
Maternal Attitudes and Self-Definition as Related to Perceptions of Infant Temperament

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Maternal childbearing attitudes and self-definition as related to maternal perceptions of infant temperament were investigated in a pilot study. Maternal attitudes, self-definition, and perceptions of infant temperament were determined through mothers' self-report. Results indicated that maternal attitudes—including self-confidence and feelings toward infants and children—were positively related to maternal perceptions of infant temperament. That is, mothers who reported low self-confidence and negative feelings toward infants and children in general also rated their infants' temperament as more negative. In addition, maternal work experience involving children was inversely related to maternal perceptions of infant temperament, in that those mothers who had more work experience with children rated their infants as being more difficult. The findings are consistent with Sameroff's transactional model of development (Sameroff & Chandler, 1975) wherein both the psychological and behavioral aspects of mother and infant create the milieu for further development.

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Intrigued by the occupational role of mothering, various occupational scientists have examined what it means to be a mother (Kellegrew, 2000; Larson, 2000; Pierce, 2000). Understanding the meaning of mothering is essential because maternal work forms the foundation of society (Larson, 2000). Terms such as *orchestration* (Larson, 2000), *maternal management* (Pierce, 2000), and *construction of daily routines* (Kellegrew, 2000) depict the complex nature of mothering. Research on maternal work shows that: (a) ecological and cultural aspects have an impact on the routines of mothers with children who have disabilities (Kellegrew, 2000; Olson & Esdaile, 2000); (b) mothers use planning, organizing, balancing, anticipating, interpreting, and forecasting to orchestrate their role (Larson, 2000); (c) mothers use environmental space to foster growth and development in their children (Pierce, 2000); and (d) mothers view mothering as a lifetime occupation (Francis-Connolly, 1998). These findings illustrate that mothering is multifaceted and influenced by factors external and internal to the mother.

Mothering is often associated with *doing* (Kellegrew, 2000; Larson, 2000; Pierce, 2000), that is, performing certain activities such as preparing a meal, responding with nurturance, and promoting development. As children mature and assume typical young adult roles, the activities that mothers engage in continue to change. Francis-Connolly (2000) found that mothers listened and were available for their children during young adulthood, whereas when their children were younger, mothers engaged in greater amounts of teaching and nurturing activities. Although mothering includes doing, research in developmental psychobiology suggests that mothering involves biological and psychological processes (Fleming, O'Day, & Kraemer, 1999; Fleming, Ruble, Krieger, & Wong, 1997; Kraemer, 1992).

The transition to motherhood represents a significant shift in psychological processes including changes in roles, mood state, and social interactions (Ruble et al., 1990). These psychological processes reflecting childbearing attitudes—which include self-esteem and feelings toward children and interpersonal relationships—are measured using self-report (Ruble et al., 1990). In addition, *maternal self-definition* (a typology or classification of a mother, such as fun, traditional, or

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protective) is also measured using self-report (Ruble et al., 1990). Using self-report methods, Fleming et al. (1997) found that maternal attitudes and self-definition changed over the course of pregnancy. For example, 667 pregnant women in a cross-sectional study rated their feelings toward their spouse or partner lower during pregnancy than before pregnancy (Fleming et al., 1997).

Maternal feelings change in relation to the developmental stage of their children (Francis-Connolly, 2000). During early stages of motherhood, mothers report feelings of being overwhelmed by the extent of caring for their children (Francis-Connolly, 2000). The act of mothering young children requires continuous attention and often mothers feel unprepared for the demands of children. This situation is particularly true when mothers are caring for children who are not developmentally able to verbally express their needs and wants. Mothers often feel a sense of guilt because they do not view themselves as perfect or as the ideal mother (Francis-Connolly, 1998). These feelings of guilt and imperfection may be intensified by characteristics of the infant, including the infant's temperament style. Little is known about the relationship between maternal childbearing attitudes and self-definition and infant characteristics such as temperament style.

Temperament is a biologically based characteristic evident in an infant's ability to self-regulate and react to stimuli (Rothbart & Bates, 1998; Rothbart & Derryberry, 1981). Heredity, maturation, and experience influence dimensions of temperament (activity level, soothability, etc.) and temperament styles (positive or negative affectivity) (Gartstein & Rothbart, 2003). Dimensions of temperament routinely assessed include activity level, smiling and laughter, fear, soothability, distress to limitations, and duration to orienting (Rothbart, Chew, & Gartstein, 2001). Observations and parental report of infant behavioral responses in the aforementioned dimensions are used to classify a particular temperament style (positive or negative affect). (Rothbart, Chew, & Gartstein, 2001; Rothbart & Derryberry, 1981). An advantage of using parental report to assess temperament is that parents often accompany their children during daily activities in which self-regulation and reaction naturally occur (Rothbart & Bates, 1998).

