A STUDY OF THE INFANT BEHAVIORS THAT MOTHERS AND FATHERS

INTERPRET AS MEANINGFUL

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A STUDY OF THE INFANT BEHAVIOR THAT MOTHERS AND FATHERS INTERPRET AS MEANINGFUL

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Jo Ellyn Peterson was born on July 22, 1960 in Watseka, Illinois. She graduated from Gilman High School in Gilman, Illinois in 1978. She received a Bachelor of Science degree in special education from Illinois State University in 1982. For the next two years, she worked as a Peace Corps Volunteer in Honduras, Central America. She then worked for the Iroquois County Association for Retarded Citizens as an early intervention specialist. In 1988 she matriculated at Auburn University, and in1989 received a Master of Education degree from the Department of Rehabilitation and Special Education, with a focus in early intervention. She next worked at Child Development Resources in Williamsburg, Virginia, providing training and technical assistance to early childhood professionals. In 1993, she returned to Auburn University to begin work on a Doctor of Philosophy degree. While at Auburn, she worked as a graduate teaching assistant in the Department of Rehabilitation and Special Education, as a trainer for paraprofessionals in early intervention programs throughout the state of Alabama, and as assistant administrator of the Crisis Center of East Alabama. She is currently employed as an associate professor of early childhood education and special education at Bluffton University, Bluffton, Ohio.

DISSERTATION ABSTRACT

A STUDY OF THE INFANT BEHAVIORS THAT MOTHERS AND FATHERS INTERPRET AS MEANINGFUL

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The purpose of this study was to investigate the infant behaviors that mothers and fathers interpret as meaningful, and to identify possible patterns of identification and interpretation of those behaviors. Thirteen mother-father-infant triads participated in this study.

The triads were videotaped in their homes when the infant was between three and six months old. The parents were asked to watch the videotape and then (1) identify the infant behaviors they interpreted as meaningful, and (2) to describe what meaning that behavior had for them. The behaviors identified and the subsequent interpretations of those behaviors were analyzed qualitatively to identify patterns of identification and interpretation. Seven categories of behavior

and six categories of interpretation were identified. With one exception, mothers and fathers identified behaviors and interpretations in all categories. Further analysis revealed that mothers identify significantly more behaviors and interpretations than do fathers.

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I. INTRODUCTION

Infancy is a marvelous time of discovery — for the infants, of course, but also for the adults who interact with them. For the infants, it is a time during which the foundation for many important aspects of later behavior is laid. This foundation grows from countless interactions between the infants and the adults who care for them. These interactions may be in the context of care given to the infants, they may occur as attempts to teach the infants about themselves or their environment, or they simply may be in the playful words and games exchanged between infants and parents. Through whatever means they occur, it is within the context of these interactions that infants learn about their world and begin to build responses to it (Field, 1991; Goldberg, 1977; Hartup, 1989; Klass, Gaskin, & Thomas, 1995). For the parents, infancy is a time to learn about the infants and to begin to build a relationship with them. It is also a time to help them learn about the world - to begin to teach the unwritten rules of family, culture, and society. These interactions will, in turn, influence the children's actions and interactions throughout the course of their lives (Garcia Coll, & Meyer, 1993).

Adults have many ways of interacting with infants; these are called 'interaction styles.' While there is no one 'correct' interaction style, it is thought that interactions characterized by attentiveness to the infant, warmth, sensitivity,

and responsivity to cues or signals have many advantages for the infant, including promoting social, intellectual, and language development (Beckwith, Cohen, Kopp, Parmelee, & Marcy, 1976; Brazleton, Koslowski, & Main, 1974; Hartup, 1989; Honig, 1981; Pilling & Pringle, 1978; Watkins, 1986). Additionally, research in the development of the infant brain indicates that interactions with adults facilitate the formation of synapses within the brain (Herschkowitz, 2000; Kotulak, 1997).

The effects of these interactions are cumulative, increasing each time the infant and parent interact. However, each individual interaction is important. Lussier, Crimmins, and Alberti (1994) demonstrated that even within a short interaction period (six minutes), the interaction style of the adult had an effect on the engagement behavior of the infant.

In addition, most research in infant-parent interaction has focused on interactions between infants who were typically developing and were being raised in Caucasian, middle-class, two-parent families. Increasingly, studies are being conducted that include dyads of diverse ethnic, cultural, racial, and socioeconomic backgrounds. A limited amount of research has been conducted to study the interaction patterns of infants and toddlers with disabilities or who are at-risk. Little information is available about interactions of ethnically diverse dyads. Tortora (2004) describes the “Ways of Seeing” program, which is designed to assist mothers and infants to use sensory-based experiences to enhance interaction. This program has been used with children with a variety of

disabilities and difficulties. It is designed for use with mothers. Fathers and other caregivers are not included.

Even with these limitations, much is known about the interactions of infants and their parents. Knowledge of the multiple factors that influence infant-parent interaction and the possible developmental consequences of different styles of interaction has led to increased interest in studying and measuring the interactions of infants with their parents. Both clinical and research professionals who are interested in child development have come to regard this as an important field of study (MacDonald & Carroll, 1994; Van Horn & Segal, 2003).

Statement of the Problem

Early infancy is a critical time for laying the foundation for many skills and abilities, including communication and relationship building. Many studies have investigated multiple aspects of infancy; fewer have investigated infant-parent interaction. A minimal number of studies have provided information about maternal interpretation of the behavior of infants (Baird, Haas & Mayfield, 1993; Baird, Haas & McCormick, 1993; Baird, Ingram & Peterson, 1998; Baird, Peterson & Reilly, 1995; Haas, Baird, McCormick & Reilly, 1994). No research that explored paternal interpretation of infant behavior could be found.

To date, the vast majority of information available about infants' interactions with adults has focused on the infants and their mothers. Recent social and sociological changes in American culture have given us a broader definition of 'family' (Thomas, 1992). With this new definition has come the

recognition that many different adults care for and nurture infants. Consequently, more research has focused on fathers and other caregivers and their influence on the child.

This study was an attempt to determine if mothers and fathers identified and interpreted similar categories and numbers of infant behavior. Categories of behaviors identified as meaningful and subsequent interpretation(s) of those behaviors have been identified in other studies (Baird, Haas & Mayfield, 1993; Baird, Haas & McCormick, 1993; Baird et al., 1998; Baird et al., 1995; Haas et al., 1994). However, qualitative analysis of the data from this study was performed independent of that information, so that the identification of categories on prior studies did not influence the creation of categories in the current study.

Purposes of the Study

To more fully understand how interactions influence infant development, it is critical to understand if mothers and fathers identify and interpret infant behavior differently. The purposes of this study were to (a) investigate the infant behaviors that mothers and fathers interpret as meaningful, (b) to identify categories of behavior, (c) to investigate the interpretations of infant behaviors identified as meaningful by mothers and fathers, and (d) to identify categories of interpretation.

Research Questions and Hypotheses

This study addressed the following research questions:

1. Do mothers and fathers identify equal numbers of infant behaviors as being meaningful?

2. Do mothers and fathers of infants identify different infant behaviors as being meaningful?

3. Do mothers and fathers identify equal numbers of interpretations for the infant behaviors they identify as meaningful?

4. Do mothers and fathers interpret the behaviors they identify differently?

HØ 1: Mothers and fathers will identify equal numbers of infant behaviors as being meaningful.

The logic behind the stated hypothesis is that infants in the targeted age range display a relatively small repertoire of behaviors and their parents will identify roughly equal numbers of infant behaviors as meaningful.

HØ2: Mothers and fathers will identify similar infant behaviors as being meaningful.

The logic behind the second hypothesis is that, given the design of the study, mothers and fathers had the same opportunity to view the videotape of the infant's behavior and will, therefore, identify a similar set of behaviors as meaningful.

HØ3: Mothers and fathers will provide equal numbers of interpretations for the infant behaviors they identify as meaningful.

The logic behind this hypothesis is that mothers and fathers view the same set of infant behaviors and will, therefore, provide the same number of interpretations for the behaviors identified as meaningful.

HØ4: Mothers and fathers will give interpretations of their infants' behaviors that fall into similar categories.

The logic behind the final stated hypothesis is that if parents identify similar behaviors as meaningful, they will also provide similar interpretations of, or reasons for, the behavior.

Summary of the Research Findings

The participants in this study were thirteen infants between the ages of three and six months and their parents. The triads were videotaped for five minutes during a home visit and the parents were asked to view the videotape and provide information about (a) the behaviors they identified as meaningful, and (b) their interpretation of those behaviors.

The raw data collected during the home visits included demographic information and parents' identification of meaningful infant behavior and interpretation of those behaviors from videotaped segments of interaction. The resulting information was then coded and analyzed using both qualitative and quantitative methods.

The findings of the study did not support two of the hypotheses. The hypothesis that mothers and fathers would identify similar numbers of infant behaviors as meaningful was not supported. The hypothesis that mothers and

fathers would provide similar numbers of interpretations for their infants' behaviors was not supported. While there was wide variation in the numbers of behaviors identified as meaningful by both mothers and fathers, mothers, on average, identified nearly twice the number of behaviors as meaningful as did fathers. The same result held true for interpretation of infant behavior; mothers provided approximately twice as many interpretations as did fathers.

The results of the study supported the hypothesis that mothers and fathers would identify similar infant behaviors as meaningful. Both mothers and fathers identified behavior from each of the behavior categories determined by the qualitative analysis of the data. Similarly, both mothers and fathers interpreted their infant behaviors in each of the categories determined by the qualitative analysis of the data with one exception. Four fathers and no mothers gave answers such as "I don't know" when asked to interpret a specific infant behavior.

