-month assessment. When the children were 24 months of age (T2), mothers were mailed a packet of questionnaires to complete and return in an envelope provided (although 19% of the mothers did not complete these measures immediately). The Self-Expressiveness in the Family Questionnaire (Halberstadt, Cassidy, Stifter, Parke, & Fox, 1995) was included in the packet. When the children were 30 months of age (T3), mothers were invited to participate with their children in a follow-up laboratory assessment similar to the 18-month assessment. Again, mother-child dyads were observed in a free-play session and were given the same instructions as during the 18-month assessment.

Measures

Maternal behavior—Two measures of maternal behavior, *sensitivity* and *intrusiveness*, were coded from the free play mother-child interactions at both 18 and 30 months. Mothers were rated for sensitivity and intrusiveness on a 4-point scale every 15 sec (Fish, Stifter, & Belsky, 1991), and the average score across the episodes was computed. *Maternal sensitivity* was based on observations of maternal behavior that was appropriately attentive to toddlers, including attention to and contingent responses to their affect and current level of arousal, interests, and abilities. For sensitivity, a score of 1 was given if no evidence of sensitivity was observed, a 2 if minimal sensitivity was observed, a 3 if there was evidence of moderate sensitivity (indicating that mothers were more than minimally tuned into toddler signals), or a score of 4 if mothers were very aware of toddlers, were contingently responsive to their interests and affect, and had an appropriate level of response/stimulation. *Maternal intrusiveness* included instances when mothers were over-stimulating and over-controlling with toddlers, such as giving commands unnecessarily, physically manipulating or restricting toddlers, overwhelming toddlers during interactions, and preventing toddlers from attempting tasks by doing them for the toddlers. For intrusiveness, a score of 1 was given if there was no evidence of intrusiveness, a 2 if intrusiveness was low, a 3 if a moderate level of intrusiveness was observed, and a 4 for high levels of intrusiveness (mothers displayed extreme and/or consistent intrusive behaviors across the episode). Two coders separately coded 20% of the free-play sessions at each age. Reliability intra-class correlations were .81 (T1) and .86 (T3) for sensitivity and .82 (T1) and .81 (T3) for intrusiveness.

Maternal emotional expressions—Maternal observed emotional expressions were also coded from the free play and included *positive* (amount and intensity of smiles and laughter) and *negative* (amount and intensity of impatient and/or unpleasant tone of voice, expressing criticism) expressiveness. Episodes of 15-seconds were scored on a 4-point scale from 1 *none* to 4 *high*, and the 12 episodes were averaged to compute scores for positive and negative emotional expressions. Reliability intra-class correlations for observed maternal emotional expressions were .82 (T1) and .90 (T3) for positive and .87 (T1) and .93 (T3) for negative.

Maternal-reported emotional expressiveness in the family was measured from the Self-Expressiveness in the Family Questionnaire (SEFQ; Halberstadt et al., 1995), which is designed to measure a parent's predominant style of emotional expressiveness in the family. Each item on the SEFQ was rated on a 9-point scale from 1 *rarely express these feelings* to 9 *frequently express these feelings*. Two summary scales were calculated from the SEFQ following procedures outlined by Halberstadt et al. (1995), using 24 items recommended for their short form. The average of the 12 items for each scale was calculated to form the summary scales: *positive* (alpha = .88; "Telling a family member how happy you are.") and *negative* (alpha = .81; "Showing dislike for someone.").

Maternal personality—The Big Five Personality Inventory (BFI) was developed by John et al. (1991) to be a brief inventory that would allow for efficient and flexible assessment of the Big Five dimensions. Even though the number of items is lower (8 to 10 items for each of the scales) than other Big Five measures, the shorter scales avoid problems with boredom and fatigue often experienced by participants when completing measures with more items, and good content coverage and psychometric properties are still maintained in the shortened scales (John, 1990; John & Srivastava, 1999). The BFI also uses short phrases instead of single adjectives, which can be ambiguous or have multiple meanings for parents. Each item on the BFI was rated on a 5-point scale from 1 *disagree strongly* to 5 *agree strongly*, and the average of the items for each scale was calculated to form summary scales. Five summary scores were computed from mothers' answers: *Extraversion* (7 items, alpha = .81; e.g., "Do you feel that you are someone who is outgoing, sociable?"), *Agreeableness* (7 items, alpha = .70; e.g., "Do you feel that you are someone who is considerate and kind to almost everyone?"), *Neuroticism* (7 items, alpha = .78; e.g., "Do you feel that you are someone who gets nervous easily?"), *Conscientiousness* (7 items, alpha = .68; e.g., "Do you feel that you are someone who does a thorough job?"), and *Openness to Experience* (7 items, alpha = .61; e.g., "Do you feel that you are someone who is original, comes up with new ideas?").