Knowledge regarding infant temperament styles and the relationship to maternal attitudes may be significant in understanding the transactional nature of maternal-infant interactions (Kochanska, Friesenborg, Lange, & Martel, 2004; Kraemer, 1992; Langkamp, Kim, & Pascoe, 1998; Lowinger, 1999; Sameroff, 1993, 2004). The transactional model of development was used as a conceptual framework for this study (Sameroff, 1993, 2004; Sameroff &

Chandler, 1975). Sameroff suggested that development occurs through the dynamic interaction between the child and the social experiences provided by the family and primary caregivers (Sameroff & Fiese, 2000). The transactional model of development incorporates the contributions of the mother and the infant in the evaluation and intervention processes (Sameroff & Fiese, 2000).

Research findings support the view that maternal attitudes and perceptions of infant temperament influence maternal-infant reciprocity. For example, Lowinger (1999) found that maternal ratings of infant irritability predicted maternal holding behavior, such that those infants who were rated as more irritable were held more frequently. In addition, Kochanska et al. (2004) found that infant temperament ratings at 7 months of age explained between 10% and 20% of the variance of the mother-infant relationship, including shared positive ambience, responsiveness, and consistent tracking of the infant. Furthermore, Langkamp et al. (1998) found that mothers of high-risk infants rated their infants as being more negative, less adaptable, and less regular in feeding, sleeping, and bowel movements. These findings suggest that knowledge about the relationship between maternal childbearing attitudes and infant temperament style may facilitate understanding of maternal feelings and behavior patterns. In early intervention practice, knowledge about maternal attitudes and perception of infant temperament may be particularly important when planning interventions specifically focused on the mother-infant relationship.

The purpose of this article is to report preliminary findings that describe the relationship between maternal childbearing attitudes, self-definition, and maternal perception of infant temperament.

Method

Study Design

The findings reported herein are part of a study examining how infants' behavioral and physiological capacities were related to maternal childbearing attitudes and maternal interaction styles (Barnekow, 2003). Mothers and infants completed an experimental sequence consisting of four conditions, including two mother-infant play conditions (conditions 1 and 3) and two object perception conditions (conditions 2 and 4). Data were collected to examine whether infant behavioral and physiological responses during the conditions were significantly different. In addition, mothers completed a questionnaire pertaining to maternal childbearing attitudes and perceptions of infant temperament.

Participants

Participants were recruited from childbirthing classes, mother support groups, and pediatric clinics in a Midwestern community through brochures left in the reception area of clinics, or by personal invitations for mothers who attended childbirthing classes and support groups. All 21 mothers volunteering for the study were personally invited after they were determined to be eligible. Mothers received a \$15 grocery certificate for volunteering. The Institutional Review Board of the University of Wisconsin–Madison approved this study.

Mothers were included if this was their first birthing experience, if they were married or living with a partner, if they were not taking prescription medications for physical or emotional reasons at the time of the study, and if their infants had no history of visual, hearing, or neurological disorders.

Instruments

Mothers completed the Childbearing Attitude Questionnaire (CAQ) (Fleming et al., 1997; Ruble et al., 1990) and returned it by mail within 1 week after the initial visit. The CAQ consists of questions related to the mother's past experience with children, maternal self-definition, and maternal attitudes. The CAQ measures maternal attitudes about the transition to motherhood, which is a period related to disruptions in self-definition, significant role and lifestyle changes, changes in social network, and changes in pain perception.

The CAQ (Fleming et al., 1997; Ruble et al., 1990) is a self-report instrument of 126 questions divided into three sections. The first section consisted of four questions that asked mothers about their past experiences with children, including professional and nonprofessional experiences. Mothers responded using a 5-point Likert scale. Psychometric properties of the CAQ (without the temperament questions) were determined in a longitudinal study and cross-sectional study (Fleming et al., 1997; Ruble et al., 1990). Test–retest reliability was evaluated by analysis of the data from the longitudinal sample. Test–retest correlations were above .60. This tool demonstrates adequate internal consistency and stability.