Significance of the Study

The information provided by this research could be used to teach parents about interpreting their infant's behavior. A curriculum could be developed to assist parents who have difficulty identifying and interpreting infant behavior. Much of the information that is available today is based on research conducted with mothers. The information gleaned from this study may be useful for fathers who have difficulty interacting with their infants. Fathers may be more likely to feel included in the process when provided with information that was obtained from fathers.

While the findings of the study may not change the outcome for infants in positive home environments, it has the potential to make a meaningful difference for parents who are functioning at less than an optimal level. If the parents are made aware of the importance of positive interactions and are provided an opportunity to become more comfortable with interacting, their infants may be raised in more contingently responsive environments (Lerner & Ciervo, 2003).

Definition of Terms

Behavior category: Groups of infant behavior determined to have a common element.

Behavior identified as meaningful: Parent participants in the study determined which of their infant's behavior carried a message for them.

Instance of meaningful behavior: An instance of meaningful behavior was determined by a parent's identification of an infant's action. An instance may include only one infant behavior, or multiple behaviors may be identified within a single instance.

Instance of interpretation: An instance of interpretation was determined by a parent's provision of meaning for an infant's behavior. An instance may include only one interpretation, or multiple interpretations may be given for the infant's behavior(s).

Interpretation of infant behavior: Parent participants provided their explanation of the meaning of the infant's behavior.

Interpretation category: Groups of interpretations determined to share a common element.

II. LITERATURE REVIEW

The purpose of this chapter is to review literature relevant to interpretation of infant behavior. A multitude of factors have influenced the current study of infant-parent interaction, specifically parental interpretation of infant behavior. It is critical to understand the complex factors that influence the many facets of interaction and interpretation.

This chapter is divided into three sections. The first section reviews theories that influence the study of infant-parent interaction. Interactions are, by their very nature, complex. Interactions with infants may be more complex than most because of the infants' limited repertoire of behavior and their unique dependence on adults to read and interpret their behavior.

The second section introduces and provides a review of literature related to infant-parent interaction and some of the factors that influence it. Research is presented relevant to the characteristics and roles of both the parents and the infant. These characteristics and roles influence work simultaneously to influence interaction.

A review of current methods of studying infant-parent interaction is found in the final section. The study of infant-parent interaction has evolved, as has the assessment of those interactions. The contribution of this information has the

potential to give professionals who work with infants and their families a better understanding of the complexities associated with interaction. From this understanding, better methods for working with families may evolve.

Theories Influencing the Study of Infant-Parent Interaction

Currently, the study of infant-parent interaction includes aspects of many different theories and viewpoints about families, infant development, and interaction. The purpose of this section is to review four major influences on the study of infant-parent interaction. These include (a) family systems theory, (b) transactional theory, (c) infant social competence theory, and (d) developmental theory. In addition, a discussion of the concepts of bonding and attachment is provided.

Family Systems Theory

The study of infant-parent interaction is a study of relationships. Since 1968, when Bell introduced the concept of bi-directionality of influence in socialization, researchers have studied the relationships between and among family members. Hinde (1989) defined a relationship as "… a series of interactions between two individuals, each interaction being relatively limited in duration but affected by past interactions … and affecting future ones" (p. 1). The paradigm by which the influences of interactions between and among family members is understood is referred to as family systems theory.

Family systems theory is a paradigm through which the interaction between and among family members is studied. Minuchin (1988) discussed four

characteristics of family systems theory. First, family systems theory emphasizes wholeness, organization, and circularity. The family is viewed as a complex, integrated whole with organized patterns of interaction that are circular rather than linear. Second, systems elements are viewed as interdependent. Each element (person) is interdependent on other elements and contributes to the formation of patterns of interaction. Third, families continually pass through periods of stability and change, which necessitate periods of reorganization of patterns. Finally, family systems are composed of subsystems. Within a family system, possible subsystem configurations include husband-wife, parent-child, and sibling-sibling subsystems. In addition to internal influences, external forces are thought to influence family interactions.

Ecological Theory

The ecological theory of human development (Bronfenbrenner, 1979) considers human development within the context of the environment. This theory focuses on developing children in the 'real world', recognizes that the social environment manifests in many diverse forms, and considers children as active participants in their own development (Garbarino & Gaboury, 1992).

The ecological theory considers developing individuals within several social environments (Bronfenbrenner, 1979). These environments may be thought of like a set of Russian dolls, one nested within the next. The innermost environment is the microsystem. It is within this context that developing individuals interact with their environment. Common microsystems for young children include the home, schools, and childcare settings. Many attempts to

explain human development deal only with this environment, but other, larger factors influence development.

The mesosystem is the next larger environment. The mesosystem is the one in which the developing individual may participate on occasion. For example, children may spend part of their day at home, and part at a childcare center or school. Their behavior or learning in one environment, when carried over to another environment, is an example of the interrelatedness of the systems. The third layer, the exosystem, simultaneously affects and is affected by the developing individual without direct interaction between the two. The exosystem may be thought of as the informal support to families such as employment for the parents, a parent support group, or other structures, in which children rarely, if ever, participate.

Finally, the largest, most comprehensive system is the macrosystem. The macrosystem may be thought of as the cultural or political influences on the developing child. These influences are mediated through the other systems, but they influence development nonetheless. Cultural mandates regarding behavior may influence parents to interact in specific ways with their infants; a political decision about funding may affect a school or childcare setting in which the developing child spends large parts of his or her day.

According to the ecological theory of human development, it is the interaction between and among developing individuals and these environments that influences child development. Another important tenet of this theory is that what matters for behavior and development is the way in which developing

individuals perceive reality, rather that ‘reality’ itself. That is, if an individual feels supported through interactions within their microsystem, mesosystem, exosystem and macrosystem, he or she will interact differently from someone who does not perceive support. Bi-directionality, a key component in this theory, is an important part of transactional theory as well.

Transactional Theory

In the transactional model, the development of children is seen as the product of the interplay between children and the experiences provided to them by their families within a social context (Sameroff, 1993; Sameroff & Chandler, 1975). “Transactions occur when parents are influenced by their child’s behavior to do something that they would not have ordinarily done had the child acted otherwise” (Sameroff, 1993, p. 7).

Transactional theory provides a venue for understanding infant-parent interaction. In order to consider infant-parent interaction from a transactional perspective, the actions of both dyad partners, and the interaction between the two, must be considered. Environmental factors must be understood as well. There is evidence that transactions are influenced by the intergenerational transmission of parenting styles, coping, and other factors (Bowlby, 1969; Lyons-Ruth & Zeanah, 1993). Transactional theory provides an explanation for interactions in part by considering the infant as a full partner in the transactions. The theory of infant social competence provides additional support for this idea.

Infant Social Competence

In contrast to earlier views of infants and infancy, Goldberg (1977) proposed a model of infant social competence that characterized infants as active and competent partners in social exchanges with adults. According to this model, infants are thought to be pre-adapted to selectively attend to the kinds of stimulation provided by people, and are equipped with a repertoire of behaviors to both capture adult attention and facilitate effective interactions. These interactions were believed to enhance the feelings of efficacy of both partners, and influence them to seek out social interaction.

Competence motivation, or the desire to interact effectively with the environment, is believed to contribute to infant social competence. Both the infant and their parents are believed to be motivated to interact competently with their partner. Infant competence is highly variable and is believed to be influenced by three factors: (a) readability, (b) predictability, and (c) responsiveness. Readability, or the extent to which behaviors are clearly defined and provide distinctive signals to adults, is believed to enhance adult feelings of efficacy in interactions with infants. Predictability, or the extent to which adults who are familiar with the infant can readily anticipate the infant's behaviors, is generally demonstrated when caregivers can predict the infant's needs. Predictability readily leads to satisfactory outcomes for both infants and their parents. Predictability on the part of infants enhances adult feelings of efficacy by enhancing adults' ability to (a) make successful predictions about the infant's needs, (b) make successful decisions about appropriate intervention, and (c)

experience success when their choice produces the desired outcome. Responsiveness is influenced by a variety of factors including infant age, developmental status and disability. A neonate has a limited repertoire of behavior and may be relatively unresponsive to adult attempts to interact. Within a few months, however, the infant has gained skills that make engaging in interactions much easier. If the infant is premature, has a disability, or is struggling developmentally in other ways, the interaction may continue to be compromised.

Adult competence is influenced by several factors as well. Parents' prior experience with infants will influence their interactions with their own infant. Parents' perceptions of the infant, specifically their perception of their ability to interact with the infant, also influences their perceptions of competence. These feelings of competence, in turn, influence interaction with their infant. Although rarely addressed in research, it is important to remember that these perceptions may have a cultural basis (Carlson, Feng & Harwood, 2004; Van Horn & Segal, 2003).

The interaction of the competence of infants and the competence of adults influences the quality of the interactions of the dyads. Newborns' behavioral repertoire, although relatively limited, are sufficient to elicit appropriate caregiving behaviors from most adults (Provence, 1990). Infants who are impaired in some way, but who are complemented by competent and sensitive caregivers, can be effective participants in interaction. Conversely, infants whose behavior is communicative but who are paired with caregivers who are unaware of or

unresponsive to communicative cues will not experience effective interactions. Ultimately, it is the match of the infants' and the parents' behaviors that sets the tone for interactions. This match develops over time.