RESULTS

Descriptive Analyses

Following procedures in Tabachnick and Fidell (2001), the skewness and kurtosis of all variables were examined, and variables were transformed when necessary. Inverse transformations were applied to maternal intrusiveness at 18 months, transformed mean = $-.78$, $SD = .16$, and at 30 months, transformed mean = $-.83$, $SD = .14$. The means and levels of variability for observed maternal negative emotional expressions were low (see Table 1). Because of the restricted range of observed negative expressiveness, we did not consider these variables in our main analyses.

ANOVAs were calculated to examine child sex differences in maternal behavior, maternal emotional expressiveness, and maternal personality. Mothers were marginally more sensitive at both 18 and 30 months with girls, $M_s = 2.60$ and 2.90 , $SD_s = .59$ and $.47$, respectively, than with boys, $M_s = 2.45$ and 2.77 , $SD_s = .62$ and $.55$, $F_s(1,243; 1,214) = 3.33; 3.48$, $p_s < .07$ and $.06$. Mothers were more intrusive at 30 months with boys, $M = -.80$, $SD = .15$, than with girls, $M = -.85$, $SD = .13$, $F(1,214) = 6.95$, $p < .001$. The ANOVAs for observed (18 and 30 months) and reported (24 months) positive emotional expressiveness were not significant; however, mothers of boys, $M = 3.69$, $SD = .98$, reported using fewer negative expressions than did mothers of girls, $M = 4.02$, $SD = 1.14$, $F(1,211) = 5.17$, $p < .02$. None of the ANOVAs examining sex differences in maternal personality was significant.

Partial correlations (controlling for child sex) were used to examine relations between observed maternal positive emotional expressions and maternal-report of expressiveness within the family, both positive and negative. Observed maternal positive expressions at 18 months were

significantly associated with maternal-report of positive expressiveness at 24 months, $r(206) = .28, p < .001$.

A series of paired t -tests examined changes in maternal behavior from 18 months to 30 months (see Table 1 for the means). Maternal sensitivity significantly increased from 18 months to 30 months, $t(211) = -7.39, p < .01$, and maternal intrusiveness decreased, $t(211) = 3.49, p < .01$. Maternal positive affect decreased from 18 to 30 months, $t(211) = 7.88, p < .01$.

Relations of Maternal Personality to Observed Maternal Behavior

Partial correlation analyses (controlling for child sex) were used to examine the relation of maternal personality to maternal behavior during the free-play session (see Table 2). There was no evidence of significant associations between maternal personality and maternal behavior at 18 months; however, maternal personality reported at 18 months was associated with observed maternal sensitivity 1 year later. Specifically, higher-levels of maternal conscientiousness and agreeableness were linked to higher maternal sensitivity at 30 months.

Regression analyses were used to examine the amount of variance explained in maternal parenting (separate analyses were conducted for each behavior at each age) by all five of the personality dimensions. The criterion variable was maternal behavior, child sex was entered on the first step as a control variable, and the personality dimensions were predictors added on the second step. None of the regression models was significant.

Relations of Maternal Personality to Maternal Emotional Expressiveness

In partial correlations (controlling for child sex) between maternal personality and observed maternal emotional expressiveness, maternal personality was concurrently associated with maternal positive affect observed in the free-play session (see Table 2). Maternal reports of Conscientiousness and Agreeableness were positively associated with more observed maternal positive affect at 18 months. No significant associations were found between maternal personality and observed maternal emotional expressiveness at 30 months.

The relations of maternal personality to maternal reports of emotional expressiveness, controlling for child sex, also are presented in Table 2. Higher positive expressiveness reported by mothers was associated with higher levels of maternal extraversion, agreeableness, and openness to experience. Lower levels of agreeableness and conscientiousness and higher levels of neuroticism were associated with more negative expressions reported by mothers after controlling for child sex.