Seven questions from the supplementary data section of the Carey Infant Temperament Questionnaire (Carey, 1972) were adapted and randomly placed in the third section of the CAQ (Childbearing Attitude Questionnaire–Revised [CAQ–R]) so that mothers would be less aware of the questions regarding infant temperament (see Appendix A). Carey (1972) developed a self-report measure of infant temperament designed to evaluate maternal perceptions of infant responses during daily activities. Within this assess-

ment, there is a section asking mothers to rate their general impression of their infants' temperament. For the current study, the general impression section was modified to examine the relationship between perceptions of infant temperament and maternal attitudes and self-definition. The questions focused on activity level, regularity, responses to new situations, distractibility, mood, attention span, and adaptability to change. Mothers responded to the adapted questions using the 7-point Likert rating, with a 1 indicating strongly disagree and a 7 indicating strongly agree. For example, mothers would rate their perceptions to the following question, "My baby is regular in feeding, sleeping, and bowel movements." Questions from the supplementary data section were chosen for this study because the purpose of this section is to identify the mother's overall impression of the infant's temperament (Carey, 1972).

Procedures

Mothers recruited, as described previously, were asked to mail a form confirming their interest in the study. Mothers were then contacted by telephone to describe the study and to determine eligibility. For eligible mothers, an appointment for a home visit was scheduled when the infant was 16 weeks of age (± 10 days).

On arrival, the experimental procedures and sequence were explained to the mothers and informed consent was obtained. Mothers received the grocery certificate after signing the informed consent. As part of the larger study, mothers and infants completed an experimental sequence consisting of four conditions, including two mother–infant play conditions and two object perception conditions. At the end of the experimental sequence, the mothers were instructed to complete the CAQ–R (Fleming et al., 1990; Ruble et al., 1990) and return it by mail within 1 week. All 21 mothers complied with this request.

Statistical analyses. Items on the CAQ–R were categorized into attitude and self-definition factors derived from the responses of 667 participants and the temperament items (Carey, 1972; Fleming et al., 1997; Ruble et al., 1990). Mean scores for each attitude cluster were calculated and used in the analyses.

To examine the relationship between maternal attitudes and maternal perceptions of infant temperament, Pearson correlation coefficients were computed between all of the items in the section of the CAQ–R pertaining to maternal perceptions of infant temperament. To examine relationships between maternal self-definition and previous experience with children and infant temperament, Pearson correlation coefficients were computed between items in the first and second sections and the temperament items in the third section of the CAQ–R.

Results

Of the 21 mothers recruited, the reported annual household income range was \$30,000 to \$100,000. Maternal education level ranged from some college to graduate school. Nine of the 21 mothers were not employed outside of the home, and 12 of the 21 mothers were employed either full time or part time. The sample consisted primarily of Caucasian women (99%). The mean age of the mothers was 30 years (range 22 to 39 years of age). The data from 2 mothers were excluded. One mother had premature triplets and filled in identical information for all of her infants, although she verbally indicated differences in the infants' behavior and responsivity. Another mother's data were excluded due to a seeming lack of understanding regarding how to answer the questionnaire, perhaps because English was a second language for her. Data from 19 mothers of healthy infants were used in the final analysis.

Analysis revealed significant correlations between maternal self-confidence $r = .47, p = .03$, feelings toward infants in general $r = .54, p = .013$, feelings toward children in general $r = .56, p = .013$, and maternal perceptions of infant temperament.

There were no significant correlations between any of the maternal self-definition scales and maternal perceptions of infant temperament. There was an inverse relationship between previous professional experience with children and maternal perceptions of infant temperament, $r = -.497, p = .026$.

Discussion

The foremost findings are the significant correlations between maternal self-confidence, feelings toward infants and children, and maternal perceptions of infant temperament. First, those mothers who rated their infant's temperament as more difficult also rated their own self-confidence as lower. This finding is consistent with previous research findings (Fleming et al., 1990; Hyde, Else-Quest, Goldsmith, & Biensanz, 2004; Porter & Hsu, 2003). Hyde and colleagues (2004) found that maternal perceptions of infant temperament were related to maternal sense of parenting competence and maternal depression in mothers of 4-month-old infants. Fleming et al. (1990) found that mothers who were concerned about their infants' sleeplessness and irritability (behavioral correlates of difficult temperament) were also more anxious and irritable, whereas Porter & Hsu (2003) found that maternal perception of infant temperament during the postnatal period was related to maternal efficacy at 3 months postpartum. The present study contributes to the literature because our findings sug-

gest that measurement of maternal attitudes and perceptions of the infant temperament may be accomplished through the use of the CAQ-R.