Developmental Theory

Initially, the infant-parent interaction process is asymmetrical, with the adult providing much of the activity and the infants simply responding to behavioral or other biological stimuli. Later, as their skills develop, the infants become more spontaneous. The spontaneous behavior of typically developing newborn infants is richly organized from birth and this organization becomes progressively more complex during the first few years of life (Greenspan & Leiberman, 1989). Bronfenbrenner (1979) stated that development implies enduring changes that carry over to other places and other times.

The way in which parents view child development and the infants' developmental capacities is pivotal in determining how they interact with children. Sameroff (1993) conceptualized theories of development as fitting in to four categories. These categories comprise active and passive views of person and environment. The first category is that of "passive person-passive environment." Those who subscribe to this paradigm ascribe development to combinations of events in the environment that imprint on the mind of the individual. The second category combines the passive person with an active environment. The principle of behavior modification fits into this category. A conditioner actively structures the environment for a person who is assumed to make little or no contribution to the experience.

The third and fourth categories in Sameroff's paradigm ascribe active participation to the developing individual. The third category is that of "active person-passive environment." For example, Piaget's developmental theory portrays the person as the constructor of knowledge based on experiences within the passive, or stable, environment. Finally, the fourth category combines an active participant in an active environment. Changes in development are ascribed to the interplay of child and context, which reciprocally influence each other across time.

Increasingly, information about children's abilities, including neonates and infants, has led researchers to conclude that children are born with a unique set of competencies with which they influence their environment. One unique aspect of these theories is the reciprocal influence of the child and the environment.

Children, especially infants and toddlers, live in environments that are structured and modulated by adults. This structure is believed to be influenced by cultural, familial and individual codes that temper the beliefs and actions of the adult (Sameroff, 1993). Within this structure, mutually contingent interactions occur, with each member of the dyad recognizing and responding to the behavior of the other (Hodapp, 1988). These behaviors are also influenced by factors external to the dyad. The ways in which infants and their parents recognize and respond to one another are known as bonding and attachment.

Bonding and Attachment

Two separate veins of research have developed to study the relationship between infants and parents. Often, as the relationship is viewed from the

perspective of the parent, the term ‘bonding’ is used; when it is discussed from the perspective of the infant, it is called ‘attachment’ (Weiderstrom, Mowder & Sandall 1991). Other authors use the terms to refer to both partners; that is, the ‘bond’ between infant parent, or ‘attachment’ between the two partners. However it is defined, these two concepts have guided much of the research in the field of infant-parent interaction since the 1960’s. While the concepts do not represent well-defined theory, they are nevertheless important in the study of infancy, particularly infant-parent interaction.

Bonding

Bonding has come to refer to the unique developmental changes that (a) occur during the neonatal period, and (b) have a long-lasting effect on subsequent parent-child interactions and child development (Goldberg, 1983). Early attempts to understand the special relationships of infants and parents were based on the work of John Bowlby (1969, 1982). Through the years, as more information was available, the way in which researchers and practitioners understood and used the information has changed (Bowlby, 1982).

Klaus and Kennell (1978a) and Salk (1978) supported the idea that a critical window of opportunity for parent-infant attachment exists in the neonatal period. Initially, these authors supported the view that if for some reason the mother and infant were separated during the neonatal period, irreparable damage to the relationship would result. This hypothesis has influenced health care, so that now in hospital settings mothers and infants are typically provided time together during the neonatal period.

Important as this time together is, Klaus and Kennell's hypothesis led to the belief that if, for whatever reason, mothers and infants were not together in the neonatal period, disturbances in future interaction were inevitable. As more information has become available, these authors have altered their position somewhat (1982). In this more recent publication, less emphasis was placed on the critical nature of timing as a factor in the bonding process. Optimally, mothers and infants should have time to get to know one another. But if they are unable to be together in the first few hours, days, or even weeks, their relationship is not doomed for failure.

If circumstances such as illness or premature birth dictate that a mother and newborn infant must be separated, bonding and attachment can still occur (Goldberg, 1983). Brazelton (1989) and others concur, and consider that the human bond has more leeway to develop over time than once thought.

Attachment

Attachment behavior is "any form of behavior that results in a person attaining or maintaining proximity to some other clearly identified individual who is conceived as better able to cope with the world" (Bowlby, 1982, p. 668). Attachment behaviors include the babies' smiles; their willingness to be comforted by the few special adults in their lives; and kissing, cuddling and prolonged gazing on the part of the parents (Klaus & Kennell, 1978b; Watkins, 1986). After an infant can crawl or walk, attachment is demonstrated by proximity-seeking behaviors such as moving toward a specific adult for attention

or comfort. Infants may also cry or otherwise protest, or attempt to follow when the adult leaves.

The age of the infant influences the manifestations of attachment behavior. The second half of the first year of life is characterized by the formation of the child's attachment relations (Bowlby, 1969). At this time, infants develop cognitively to the extent that they can appreciate the independence and permanent existence of others. This realization precedes the manifestation of attachment behaviors (Lamb, 1977b). The beginning of the second year marks the process of 'detachment', at which time the infants typically begin to move away from the attachment figures to explore their distal environment.

Bonding and attachment are global paradigms for understanding the relationships between infants and their parents. They are considered important concepts, but the study of infants' interactions with their parents has begun to be studied in more depth, across more contexts, and with more variables. Many instruments and procedures have been developed to assess aspects of the relationship between infants and their parents.

Infant-Parent Interaction

"Nothing influences the infant as does the family" (Widerstrom, Mowder & Sandall, 1991, p. 116). The parents' influence on the developing infant has been recognized and supported through literature, legislation, and best practice in the field of early intervention (Bailey & Simmeonson, 1988; Bricker, 1989; DEC Task Force on Recommended Practices, 1993; McLean, Bailey, & Wolery, 1996;

Sameroff & Chandler, 1975; Trohanis, 1994; Widerstrom et al., 1991). Just how this influence occurs has long been debated. Clarke-Stewart (1980) hypothesized that influences are sequential; that is, one behavior occurs following the occurrence of another. In contrast, Sameroff and Chandler (1975) proposed that influences are concurrent or reciprocal.

Professionals in the field of early intervention have come to view the process of parent-child interaction as an important window for understanding child development (Barnard, Morisset, & Spieker, 1993; Pedersen, 1982; Stott & Halpern, 2003; Van Horn & Segal, 2003). The view of the importance of infant-parent interaction has changed dramatically over the years. Harlow, Harlow, and Hansen (1963), for example, argued that being poorly parented in infancy leads to poor parenting in adulthood; however, they did not specifically define 'poor parenting.' It is now more widely believed that while experiences in infancy or early childhood may contribute to later parenting style, ill effects of being poorly parented may be ameliorated (Fraiberg, Adelson, & Shapiro, 1980).

Infant-parent interaction is believed to be the root from which later interpersonal competence grows. Sroufe (1983) demonstrated that social development progresses from early infant-parent attachment to peer relations. Bowlby (1980) asserted that intimate attachments to other human beings are the hub around which a person's life revolves, not only when he or she is an infant or toddler, but throughout adolescence and into the years of maturity.

Interactions with both the family and the community in childhood are believed to strongly influence developmental competence (Garbarino &

Abromowitz, 1992). Garbarino and Abromowitz (1992) defined developmental competence as "the ability to succeed in life's major challenges" (p. 2), and divided it into three major components. The first major component, componential intelligence, is the type of intelligence most often measured by I.Q. tests. The other types of intelligence are creative intelligence and social intelligence. The last of the three, social intelligence, may be most strongly influenced by infant-parent interaction. 'Reading' people, influencing their behavior, and manipulating one's environment to produce desired results can profoundly affect the ability to interact successfully.

There is widespread support for facilitating high quality infant-parent interaction, both as a part of an early intervention program and in the field of infant mental health (Clarke-Stewart, 1978; Field, 1979; Goldberg, 1977; Pedersen, 1982). Practitioners and researchers in the fields of early intervention and infant mental health need assistance both to define 'high quality interactions' and to identify and use appropriate measures for observing these interactions. Using appropriate measures involves planning intervention approaches or strategies that support the development of the infant and the dyad. To do this effectively, professionals must understand that many factors influence infant-parent interaction.

Factors that Influence Infant-Parent Interaction

Many diverse factors influence infant-parent interaction. These include, but are not limited to (a) family influences, (b) cultural influences, (c) infant

characteristics, and (d) parent or caregiver characteristics. These factors are not discreet — they work in harmony to influence the members of the dyad and dyadic interactions (Trad, 1994). Dunst and Trivette (1988) caution practitioners to look beyond the dyad to identify the full range of factors that influence the behaviors of the dyad members.

Family Influences on Infant-Parent Interaction

Families are the most basic and enduring of social institutions; at the same time, families change in response to the needs of individual members. At a minimum, a family may be defined as two people who are related through blood or marriage (Garbarino & Abramowitz, 1992). Other, more flexible definitions indicate that the family may be defined by its members and may be linked by blood, marriage, religion, or support (Thomas, 1992).

Families may be thought of as systems within systems. The family acts as the mediator between the individual and society; that is, children are prepared for membership in society by the family (Blasco & Pearson, 1995; Garbarino & Abramowitz, 1992). A particular parent-child dyad may be thought of as one link in a multi-link chain consisting of several individuals simultaneously occupying the roles of parent and child. Individuals involved in positive relationships as a child are more likely to promote positive relationships as parents (Hagestad, 1984).

Each person's interaction with the infant influences the infant's development by providing experiences that are important venues for learning, especially in infancy and the preschool years. Since there is no institution such

as school during these early years to help standardize the quality of experience across families, it seems highly probable that the infant's experience with parents and other caregivers is a substantial factor in later development (Hunt, 1987). Just as children are influenced by their families, families' interactions with their children are influenced by external sources such as culture.