As with maternal parenting behavior, the amount of variance explained in maternal emotional expressiveness by all five of the personality dimensions was examined in regression analyses (separate analyses were conducted for each measure of expressiveness). In all analyses, the criterion variable was emotional expressiveness, child sex was entered on the first step as a control variable, and the personality dimensions were added on the second step. Observed maternal positive emotion at 18 months, but not at 30 months, was significantly predicted by the personality dimensions, $F(6,237) = 3.58, p < .01, R^2 = .08$. Agreeableness and Conscientiousness were positively related to observed maternal positive emotions at 18 months, $B_s = .22$ and $.14, p_s < .04$ and $.001$. The personality dimensions also significantly predicted mothers' reports of positive, $F(6,201) = 5.94, p < .001, R^2 = .15$, and negative emotional expressiveness, $F(6,201) = 5.70, p < .001, R^2 = .15$. Higher levels of extraversion, agreeableness, and openness to experience, $B_s = .20, .24$, and $.16, p_s < .01, .001$, and $.02$, were associated with higher levels of maternal report of positive emotional expressiveness. Mothers who reported higher levels of negative emotional expressiveness within the family were higher on neuroticism and lower on agreeableness, $B_s = .20$ and $-.18, p_s < .01$.

Mediation Analyses

The following analyses examined maternal emotional expressions, both during the free play at 18 months and as reported by mothers on the self-expressiveness questionnaire at 24 months, as potential mediators of the association of maternal personality to maternal parenting behavior (sensitivity and intrusiveness) during the free play at 30 months. Mediation requires an association between the mediator (maternal emotional expressions) and the dependent variable (maternal parenting behavior at 30 months) when the independent variable (maternal personality measured at 18 months) is controlled (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). Our approach to mediation follows that presented by Collins et al. (1998), where mediation can occur even when the independent variable is not significantly related to the dependent variable (also see MacKinnon 2000; MacKinnon et al., 2002). In this case, mediation would be indirect and viewed as a series of steps where the independent variable is significantly related to the mediator, which is then significantly related to the dependent variable.

Cases where mediation was found are reported in Table 3. Regression analyses were used to examine mediation. In the first set of regression analyses, child sex was entered on the first step as a control variable and maternal personality was entered on the second step as a predictor of maternal emotional expressions. In the second set of regression analyses, child sex was entered on the first step as a control variable and both maternal personality and maternal emotional expressions were entered on the second step as predictors of maternal parenting behavior. Following procedures in MacKinnon et al. (2002), mediation was considered to be significant if, in the first set of regression analyses, maternal personality predicted maternal emotional expression, and if, in the second set of regression analyses, maternal emotional expressions (the mediator) predicted maternal parenting behavior (the criterion variable) when maternal personality was also entered in the regression.

Conscientiousness and Agreeableness predicted maternal positive emotional expressions during free play at 18 months, and positive affect significantly predicted maternal sensitivity at 30 months when maternal personality (Conscientiousness and Agreeableness) was also included in the regression analyses. Observed positive expressions mediated the association of Conscientiousness and Agreeableness to maternal sensitivity at 30 months. There was no evidence of mediation for Openness to Experience, Extraversion, or Neuroticism.

Openness to Experience, Extraversion, and Agreeableness also predicted maternal report of positive expressiveness at 24 months. Positive expressiveness predicted maternal sensitivity at 30 months when maternal personality (Openness to Experience, Extraversion, and Agreeableness, although the beta for positive expressiveness in the regression model with Agreeableness was marginally significant, $p < .08$) was also included in the analyses. Thus, maternal report of positive expressiveness, but not negative expressiveness, mediated the association of Openness, Extraversion, and Agreeableness to maternal sensitivity at 30 months. Evidence of mediation was not found for Conscientiousness or Neuroticism. Also, there was no evidence of mediation for intrusiveness with either observed or reported emotional expressions.

DISCUSSION

The current study examined the role of parent personality in understanding individual differences in maternal parenting behaviors. Additionally, the role of maternal emotional expressiveness was considered in relation to parent personality and as a mediator of the relations of parent personality to parenting behavior. Some support was found for direct links between mother-reported personality and observed parenting behavior, in particular sensitivity displayed when interacting with 30-month-old toddlers. Maternal personality also was related to emotional expressiveness, particularly in regard to mother-reported expressiveness in the

family. Maternal emotional expressiveness was found to be a pathway for understanding some of the associations between maternal personality and maternal parenting behavior. Specifically, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience were associated with expressions of positive affect either displayed or reported by mothers, and the positive emotional expressions, in turn, were related to more maternal sensitivity observed during interactions with toddlers.