Second, in the present study, mothers who rated their infants' temperament as more difficult also rated their feeling towards infants and children in general as more negative. This finding supports Sameroff's (2004) position that the transactional nature of the mother-infant relationship is related to both psychological aspects of the mother and behavioral attributes of the infant. Although maternal attitudes may not necessarily manifest in a particular maternal behavior, Sameroff (2004) suggested that negative feelings about infants and children may place mother-infant dyads at risk for poor interactions, thus contributing to underdeveloped social skills in the respective children (Sameroff, 2004; Sameroff & Fiese, 2000).

The inverse relationship between professional experience and maternal perceptions of infant temperament is an interesting finding. Those mothers who rated themselves as having a greater amount of professional experience with infants also rated their infant's temperament as more difficult. The relation between maternal work and infant temperament is just beginning to be explored. In a recent longitudinal study of infant temperament and maternal work role, Hyde and colleagues (2004) found that children with difficult temperament styles had mothers who rated themselves lower on the rewards and concerns scale of the Work-Role Quality Scale. Hyde et al. suggested that the significant correlations indicate a negative spillover effect such that negative interactions with the infant trigger negative interactions with other family members and within the work environment.

Implications for Occupational Therapy

The findings suggest that there is a relationship between maternal attitudes and perceptions of infant temperament. Maternal attitudes, however, are one of many factors that may contribute to maternal perceptions of infant temperament. Additional aspects, such as the infant's ability to express socially appropriate cues, may also contribute to maternal perceptions of infant temperament (Porter & Hsu, 2003). Nevertheless, pediatric occupational therapists may find an assessment of maternal childbearing attitudes and infant temperament useful in planning family-centered treatment in early intervention. Clinicians' attention to parental perceptions of infant temperament styles represents evidence-based, family-centered intervention (Sturm, 2004). Family-centered care is based on the premise that evaluation and treatment of family concerns should be foremost in early intervention practice (Dunst, Johanson, Trivette, & Hamby, 1991). To ensure best practice in early

intervention, occupational therapists should evaluate and be informed about maternal attitudes, self-definition, perceptions of infant temperament, and other sociocultural factors that may affect maternal–infant attunement (Francis-Connolly, 1998; Sameroff, 2004).

Limitations and Future Research

This study is a pilot study examining a relationship between maternal childbearing attitudes and infant temperament. By interspersing questions from the Carey Temperament Scale, the adequacy of the Childbearing Attitude Questionnaire may have been changed. Future studies could refine the CAQ–R, developed for this study, and establish criterion or concurrent validity with other measures of infant temperament.

Second, significant correlations do not tell us what the direction of causal influences might be. The results suggest that a relationship exists between maternal attitudes and measurement of infant temperament; however, the findings do not allow us to conclude that maternal attitudes cause a particular temperament style or vice versa. Because temperament is a constitutionally based characteristic influenced by environment and experience (Rothbart & Derryberry, 1981), future studies may incorporate dependent measures, including physiological, behavioral, and sociocultural. This research may further elucidate causal relationships.

Third, when using correlation analysis, smaller sample sizes are subject to finding spurious but significant linear relationships when only a few observations are available. As the sample size gets smaller, the magnitude of the correlation needed for significance gets larger, with very small samples requiring very large correlation coefficients to be confident that there is a real (non-zero) relationship in the population. This conservatism decreases the likelihood of committing a Type I error associated with small sample size. The correlation values obtained in this study indicate that the relationship between maternal self-confidence, maternal professional experiences, and perceptions of infant temperament are moderate (Portney & Watkins, 2000). In addition, the relationship between maternal self-confidence and perceptions of infant temperament is also supported in the literature (Fleming et al., 1990; Hyde et al., 2004; Porter & Hsu, 2003). The literature, however, does not clearly support the inverse correlation found between maternal professional roles and perceptions of infant temperament. Further research examining professional roles and perception of infant temperament may refine our understanding of this relationship.

Finally, the data were collected on a sample of healthy infants and it is not clear how they would generalize to high-risk populations. Future studies could compare maternal

scores of healthy and high-risk infants on the CAQ–R and the Sensory Profile (Dunn, 1994). Dunn (2001) provided a model linking temperament style and sensory modulation. This line of inquiry may suggest whether maternal childbearing attitudes and maternal perception of infant temperament should be routinely evaluated by occupational therapists treating children with sensory modulation disorder. ▲

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Appendix A

Items adapted from the Carey Temperament Scale (Carey, 1972):

- My baby's physical activity level during feeding, play, and dressing is high.
- My baby withdraws from new people, foods, places, or toys.
- My baby is regular in feeding, sleeping, and bowel movements.
- My baby's mood is generally positive.
- My baby's temperament is easier than most children.
- My baby attends persistently to toys and activities.
- My baby is easily distracted by sounds, toys, or people.

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