Cultural Influences

Not all cultures view infants, parents, and their interactions in the same way. Cultures vary widely in their views of many aspects of child rearing (Carlson et al., 2004; Zirpoli, 1995). These include beliefs and values about medicine and health care, the meaning of disability, and child care practices (Hanson, Lynch & Wayman, 1990). Although societal expectations have changed in recent years, traditional Western industrialized society has a clear set of roles prescribed for males and females, with child care being assigned almost exclusively to the mother with fathers working outside the home (Gopnik, Meltzoff & Kuhl, 2001). Some cultures are extremely child-oriented, placing a great deal of emphasis on the infant or child. Other cultures emphasize the importance of the adult; in these cultures, children and their development are secondary (Carlile & Holstrum, 1989).

Culture is a learned code through which we communicate with others. Certain ways of communicating have come to have meaning in some cultures, but may have different meaning, or no meaning at all, in another culture. The Anglo-American culture is typically characterized by independence, a belief in one's ability to control one's environment, self-help, a change or action

orientation, and a direct approach to people or issues (Carlson et al., 2004; Zirpoli, 1995). Other cultures value cooperation, community spirit, and an indirect approach to problem solving. In addressing the topic of interaction with families, care must be taken to honor the individual, family and cultural values of the dyad (Barrera, 2003; Hanson et al., 1990; Murphy, 1990).

Culture influences not only the families involved in the assessment of infant parent interaction, but also how professionals view constructs related to interaction. Often, results of 'good interactions' or ’relationships' are reported without accompanying definitions of 'good' or 'positive.’ What is considered 'good', 'positive' or 'appropriate' in one culture may be an adaptive behavior that serves a purpose within that culture; the same behavior may well be maladaptive in another culture and be viewed as 'negative' or 'inappropriate' (Barrera, 2003; Carlson et al., 2004)

These constructs may be so ingrained in the researcher that he or she neglects to define the construct, assuming that his or her cultural constructs are shared by the participants of the study as well as readers of the research report. The cultural biases of the researcher, the research process, and the families and the infants meld to provide information about infant-parent interaction that must be viewed within the cultural context of the researcher and the family. Unfortunately, this seldom occurs.

Infant Characteristics

Many infant characteristics influence the interactions of the infant-caregiver dyad. The extent to which an infant’s behaviors can be interpreted by

adults is called "readability" (Goldberg, 1977). An infant whose behavior is easily read or interpreted by caregivers may be more likely to engage in high-quality interactions. These high-quality interactions, in turn, may lead to enhanced interactions with others later in life.

Within moments after birth, infants demonstrate auditory and visual sensitivity to the stimuli provided by human interaction (Barnard, Morisset & Speiker, 1993). From birth, the interactions between infant and parent influence the child's developmental course in all areas. Papousek and Papousek (1992) proposed that adults are biologically programmed to provide infants with the interactive support the infant needs to make rapid developmental progress. Others have suggested that infants are born with in-born abilities that are designed to enhance their interactions with adults (Goldberg, 1977; Lewis, 1973).

Temperament. Infant temperament is also believed to influence infant-parent interaction. Temperament is defined as the intrinsic characteristics that the infant brings to the relationship (Lyons-Ruth & Zeanah, 1993). An infant with a difficult temperament may be less available to his parent, less interested in his environment, or more emotionally labile than an infant with an easy temperament. The infant with a difficult temperament, therefore, may be less responsive to even the highest quality interaction. "Easy" infants, on the other hand, are characterized by greater availability for adult interactions, predictability, and relatively more emotional stability. These infants typically reinforce adults in interactions and this may encourage caregivers to interact with them more often, and in more positive ways.

Infant age. Infancy is a time of rapid growth and development. As typically developing infants grow and develop, they are able to engage in more easily interpreted signaling, and they need less instrumental care (i.e., feeding). Thus, the infants' interactions with their parents change. Typically, as infants become more able to engage in physical play, interactions with parents, siblings and caregivers increase. Bowlby (1969) outlined a sequence of the development of attachment in infancy. Between the ages of 3 and 6 months, infants begin to focus on familiar people. They begin to discriminate between people they don't know and the people in their lives with whom they are familiar. Their behavioral repertoire becomes more 'readable' by their parents and caregivers. Simultaneously, as the infant becomes more adept at self-help skills, instrumental care decreases (Clarke-Stewart, 1980). Malatesta and Haviland (1982) reported that mothers' pattern of contingent responding varied slightly as a function of both the infants' age and gender. As the infants got older, mothers responded more contingently, especially by engaging in more contingent smiling. The effect was stronger for boys than for girls.

Factors such as development of self-help skills, communication and locomotion, which change rapidly as infants develop, affect the infants' interactions with their parents. Typically developing infants follow relatively predictable patterns in these areas. Infants who have a disability, or who are at-risk, may not follow the same developmental patterns as their typically developing peers, and these altered patterns of development may influence their interaction patterns.

Disability or risk. Interactions with caregivers are important for all children, especially for children who are developmentally at-risk (Klein, 1991). Much of the research on infant-parent interaction has been done with parents (mostly mothers) and their typically developing infants, toddlers, or young children (Marfo, 1988). Infants who are at-risk for less-than-optimal development or those with diagnosed disabilities may also be at-risk for interactional discord. These infants may be less adept at responding to parental cues and relational difficulties may ensue (Rogers, 1988; Widerstrom et al., 1991).

A limited amount of research about the interactions between children with disabilities and their caregivers has been conducted. Multiple factors influence interactions between children and their caregivers. The presence of a disability and the specific characteristics of the disability may have profound effects on interaction (Fraiberg, 1967). Infants with severe disabilities such as deafness or visual impairment may not have the physical capacity to engage in typical infant-parent interactions. These children may be unable to respond or their responses may be so subtle or delayed that they are missed completely.

Children with disabilities may operate within a more limited band of interactional tolerance than do children who are typically developing. They may require more interactional input to become involved in an interaction, and may be more easily overwhelmed by high levels of input. Children with disabilities may experience less spontaneous recovery, less incidental learning, and less initiation of social contact. There is a great deal of variability among all children, even those with disabilities (Walker, 1982).

A reduced number of interaction partners may inhibit a child's ability to interact competently with a wide variety of people. Parents of children with disabilities may learn interaction methods to facilitate their child's interaction (Jamieson, 1995). These methods may not be obvious to individuals who are not familiar with the child, and may influence them to believe that the child is not capable of interacting when, in fact, the infant can interact with individuals who are adept at reading prelinguistic cues.

Children with disabilities are considered at increased risk for developing difficulties in interaction. Other groups of infants are also at-risk; one such group is infants who are born prematurely. Both the behavioral characteristics of these infants, and their parents' response to these characteristics have been found to be potential risk factors for optimal interaction between the infant and parent. Additionally, parents of children with disabilities may have more control over the social interactions of their children than do parents of typically developing children.

Infants born prematurely. Infants born prematurely typically exhibit characteristics that influence both the quantity and quality of their interactions with their parents. Premature infants exhibit less attentive behavior, less smiling and positive affect, and greater fussiness as compared to full term infants (DiVitto & Goldberg, 1979; Field, 1977; 1979). These differences have been found to extend into the second year of life and beyond (Goldberg, 1978; Klein, 1991; Malatesta, Culver, Tesman, & Shepard, 1989; Minde, Whitelaw, Brown, & Fitzharding, 1983). Mothers of premature infants and infants with disabilities must

frequently work harder to elicit a response from their infant than do mothers of typically developing children. These attempts often end in frustration when the mother overstimulates her infant and must terminate the interaction (Field, 1977; 1979).

Infants born prematurely have been found to have different experiences with their parents than do infants born at term. Casteel (1990) reported that for a sample of parents of premature infants, mothers provided the majority of care for their children, even when both parents worked full time. In a semi-structured interview, mothers in this study provided more specific information about their role as parents than did the fathers.

Minde and his colleagues (Minde, Marton, Manning, & Hines, 1980; Minde et al., 1983) reported the results of studies of the interaction patterns of prematurely born infants and their mothers and concluded that infant status does contribute to parenting behaviors. In a study of infant and maternal behavior, Minde (1993) reported that even after recovery from the sequelae of premature birth, their mothers continued to treat them in a less active way than did mothers of infants born at term. Infants born prematurely often demonstrate less tolerance for interaction than do typically developing infants. They tend to be less socially responsive and often react negatively to stimulation. These factors may influence their interactions with their caregivers; it may also be that parental perception of the infant influences the interaction more than does the medical status. Just as infant variables influence interaction, the parent's perception of the premature infants' characteristics, such as fragility or difficult temperament, may also

contribute to difficulties in interaction (Field, Hallock, Dempsey, & Shuman, 1978). Parental perceptions are sometimes influenced by the provision of developmentally supportive care in the neonatal nursery.

Currently, developmentally supportive care is more common in neonatal intensive care units (Als & Gilkerson, 1995). This care, which is based on the need of the infants' developing neurological system, promotes the family as primary nurturers of their child and teaches parents effective interaction techniques. As parents are taught to interact with their premature infants, they become more adept at reading and responding to their unique signals and cues. This sensitive interaction appears to improve children's outcomes, and enhance families' feelings of efficacy in relating to their infants.