Maternal parenting that is high in sensitivity and low in intrusiveness is necessary during toddlerhood to support toddlers' development of self-regulation. Our findings indicate that maternal emotional expressions may be one possible pathway in explaining how maternal personality is related to maternal parenting behaviors. In particular, positive emotional expressions, both as observed and as reported by mothers, were found to mediate the association of Agreeableness to maternal sensitivity, although the association was stronger for observed than for reported positive emotions. Additionally, observed positive expressions mediated the association between Conscientiousness and maternal sensitivity, and reported positive emotional expressions mediated the association of Openness to Experience and Extraversion to maternal sensitivity. These personality dimensions were related to increased positive affect (at 18 and/or 24 months), which in turn were related to increased maternal sensitivity when toddlers were 30 months old. The associations were found longitudinally, providing stronger support for the mediated pathway. Increased maternal positive emotional expressions at earlier developmental periods allowed mothers to display more sensitivity with toddlers at later periods. Mothers who are expressing positive emotion are likely to be more engaged with their toddlers and also are likely to have toddlers who are more engaged with them. Providing sensitive care may be easier because of the increased toddler engagement. Furthermore, toddlers with positive mothers may be socialized to display more positive emotions themselves, which then may make it easier for mothers to display sensitivity when interacting with them.

We also examined direct relations between maternal personality and maternal parenting behaviors. As with previous research (Belsky et al., 1995; Kochanska et al., 1997), mothers who reported higher levels of agreeableness and lower levels of neuroticism (this association was marginally significant, $p < .08$) were more likely to display adaptive parenting, in this case higher levels of maternal sensitivity during interactions with their toddlers at 30 months. These findings support the idea that mothers who are more agreeable and less neurotic are able to be more sensitive with older toddlers, thus demonstrating maternal parenting that will most likely support positive developmental outcomes. Our finding that higher levels of agreeableness were associated with more sensitivity also supports the idea that Agreeableness is related to behaviors that support positive social relationships (Graziano et al., 1997; Tobin et al., 2000). These mothers may be accustomed to interacting with others in a positive and harmonious manner and may be applying these qualities in their relationships with their toddlers. Higher levels of conscientiousness also were related to higher levels of maternal sensitivity at 30 months of age, as has been found by Kochanska and colleagues (Clark et al., 1997; Kochanska et al., 2000). Mothers who were more organized and more structured were more sensitive, which suggests that Conscientiousness relates positively to maternal parenting behavior. Mothers with more effortful control over their behaviors, which may be reflected in high Conscientiousness (Rothbart et al., 2000), may be better at interacting sensitively with toddlers. High Conscientiousness in this sample of mothers did not seem to interfere with mothers' ability to sensitively respond to toddlers and may even support higher levels of maternal sensitivity.

We, however, did not find direct associations between Extraversion and maternal sensitivity, findings which are similar to the work of Kochanska and colleagues (Clark et al., 2000; Kochanska et al., 1997, 2004). The fact that we found associations between parenting and

Agreeableness and not between parenting and Extraversion also supports the idea that the social behaviors related to these two personality dimensions are different (Jensen-Campbell & Graziano, 2001). Extraversion may not necessarily translate into better social relationships or better parenting relationships, whereas Agreeableness does appear to support better parenting relationships.

Our findings indicate that Extraversion may be related to parenting through the emotions displayed by mothers. As discussed above, maternal-report of positive emotional expressions mediated the association of Extraversion to maternal sensitivity. Mothers who are high in extraversion reported more positive emotions within the family. The positive emotional expressions then were related to more sensitive interactions with toddlers at 30 months of age. Traits associated with Extraversion may make it easier to display positive emotional expressions, and these positive expressions may allow mothers to show more sensitivity to older toddlers. High Extraversion may relate to more enjoyment of interactions and social activities (Belsky & Barends, 2002). This enjoyment may be reflected in the mothers' positive emotional expressions, which then allows them to display more sensitive parenting behaviors. Also, mothers and toddlers may be more engaged in their interactions with each other because of the increased maternal positive expressiveness, and the higher levels of engagement may be allowing mothers to be more sensitive in their interactions with toddlers.

Openness to Experience also was not directly related to parenting. In our findings, it did not appear that having broad interests and being open-minded and original was related to either sensitive or non-intrusive parenting. As hypothesized by Belsky et al. (1995), Openness to Experience might not be one of the Big Five factors that influence the parenting of young children, although Openness to Experience was not even considered in their study. Individuals high in openness to experience actively look for new and varied experiences (McCrae & Costa, 1997), and parenting, especially parenting young children, may not provide enough new experiences for mothers high in openness. Whereas our findings did not support a direct link between Openness to Experience and parenting, that association was mediated by maternal report of positive emotional expressions in the family. Our findings support the idea that mothers who were higher on openness to experience also were more likely to display positive expressions within their family, and the higher levels of positive expressiveness then were associated with more sensitivity displayed during interactions with toddlers at 30 months. Again, it appears that sensitive parenting may be easier for mothers to display when positive emotions are more prevalent.