Minde (1993) compared the behavior of matched-pairs of "sick" and "well" infants and reported that while the infants behaved similarly, their mothers' behavior differed. Mothers of infants who were hospitalized 35 days or more behaved differently than did mothers of infants who were hospitalized less than 17 days. These differences were seen three months following discharge. Two possible explanations for this result were given: (1) illness may act on maternal behavior via the infant's behavior, or (2) illness may act independently on the mother's and infant's behavior. The influence of premature birth appears to have an effect on the mother's behavior independent of the influence on the infant's behavior. No studies could be found outlining the effects of premature birth on fathers, and their subsequent interactions with their infants.

DiVitto and Goldberg (1979) compared preterm infants to infants born at full term and concluded that the premature infants were less alert and less responsive than their full term counterparts. The lack of alertness may give parents less opportunity to have mutually enjoyable interactions with their preterm infants, and the lack of responsiveness may make the interaction less enjoyable for the parent. Goldberg (1978) analyzed the behaviors of mothers of infants born prematurely and mothers of infants born at term. The two groups of mothers demonstrated significant differences in the behaviors they directed toward their infants. Mothers of preterm infants spoke to the infants less, engaged in less gazing behaviors, vocalized less, and smiled and touched less than did mothers of full-term infants.

There is some evidence that mothers and fathers of preterm infants differ in their interactions with their infant. Parke (1979) reported that fathers of term infants engaged in more physical play than did mothers; however, fathers of preterm infants did not engage in the same level of physical play as did fathers of infants born at term. Perhaps this is because fathers of preterm infants perceive them as more fragile and unable to tolerate the same level of physical interaction.

Brazelton (1989) reported that significant intrapartum events that have an effect on the behavior of neonates may have a long lasting effect on the mother-child relationship. This disturbance appears to occur not because of the infants' long-term inability to interact with their mother, but because the transient behavior of the infants influenced the mothers' perceptions of their competence. Thus, even transient characteristics may have a long lasting effect on the

relationship between parent and child. Harrison (1990) compared parental interactions with term and preterm infants and reported interesting results. The preterm and term infants were equally responsive to their fathers, but fathers of term infants were less responsive to the infants than fathers of preterm infants. The preterm infants were also less responsive in their interactions with their mothers than with their fathers, in spite of observations that mothers of preterm infants provided more stimulation to them than did mothers of term infants.

The studies reported above suggest that infants born prematurely have interactions with their parents that are both quantitatively and qualitatively different from their full-term peers, and that the effects may be differentiated for mothers and fathers. As with all infants, the characteristics of infants born prematurely seem to influence the interactions they have with their parents. Predispositions of both the infant and the parent are thought to influence the parent, the child, and their interactions. Through high-quality interactions, children's development is enhanced in areas such as language, socio-emotional growth, and cognitive development (Bradley & Caldwell, 1980; Cohen & Beckwith, 1989; Lyons-Ruth & Zeanah, 1993; Roggman, 1991; Watkins, 1986). Positive interactions also enhance self-efficacy and enjoyment for the parents (McCollum & Yates, 1994).

Adult Characteristics

Although the characteristics of both dyad partners influence infant-parent interaction, the characteristics of the parent are believed to have the most influence (Fish, Stifter, & Belsky, 1993; Lussier et al., 1994). Studies designed to

determine the parental characteristics that influence infant-parent interaction have yielded mixed results (Brooks-Gunn & Lewis, 1982; Epstein, 1993). Although many components have been identified as potentially having meaning, one factor continually surfaces as the most influential. This factor is sensitivity to cues, which is itself influenced by many factors (Biringen, 1990; Conrad, Gross, Fogg, & Ruchala, 1992). The caregiver's sensitivity to infant cues, and subsequent reaction to those cues, are thought to play a key role in building positive interactions.

Fish et al. (1993) reported that the influences on maternal-infant interaction are "multiple, largely independent, and cumulative" (p. 15). Circumstances such as premature birth, maternal age, and maternal mental health status may have an effect on a mother's interaction with her infant. Significantly less is known about the variables that influence a father's interactions with his infant, although they certainly do exist, and are likely as varied as the factors that influence a mother's interaction with her infant.

Maternal age. Maternal age may profoundly affect infant-parent interaction, particularly when mothers give birth when they are teenagers. Adolescent parenthood is often problematic for both mother and child (Brooks-Gunn & Furstenberg, 1986; Carter, Osofsky, & Hann, 1991). Mothers who are still experiencing developmental struggles of their own may not have the capacity to be sensitive to their infants, thereby increasing the child's risk of less-than-optimal development (Brooks-Gunn & Furstenberg, 1986; Carter et al., 1991). This risk may be exhibited well beyond infancy (Pitzer & Hessler, 1992).

Adolescent mothers and adult mothers have been reported to differ in both the quantity and quality of behaviors displayed (Osofsky, Hann, & Peebles, 1993; Penny, Watson, Saunders, & Womble, 1993). Adolescent mothers are generally less sensitive and less emotionally positive than adult mothers (Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982). Factors that influence a mother's interactions with her infant may be internal or external to the mother. For example, an adolescent mother is more likely than an older mother to experience socioeconomic disadvantage, poor nutrition, late diagnosis of pregnancy, and fragmented services that may contribute to a less-than-optimal outcome for her and her infant. Adolescent mothers also experience a higher incidence of both prenatal and obstetrical complications. These external variables may negatively affect the birth outcome and the mother's subsequent interaction with the infant. Very little information exists about fathers' interactions with infants, so the effect(s) of paternal age has not been addressed.

Social support. Adequate social support is not available for some mothers, including the adolescent mother, and this may affect her ability to adequately parent her child (Dunst & Trivette, 1988). Because the adolescent mother may still be dependent on her own mother or the approval of her peers, she may be limited in her parenting role. Psychosocial conflicts are likely to occur as the adolescent mother struggles to meet the demands of an infant and her own developmental needs as well. Adolescent mothers are more likely than adult mothers to be depressed and to have inappropriate expectations about the infant (Carter et al., 1991; Osofsky et al. 1993). These and other parental issues

influence the quantity and quality of infant-parent interaction, as does the gender of both the infant and the parent.

Influences of Gender

There is some indication that the gender of the dyad partners influences aspects of the interactions, although as in many other areas of study of infant-parent interaction, contradictory results are reported. These contradictions may be the result of different foci of studies, and/or the influences of a multitude of factors on the interaction behaviors of each of the dyad partners. In this section, studies of the influences of infant and parent gender and the interaction of infant-parent gender will be reviewed.

Infant gender. Most studies of the influences of infant gender on some aspect of interaction compare mothers' treatment of or interaction with their male and female infants. Possibly because fathers have been found to interact with infants differently than do mothers, their interactions with their infants are generally considered separately from mothers' interactions. Authors of these studies report contradictory results, possibly because of the myriad of other variables that influence infants and their parents.

Pilling and Pringle (1978) reviewed several studies and reported that there are clear differences in maternal behavior toward boys and girls as early as the third day of life. In the early months (before six months of age), girls received more distal stimulation in the form of vocalizing, looking, and smiling. Boys received more proximal stimulation such as touching and holding. This trend appeared to reverse by about six months, when girls were held and touched

more. This study indicated that the influence of infant gender appears to be mediated by the age of the infant.

In a study of the possible differential effects mothers and fathers have on child development, Miller (1987) reported that mothers' and fathers' play styles were similar, but they treated their 8-month-old male infants differently from their female infants. Both mothers and fathers demonstrated more contingent and less initiation behavior with the boys, and appeared to allow more direction of the play agenda by boys than by girls.

In a study to determine factors that predicted IQ, Bradley (1986) reported that boys' IQ's were efficiently predicted by available play materials, but the IQ's of the girls in the study were predicted by a combination of play materials and maternal responsivity. Lamb (1977b) reported differential maternal behaviors directed toward sons and daughters between 7 and 24 months of age. In these studies, male infants appeared to receive more affectionate contact and more verbal expressiveness from their mothers than did female infants. Mothers provided more boundaries for their sons, and were likely to be less involved in play situations with their daughters.

Osofsky et al. (1993) reported that mothers' reaction to their sons varied more than their reaction to their daughters. In a study of emotional expression, Malatesta and Haviland (1982) videotaped mothers with their three- to six-month-old infants in a laboratory setting, and then coded the mothers' and infants' facial expressions. Overall, mothers maintained playful, positive behaviors during the 15-minute play session, but mothers of boys and girls behaved differently toward

their children. Results indicated a tendency for mothers to respond to most infant facial expressions; this tendency increased with age for boys, but decreased for girls.

Parent gender. Parent gender appears to influence infant-parent interaction, although exactly how these differences occur is not fully understood (Crockenberg, Lyons-Ruth, & Dickstein, 1993). Differences or similarities in mothers' and fathers' interaction styles are difficult to pinpoint, due in part to differences in the typical behaviors of mothers and fathers with their infants. Clarke-Stewart (1980) asserted that parents, even university-educated, more 'liberated' parents, believed that the mothers' role was to nurture and the fathers' role was to play. She also asserted that males (both fathers and sons) favor physical interactions and females (both mothers and daughters) preferred verbal exchanges.

Brachfeld-Child, Simpson, and Izenson (1988) reported differences in both mothers' and fathers' speech to infants according to the infant's gender. During a teaching situation with 8-month old infants, mothers and fathers talked more to girls, directed more imperatives and exhortations to them, and made more negative statements to them than they did to boys.

Parke and his colleagues reported that the behaviors of mothers and fathers of neonates were very similar; the only difference found was that mothers talked to their preterm infants more than did the fathers (Parke & Sawin, 1976). At three months following discharge from the hospital, parents again engaged in similar interaction patterns in all but one category; the difference being

instrumental (caregiving) touching. Mothers engaged in instrumental touching significantly more than did fathers. Thus, mothers typically engage in caregiving even during play with the infant. In another study comparing mothers' and fathers' behaviors in calming their one-month-old infants, mothers and fathers used similar and equally effective techniques to calm their infants (Worobey, Laub, & Schilmoeller, 1983).

Fathers have been reported to adjust their speech to infants, just as mothers do (Parke, 1996). Although fathers can be competent caregivers, nurturers, and teachers for their infants, play is the most common activity in which fathers and infants engage (Pedersen, 1980). Parke and Sawin (1976) reported only minimal differences in the ways that mothers and fathers of newborns interacted with their infants. Fathers and mothers of older infants, however, have been found to demonstrate different behaviors toward their children (Bentley & Fox, 1991; Brachfeld-Child, 1986). This change may occur because of socialization or learning for the parent, or it may occur based on infant behavior.

Play may be considered a special domain for fathers' interactions with their infants and as a result, much of the research about infant-father relationships has been done in the context of play (Bridges & Connell, 1991). In a study of fathers and caregiving patterns, Willoughby and Glidden (1995) reported that fathers of children with disabilities participated significantly less in caring for their children than did fathers of children without disabilities.

McHale and her colleagues (McHale & Huston, 1984; McHale, Frosh, Greene, Ferry & Magelsdorf, 1995) studied the behavior of parents as related to their sex role attitudes. These studies have indicated that aspects of personality influence interaction with infants differently for mothers and fathers. Mothers and fathers of 120 6-month-old infants completed several instruments regarding personality and involvement and were videotaped in their homes. Results of these studies indicated that mothers' behavior with their infants was influenced more by their involvement in the paid work force. Fathers' involvement was influenced both by their own attitudes and their wives' attitude toward their involvement, and these factors appeared to have long-term influences.

There is evidence to suggest that parents' interactions with an infant affect the children beyond infancy. For example, boys raised in father-absent homes demonstrate higher rates of violence (Pitzer & Hessler, 1992). The children's early experiences influence their beliefs and working models of the world, which, in turn, influence parenting with their own children (Clubb & Mason, 1991). Fraiberg and her colleagues (1980) coined the term 'Ghosts in the Nursery' to describe the intergenerational transmission of parenting patterns. Using a case study approach, they vividly described the 'ghosts' that influenced parents to abuse or neglect their children subsequent to the parents' own experiences of maltreatment in childhood.

Parent-child gender interaction. Parent-child gender interaction appears to play at least some role in the interaction process; in other words, mothers and fathers appear to treat their sons and daughters differently, although

contradictory findings are reported. Siegal (1987) reviewed independent studies of parents' interactions with their young children and reported that 20 of 39 studies indicated that fathers treated their sons and daughters differently.

Several studies of father-infant interaction have shown fathers to be slightly more involved with boys than with girls (Kotelchuck, 1976; Lamb, 1977a; Roggman & Peery, 1988, 1989). Siegal (1987) suggested that fathers have a strong influence on their child's developing self-image, and that the father's differential treatment of boys and girls promotes the child’s development of culturally acceptable masculine and feminine behavior, respectively.

In an observational study, Mitchell, Obradovich, Herring, Tromborg, and Burns (1992) observed adults and children (presumably family units) in public places to determine if differences in adult-child interaction were influenced by gender. They reported that adult males were more likely to be involved in caretaking for boys and older children than for girls and younger children. This interaction was most often of a physical, interactive nature, such as carrying the child. Women provided most of the care for younger children and girls, and when accompanying older children, most often pushed empty strollers. In a similar study, Roggman (1992) observed adults and infants at a mall. Male adults (presumed to be fathers) accompanied infants to toy stores significantly more than they accompanied them to clothing stores. Thus, the influence of play appears to affect mother-infant and father-infant dyads differently even outside of that specific context.

In a study of the play patterns of both mothers and fathers with their toddlers, Caldera, Huston, and O'Brien (1989) reported differences in the nature of parent-child interaction with feminine, masculine, and neutral gender toys. Masculine toys, including trucks and blocks, elicited more animated sounds from the parents. Feminine toys, including dolls and dishes, evoked close physical proximity and verbal interaction in the form of comments and questions. Neutral toys, such as shape sorters and puzzles elicited more positive and informative verbalizations from parents. These patterns held for parents of both genders as they played with their sons and daughters.

Inclusion of Fathers in Research

A dearth of information exists about fathers' interactions with their infants. The studies that exist report divergent findings; some research indicates that fathers' interactions with their infants differs from mothers' interaction (e.g. Lamb & Elster, 1985; Levy-Schiff, 1986) while other reports are that mothers and fathers are similar in their interactions with infants (e.g., Brachfeld-Child, 1986; Brachfeld et al., 1988; Lamb, 1977a).

In a study of mother-father-infant relationships, Lamb and Elster (1985) observed fifty-two adolescent mothers with their 6-month-old infants and male partners. Results of the study indicated that mothers were more engaged with and responsive to their infants than were their male partners. The men in the study were more likely to engage in activities like reading or watching television.

Several factors may have contributed to the results of this study. First, the participants were fairly young. All of the mothers in the study were adolescents,

and the majority of the men were under the age of 22. Their relatively young age may have meant that they had little opportunity to interact with young children or that they did not value interaction. Additionally, not all of the males were the biological father of the children in the study. These men may have been less inclined to participate actively with the children.

In a later study Lamb (1977a) visited the homes of 20 father-mother-infant triads when the infants were 7, 8, 12 and 13 months of age. The visits included the researcher who audio-taped the visit and a research assistant who interacted with the child and the parents for the duration of the visit, which lasted between one and two hours. The audiotapes were later transcribed and patterns of attachment were described.

The results of this study indicated that the infants demonstrated no preference for either parent on attachment measures. The study did uncover differences in experiences for infants when they were interacting with their mothers as compared to when they were interacting with their fathers. The mothers tended to hold their infants for instrumental, or care giving tasks while fathers held the infants more often during play. A subsequent analysis of play interactions revealed few differences between the play styles of mother-infant and father-infant dyads. Again, the infants in this study were older than infants in the current study.

Other studies point out the similarities between mothers and fathers on some measures. Lamb (1977a) reported on father-infant and mother-infant interaction in the first year of life. His results indicated that infants do not show a

preference for one parent over the other on measures of attachment. In a teaching context, studies reported by Brachfeld-Child (1986) and Brachfeld-Child and her colleagues (1988) indicated that while fathers use more imperatives than mothers in attempting to teach their infants an unfamiliar task, the two are remarkably similar in most other ways. The findings of the present study provide support for those results; that is, the infant behaviors identified as meaningful and the subsequent interpretations of those behaviors by mothers and fathers were more similar than different.

Levy-Shiff (1986) reported the finding of a study designed to assess mother-father-child interactions in families with a child with mental retardation. Participants in this study were twenty families with a child with mental retardation and twenty developmentally matched samples. All participants were Israeli families, ten of the target children were boys and ten were girls. The mean age of the children with mental retardation was 34.2 months; the mean age of the typically developing children was 20.3 months.

The triads were observed in their homes and two observers recorded behavior, one for the child and the other for the parents. Findings of this study included the common observation that mothers were more involved in caregiving for their children and that fathers of children with mental retardation were barely involved in caregiving activities at all. Mothers also initiated verbally, responded, paid attention, played with toys, and had physical contact more frequently than did fathers. Additionally, children of both groups laughed, smiled and spoke to their mothers more often than to fathers. The behavior of the children with mental

retardation was equally related to the behaviors of mothers and fathers while the behavior of the non-disabled children was more related to the behavior of their mothers.

These studies highlight a difficulty in research about infants that includes fathers. That is, depending on the focus of the research, in some instances fathers and mothers are similar in their interactions with infants and in some instances they differ. None of the studies focused on fathers' identification and interpretation of their infant's behavior.

Fathers' Interpretation of Infant Behavior

One purpose of this study was to consider the father's interpretations of his infant's behaviors. As compared to mother-infant interaction, relatively little is known about how fathers interact with their children, especially very young children. Although some studies have been conducted to determine how much time fathers spend with their children and how that time is typically spent, little information is available about how fathers interpret their infant's behaviors. Although historically fathers were thought to be play partners for their children and little else, father-infant interaction is hypothesized to differ in type and quality (Crockenberg et al., 1993). In comparing fathers' and mothers' interaction with their infants, there may be as much within-group variance as between-group variance. Further research is warranted to investigate these differences.

Historically, fathers have been viewed as having a secondary role in child development. Their role was seen as supporting the mother as she provided

nurturance and care for the young child. Recently, however, fathers have been viewed as having a more central role in child development (Palkovitz, 1984). Increasingly, fathers have been the focus, or co-focus along with mothers, of studies of parent-child interaction because they have been found to have a more central role in child development than just supporting the mother.

Fathers typically spend less time caring for and more time playing with their infants than do mothers (Lamb, 1977a, 1977b). Lamb (1986) determined that three types of paternal interaction behaviors influence a child's development. The first of these is called interaction or engagement, and includes the time that the father spends in direct one-to-one involvement with his child. This type is most often measured directly. The second type is accessibility and includes time spent in child-related housework or time in proximity to the child, but not direct contact with the child. Finally, paternal responsibility, which is the extent to which the father takes responsibility for child care and makes arrangements for such things as babysitters and doctor's appointments, influences the paternal-child relationship. Accessibility and responsibility are most often measured by self-report measures or by the report of the mother. It is a combination of the three that is the best measure of the father's role in child rearing.