Whereas maternal personality was associated with maternal sensitivity at 30 months, few direct associations were found between maternal personality and maternal sensitivity observed during free play interactions with 18-month-old toddlers. The effects of maternal personality on parenting behavior may get stronger, as found by Kochanska et al. (2004) who reported that the effects of maternal personality were long-lasting and appeared to get stronger as parenting was measured into the preschool years. Perhaps when toddlers are first entering toddlerhood, more support is needed during a free play interaction. When the toddlers are older and able to be more independent, mothers may have more freedom to behave in ways that are more consistent with their personalities because their children no longer need constant support. At 30 months, mothers could choose to be less engaged because their toddlers were able to do more for themselves. We may have been likely to observe more natural patterns of maternal interaction at 30 months, possibility seeing more individual differences in sensitive parenting emerge. As Belsky and Barends (2002) also discussed, personality will not necessarily predict parenting behavior across multiple situations because being high on a personality dimension does not mean one's reactions are identical in every situation. Relations between personality and parenting may not be the same for children of different ages because the interactions between, mothers and children also are likely to change over time.

No significant associations were found between maternal personality and intrusiveness in the free play at either 18 or 30 months, and mediated associations were not found for intrusiveness. Parent personality may have less of an impact on intrusiveness than on sensitivity, especially because intrusiveness was relatively low occurring with these mothers during this task. Perhaps relations between intrusiveness and personality might be more likely to be seen in more structured tasks where mothers may be more likely to display control strategies with toddlers. Additionally, emotion is not as clearly involved in intrusiveness. Intrusiveness includes maternal behaviors that are over-stimulating, over-controlling, and following their own instead of their children's agenda, but intrusive behaviors do not necessarily involve negative emotions. In fact, mothers could have been displaying positive affect even when they were being intrusive and controlling during the interactions.

In addition to findings supporting the mediated model, direct links between maternal personality and emotional expressions were also found. The combined influence of the Big Five factors explained a significant amount of the variance in both observed (at T1) and reported positive emotions as well as in reported negative emotional expressiveness. Mothers with higher levels of conscientiousness and agreeableness displayed more positive emotional expressions when interacting with toddlers at 18 months of age. In addition maternal reports of positive emotional expressions in the family were associated with higher levels of openness to experience, extraversion, and agreeableness. Maternal report of negative emotional expressions in the family also was associated with lower levels of conscientiousness and agreeableness and higher levels of neuroticism. Our findings are generally consistent with associations between personality and emotions reported by McCrea and Costa (1991). By including all five dimensions, our findings provide further empirical support examining how the Big Five dimensions of personality relate to both observed and self-reported emotional expressions in a sample of mothers.

More associations were found between self-reported emotional expressions and personality; however, this is not surprising and has been found in other studies. For example, Cumberland-Li, Eisenberg, Champion, Gershoff, and Fabes (2003) reported that personality was more consistently related to reports of expressiveness in the home than with observations of emotions. The stronger relations may be related to mothers providing the information for both personality and emotional expressions, or it may also be because mothers were more reserved during their laboratory interactions with their toddlers. We may not have observed the full range of their positive and especially their negative emotional expressions. Maternal reports of these emotional expressions may have been a more accurate reflection of the emotional expressions that children experience on a daily basis within, their families.

Strengths of the current study include our use of a standardized measure of the Big Five factors and including all Big Five dimensions in our study as well as testing these relations in a relatively large sample. We used observations of parenting behavior and multiple measures of maternal emotional expressions, and we were able to examine the mediation model in a longitudinal sample. Our findings for mediation were indirect because only a few direct associations were found between parent personality and parenting behaviors; however, as discussed earlier, mediation can still be found even in cases where a direct effect is not found between the independent and dependent variables (Collins et al., 1998; MacKinnon, 2000). The indirect effects are further supported through our use of longitudinal data with three time points, which is also considered to be important to establishing mediation (Collins et al., 1998). Although our sample was relatively diverse, our findings may not generalize to lower income and more ethnically diverse samples.

A further limitation of the current work was that we observed maternal behavior and emotions during a 3-min mother-toddler interaction that did not greatly stress the mother - toddler system.

In fact, observations of negative emotions were so low occurring that we could not use them in the analyses. We may have seen more or different relations among observed emotional expressions, maternal personality, and parenting behaviors in a more structured or longer interaction task. Future directions include examining the role of the father in the relations among parent personality, emotional expressiveness, and parenting behavior and how these relations potentially interact when two parents are included. The role of child temperament and emotion as well as bi-directional associations between children and parents should also be considered. Despite these limitations, our findings add to literature on relations among maternal personality, emotional expressions, and parenting. Our study enhances our understanding of the process of how personality is related to parenting.

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TABLE 1
Means and Standard Deviations for Maternal Personality, Maternal Behavior, and Maternal Emotional Expressions

Variable	<i>n</i>	<i>M</i>	<i>SD</i>
Maternal personality (18 months):			
Openness to Experience	244 ^a	3.65	.61
Conscientiousness	244 ^a	3.89	.62
Extraversion	244 ^a	3.63	.77
Agreeableness	244 ^a	4.15	.58
Neuroticism	244 ^a	2.55	.76
Observed maternal behavior:			
Sensitivity (18 months)	245 ^b	2.52	.61
Intrusiveness (18 months)	245 ^b	1.34	.33
Sensitivity (30 months)	216 ^c	2.83	.52
Intrusiveness (30 months)	216 ^c	1.25	.24
Observed maternal emotional expressions:			
Positive (18 months)	245 ^b	2.23	.61
Negative (18 months)	245 ^b	1.02	.05
Positive (30 months)	216 ^c	1.85	.54
Negative (30 months)	216 ^c	1.05	.12
Reported maternal emotional expressions (24 months):			
Positive	213	7.45	1.07
Negative	213	3.85	1.07

^a Notes. One mother did not complete the questionnaires during the laboratory visit,

^b One mother - child free play was unable to be coded because the mother spoke in foreign language that was not able to be translated,

^c 4 mothers participated at 30 months but not at the 18 months visit; the means were the same when these mothers were not included.

TABLE 2
 Partial Correlations (controlling for child sex) Examining Relations of Maternal Personality to Observed Maternal Behavior in the Free Play and to both Observed and Reported Maternal Emotional Expressions

	Maternal Personality (18 months)				
	Openness	Conscientious	Extraversion	Agreeable	Neuroticism
Maternal behavior					
Sensitivity (18 months)	.05	.11	.06	.09	-.03
Intrusiveness (18 months)	-.08	-.06	.06	-.02	.09
Sensitivity (30 months)	.06	.15*	.05	.15*	-.12
Intrusiveness (30 months)	-.08	-.02	.05	-.03	.13
Observed emotional expressions					
Positive (18 months)	-.06	.15*	.09	.23**	.01
Positive (30 months)	.02	-.04	.04	.06	.05
Reported emotional expressions					
Positive (24 months)	.18**	.10	.25**	.28**	-.12
Negative (24 months)	-.08	-.21**	-.01	-.24**	.28**

* $p < .05$.

** $p < .01$.

TABLE 3

Regression Analyses Examining Maternal Emotional Expressions as a Mediator of Maternal Personality (18 months) to Maternal Sensitivity (30 months), Controlling for Child Sex

	<i>Beta</i>	<i>R</i> ²	<i>F</i> for model
1. Conscientiousness → Observed positive (18 months)	.15*	.02	2.80
2. Conscientiousness, Positive → Sensitivity (30 months)	.31** (positive)	.13	10.34**
	.10 (Conscientious)		
1. Agreeableness → Observed positive (18 months)	.23**	.06	7.01**
2. Agreeableness, Positive → Sensitivity (30 months)	.30** (positive)	.13	10.16**
	.09 (Agreeable)		
1. Openness → Reported positive (24 months)	.18**	.04	4.30*
2. Openness, Positive → Sensitivity (30 months)	.16* (positive)	.04	2.99*
	-.01 (Openness)		
1. Extraversion → Reported positive (24 months)	.26**	.07	8.00**
2. Extraversion, Positive → Sensitivity (30 months)	.15* (positive)	.04	3.02*
	.03 (Extraversion)		
1. Agreeableness → Reported positive (24 months)	.28**	.09	9.64**
2. Agreeableness, Positive → Sensitivity (30 months)	.13 (positive)	.06	3.75*
	.11 (Agreeable)		

* $p < .05$.

** $p < .01$.