Fathers are now considered to have both indirect and direct roles in child development. Traditionally, the father's role has been considered to be indirect. Fathers have been found to moderate the interaction of the mother and infant, and through interaction patterns with other members of the family network, they also present indirect effects on the mother-infant dyad even when they are not

physically present (Parke, 1979). The direct role, primarily considered within the father-infant dyad, is the father's direct influence on the infant. Indirect influences include (a) the impact of the father's modification of the mother's behavior with the infant, (b) the impact of the father-infant relationship on the interaction of the mother-infant dyad, (c) the impact of father's modification of the infant's behavior in the mother-infant dyad, (d) the impact of the relationship between the father and mother on the infant, and (e) the impact of the father-infant relationship on the father-mother relationship (Parke, 1979).

Studies of father-infant interaction have reported different findings for fathers of boys and girls. Parke and Sawin (1976) reported many same-sex and opposite-sex infant-parent interaction patterns. Fathers' verbal interactions were reported to be different for their newborn sons and daughters. Differences in physical interactions were also noted; fathers held their daughters close and snuggled with them more frequently and for longer periods than they did their sons. Kotelchuck (1976) reported that fathers looked at and provided more visual and tactile stimulation for their infant sons than they did for their infant daughters.

In some studies, minimal differences between the interaction patterns of mothers and fathers have been found. Parke and Sawin (1976) reported that fathers of newborns were just as nurturing as mothers, fed their infants similar amounts of formula, and reacted to auditory cues from the infant in similar ways. The major differences, especially as the infants get older, appear to be that (a) fathers interact with their infants more in play situations and mothers interact with

them more for caregiving, and (b) fathers are more tactile and physical while mothers tend to be more verbal (Parke, 1979).

Other studies have documented differences in mothers' and fathers' interactions with infants (Arco, 1983; Field, 1991; Roggman, 1991). Parental interaction with infants is thought to facilitate development in many ways, including social-emotional and cognitive development (Klein, 1991). Although mothers are consistently found to spend more time with their children than do fathers (Crockenberg et al., 1993), a lower level of father involvement does not imply that fathers are less competent than mothers in providing care.

Crockenberg and her colleagues (1993) suggested that long-term effects of infant-father interaction may not be apparent in infancy. These differences may appear much later in the child's developmental course, and may affect the child in multiple and varied ways. More research, especially longitudinal research, is needed in this area. Clearly, interactions between infants and their parents are multiple, varied, and complex. Specifically, more information about father's similarities or differences compared to mothers, and the impact of these similarities or differences will provide much needed information about interaction patterns and their short- and long-term influence on the developing child.

While the unique role of the father in child development has been documented, the professional literature still lacks concrete information about specific father-child interactions that influence child development (Akande, 1994; Ricks, 1985). Dunst (1986), for example, stated that investigators in early intervention should stop questioning the efficacy of early intervention and begin

exploring the dimensions of early intervention that may be related to changes in outcome measures. One such dimension may be the influence of fathers on infant development, both short- and long-term.

Guralnick (1986) observed that investigators must adapt their designs and pose research questions that are compatible with changing services and resources. Rendina and Dickerscheid (1976) identified knowledge of fathers' behavior toward infants as important to provide information to help men learn skills for parenting and substitute caregiving. Today, with an emphasis on enhancing the roles of all family members in the education of young children with disabilities, the role of the father becomes more important as a central feature in the infant's development.

Traditionally, the father's role in child development has been thought to be providing social support for the mother who is the primary caregiver and attachment figure. While the provision of social support is widely recognized as a factor in reducing stress and improving well-being (Dunst & Trivette, 1988), the father's role is viewed not only as a supportive role, but an important contribution to infant development as well. Fathers' interactions with their infants can also enhance paternal feelings of both personal and parental satisfaction (Turbiville, Turnbull, & Turnbull, 1995).

Triadic Interactions

As discussed previously, multiple factors influence infant-parent interaction. Parke (1979) argued that an exclusive focus on the mother-infant

dyad as a means to predict infant developmental outcome is too narrow. His tenet was that interaction must be viewed within a larger context, perhaps the most basic of which is the mother-father-infant triad. There has been a strong focus on mother-infant interaction with relatively little attention to the father-child, or the mother-father-child relationship (Zeanah & Barton, 1989).

Parke (1979) proposed that parents learn from one another, shifting their behavior with the infant according to the behavior of the other parent, further emphasizing the importance of considering the parents jointly with the infant. Bronfenbrenner (1979) embedded the mother-infant dyad within a larger social context to account for the many variables that influence the dyadic interactions and subsequently, child development.

In contrast to a traditional focus on the father-infant dyad, a systems approach focuses on the family triad of mother, father, and infant (Parke, 1979). Clarke-Stewart (1980) points out that much research has focused on the question of mothers' and fathers' different influences on children's development. Unfortunately, much of this research has isolated the behaviors of one dyad or the other, and has not accounted for the interaction of the triad. It is possible that restricting research investigations to the father-infant or mother-infant dyad alone is too narrow. Rather, by viewing the father as one member in a family network, other ways in which the father can influence the infant can be explicitly recognized. To understand parental influences on children's development, it is necessary to examine children's relations with mothers and fathers simultaneously, treating the family as a system.

Some studies have been designed to compare the members of a triad to those between members of a dyad. Belsky (1982) reported reductions in parents' interactions with a child in the presence of the other parents. Both Clarke-Stewart (1978) and Sigelman and Adams (1990) observed the interactions of mother-child dyads and parent-child triads in naturalistic settings. Perhaps contradictory to what might be expected, both observed that parents were more alike in their interactions with their children than they were different. Parke (1973) reported that mothers treated infants differently when in the presence of the baby's father. In the fathers' presence, mothers touched the infants less, but smiled at them more than they did when alone with the infant.

Bentley and Fox (1991) used the *Parenting Inventory: Young Children* (Fox, 1990) to measure the parenting of mothers and fathers of young children. This inventory consists of three subscales: expectations, discipline, and nurturing. Fifty-two urban, primarily middle- to upper-middle socioeconomic class mothers and fathers of 1- to 4-year-old children completed the instrument. Homogeneity of the sample and standardization techniques for the instrument used may limit the generalizability of the findings, but evaluation of the results suggested that mothers and fathers from the sample had similar developmental expectations for their young children. Generally, mothers and fathers agreed about discipline for their young children although specific strategies of discipline sometimes differed. Parents in this study differed most on the nurturing subscale, with mothers scoring significantly higher. One possible explanation for this

difference is that the scale was developed based on a sample of only mothers, so nurturing activities unique to fathers may not be included in the scale.

Parents have been observed to behave differently when in the presence of the other parent than when they are alone with their infant (Parke, 1979). Lamb (1977a, 1977b) reported that when both parents were present, mothers initiated less talk and play with the children than when another adult was not present. It appears, then, that the number of adults in a situation influences parent-child interaction, at least for mothers. As the number of adults increases, the amount of adult-child interaction decreases, since adults appeared to concentrate more on each other than on the child.

One generalization may be drawn from the results of these studies. Mothers and fathers differ in types of interaction with their children, but are generally similar in quality. One situation provides an exception — that is social play. In social play, mothers and fathers are alike in the quantity, but unlike in the quality or type of their interactions with their infants.

The multitude of factors listed thus far, including infant characteristics, parent characteristics, and the interaction of infant and adult characteristics make the study of infant-parent interaction an extremely complex process (Pedersen, 1982). It becomes increasingly clear, then, that multiple assessment strategies are necessary for adequately understanding early parent-infant interaction patterns. These strategies may include, but not be limited to (a) observational assessments, (b) verbal reports of parental perceptions and attitudes, and (c) assessment of knowledge about infants and their development (Parke, 1979).

Many strategies and instruments for the assessment of infant-parent interaction are available.

Assessment of Infant-Parent Interaction

Historically, infant development was thought to be strictly biologically determined (Clark, Paulson, & Conlin, 1993). Currently, however, infants are viewed as having the capacity to influence their caregivers, who, in turn, influence the infant's development. Many aspects of infant-parent interaction have been studied, and a great deal of information is available about infant-parent interaction.

The assessment of early interactions between infants and their parents was changed considerably by Bell's (1968) assertion that the roots of socialization were bi-directional. Historically, development during infancy was thought to be purely biological (Clark et al., 1993). Current information about infant communicative ability supports the notion that infants are ‘hard-wired’ to give and receive communication and that the environments in which they are raised greatly influence their abilities in multiple areas, including communication (Golinkoff & Hirsh-Pasek, 2000; Gopnik et al., 2001; Kotulak, 1997).

Assessment of infant-parent interaction has become more widely used in infant mental health programs and educational or developmental programs for infants and toddlers with disabilities. Some early intervention textbooks and curricula published in the 1980s and 1990s (e.g., Bailey & Simmeonson, 1988; Bailey & Wolery, 1992; Bricker, 1989; McLean et al., 1995) include information

on the assessment of infant-parent interaction and provide information about intervention for dyads at-risk. Unfortunately, newer textbooks do not address this area (e.g., Branscombe, Castle, Dorsey, Surbeck & Taylor, 2003; Cook, Klein & Tessier, 2004; Howard, Williams & Lepper, 2005; Howard, Williams, Port & Lepper, 1997).

Mash, Terdal, and Anderson (1973) were among the first to propose a system for recording parent-child interaction (Barnard & Kelly, 1990; Field 1991; Rosenberg, Robinson, & Beckman, 1986). Multiple systems have since been proposed. Each system has its own characteristic strengths and weaknesses. The context within which each system was designed is one factor that contributes to the relative strength or weakness of the system.

Contexts for Assessing Infant Parent Interaction

As with nearly all aspects of infant-parent interaction, there are differences of opinion regarding the importance of the context within which infant-parent interaction is assessed. Ainsworth (1979) reported that for the limited sample of White, middle-class mothers and infants used to develop the *Strange Situation*, little importance could be attributed to any one context of interaction. *The Strange Situation* was devised as a tool for gathering information about the behavior of young children. The protocol calls for the children to experience a series of eight short episodes in a clinical setting. These episodes are designed to give insight into the infant's attachment to his or her mother (Ainsworth, Blehar, Waters, & Wall, 1978). Ainsworth's findings suggest that a mother who is responsive to her infant in one setting tends also to be responsive in another

setting. Lamb (1978), who performed a modified *Strange Situation* on 32 one-year-olds, reported that infants who were securely attached to one parent were more likely to be securely attached to the other; conversely, infants who were insecurely attached to one parent (i.e., the mother) were more likely to be insecurely attached to the other (i.e., the father).

Others believe that the context within which the interactions of infant-parent dyads are assessed is an important factor in the type and amount of information gleaned from the assessment process (Bridges & Connell, 1991). Most assessment procedures are designed for use within a specific context, for example feeding, free play, or teaching. Observations in clinical and home settings reveal remarkably similar findings (Lamb, Frodi, Hwang & Frodi, 1983). The specific role of each dyad partner influences their behavior, and these roles are influenced by context. Hoffman (1992) pointed out that the negotiation and resolution of differences between dyad partners are important variables in interaction. If dyad partners are expected to fill certain roles, during feeding for example, the negotiation of the specific aspects of the role may influence their behavior. Likewise, specific characteristics of one dyad partner — an infant born with cleft palate, for example — may influence interaction in one context (e.g., feeding), but not another (e.g., play).

Observational context. The advent of videotape equipment has allowed researchers and practitioners who are interested in infant-parent interaction to develop more complex systems of measurement of aspects of the interaction. It is nearly impossible to observe and record the actions and interactions of a dyad

in vivo. The use of video recorders allows the researcher to (a) capture the interaction less intrusively, (b) view all or part of the interaction repeatedly, and (c) make comparisons of specific behaviors at different points in time.

Many believe that the context within which the interaction between infant and parent is assessed necessarily influences the findings of the assessment. Some research supports the idea that the context in which the dyad is observed influences the behaviors of both partners (Bradley, 1986; Bronfenbrenner, 1979; Golinkoff & Ames, 1979; Seifer, Sameroff, Anagnostopolou & Elias, 1992). The process of videotaping the dyad, a common practice in the study of infant-parent interaction, seems to influence the interaction (Field & Ignatoff, 1981; Rosenberg et al., 1986). Other researchers (Lamb et al., 1983) report consistent findings of infant-parent attachment regardless of the location of data collection.

The assessment of infant-parent interaction, then, must be undertaken with the knowledge that many factors, even the act of evaluating it, may influence the interaction. Cramer (1986) stressed that to assess infant-parent interaction effectively, it is essential that the dyad be offered the opportunity for interaction in a setting that is conducive to the interaction, and that the parents be offered the opportunity to discuss the possible meaning of the infants' and their own behaviors.

Play context. Play is possibly the most important context through which young children prepare for academic settings; develop internal controls and emotional mastery; and learn such skills as social competence, peer interaction, and cultural norms (Howes, 1992; Johnson, Christie, & Yawkey, 1987; Lasater &

Johnson, 1994). Play is also the only context in which mothers and fathers are equally likely to engage with their child (Pedersen, 1980) and, as such, it is important for assessing interaction.

Constructivist theories, such as Piaget's, attribute early cognitive development to interactions with the physical environment. For infants, interactions frequently happen in the context of play. Play provides a rich environment through which many aspects of children's development, including their interactions with people and objects, may be assessed. Although infants may play differently with their mothers and fathers, play is a universal phenomenon.

Play has also been identified as an important avenue through which children learn. Developmental theories from several perspectives point to an important connection between play and development (Roggman, 1991). Bredekamp (1987) stressed the importance of providing young children with ample opportunities to experience developmentally appropriate play; it is through the manipulation of their environment during play rather than in direct instruction that young children are thought to learn best.

Social play is an important avenue through which infants learn and practice social skills, but infants probably spend relatively little time engaged in social play with their mothers (Beckwith, 1986). Although mother-infant play is important, play is the most common interaction time for infants and their fathers. Play was found to be an important factor in the interaction of fathers and infants (Carlisle & Holstrum, 1989). Arco (1983) studied the play patterns of mother-

infant and father-infant dyads and reported that fathers' pace of interaction was faster than that of mothers, but that the play was equally developmentally appropriate.

Play is an important avenue for interaction between infants and their parents; differences have been found for infant age and the gender of both the infant and the parent (Bakeman & Gottman, 1986; Bentley & Fox; 1991; Dunst & Trivette, 1988). Other research about the interactions of infants and their parents has focused on the more structured context of the parents' attempts to teach a skill to the infant (Brachfeld-Child, 1986; Bradley, 1986).

Hartup (1989) maintains that two types of social interactions are important for young children: vertical and horizontal. Vertical relationships are characterized by children’s interdependence on another person, usually an adult and typically a parent. These relationships provide protection and nurturing and are the relationships within which basic social relationships are learned. Horizontal relationships, on the other hand, provide contexts in which children practice and expand the skills needed to interact with a wide variety of people. Typically, vertical relationships emerge within the first year of life; horizontal relationships generally emerge later. In most cultures, they are seen in only rudimentary form until about age three.

The play context may give infants practice with horizontal relationships with their caregivers. Within other contexts the adult generally has an agenda. During feeding, for example, infants are often encouraged to eat a certain amount. During dressing or bathing, infants are encouraged to cooperate so that

the tasks may be accomplished. During play, however, infants may be in an equal, or horizontal role. They may guide the form or rhythm of the interaction as their interests change. In a play situation, as in no other context, infants have the opportunity to be a truly equal partner with caregivers.

Teaching context. The context in which parents are asked to interact with their infants in order to teach them is another way to address infant-parent interaction. Some studies of infant-parent interaction have used a teaching context, rather than a play context, as the venue through which interaction is addressed. In these contexts, the focus is generally on the parent and his or her actions rather than on the infant. In some of these studies, both mothers and fathers were participants.

Brachfeld-Child (1986) compared mothers and fathers of 8-month-old typically developing infants in a teaching situation. Parents were instructed to teach their child to drop a cube into a cup, a task considered to be above the ability of children of this age. In contrast to earlier studies, fathers were found to be remarkably similar to mothers in most of the twelve areas analyzed. Differences occurred in the duration of time parents spent prohibiting their infants, time spent talking to infants, and time holding the cup for the infant. In each of these areas, fathers spent significantly more time with their infants than did mothers.

In a study of the speech behaviors of parents during a teaching situation, Brachfeld-Child et al. (1988) reported that fathers used more imperatives than did mothers. A possible explanation was that mothers were more in tune with the

child's abilities, and therefore when asked to get the child to complete a task that exceeded the child's ability, mothers tried less hard than did fathers. The content of the session influences the behaviors of the dyad partners, as does the location of the observation or assessment.

Location

The location of the observation or assessment of the interaction may have an impact on the participants. Dyads or triads are typically observed in their home or in a clinical setting; although some naturalistic observations performed in other settings have been reported. Several factors related to the setting may influence behavior. For example, parents and older infants may be inhibited by the unfamiliarity of a clinical setting and may be more comfortable in their own home. Probably for the convenience of the researcher, much of the observation of infant-parent dyads or triads has been performed in a laboratory setting rather than in the home.

Miller (1987) failed to find significant differences in maternal and paternal behavior as observed with eight-month-old infants in a clinical setting. She hypothesized that fathers, while equally capable of interacting with their infants in either setting, may actually interact with them less at home and increase interaction in the laboratory setting where there is little else to distract them. Thus, the interaction of the setting and the independent measures used to measure the interaction probably affected the results of studies of infant-parent interaction.

Systems for Assessing Infant-Parent Interaction

Many systems for assessing interaction between infants and their parents have been developed. Each system was designed for a specific purpose and from a specific theoretical background. These factors influence the way in which the system is used, and the extent to which the information obtained may be used for intervention. Each system has its strengths and drawbacks, and careful consideration of the type of information desired should guide the user's choice of system. The results obtained from the study of infant-parent interaction is greatly dependent on the system used to collect the data (Osofsky & Connors, 1979).

Molar and Molecular Systems

Systems designed to assess interactions between infants and parents fall into two broad categories: molar and molecular (Rosenberg et al., 1986). Some systems combine the two approaches. Molar systems use broad classes of behavior, such as directiveness or enjoyment. They provide relatively less information about the specific behavioral exchanges between dyad partners. These systems often evolve from multiple categories that are tested and then factor analyzed to reduce them to smaller, but broader, units of behavior (Mahoney, Powell, & Finger, 1986). Molecular systems define behavioral categories relatively narrowly, and are used to record specific behavioral events, such as the number of verbal exchanges. Molecular systems are designed to capture and analyze minute aspects of behaviors. Osofsky and Connors (1979) caution against relying too heavily on the analysis of only molecular units of behavior. The meaning of the behavior may be lost in the analysis, and the

representativeness and generalizability of the analysis is limited. Other systems use both molar and molecular units of behavior.

Whether a molar or molecular system is chosen, the researcher or practitioner is cautioned to adopt a dual focus for several reasons (Cramer, 1986). First, both observational data, which reveal the topography of the behavior, and the parental interpretation, which may provide an underlying clue to the meaning of the behavior within the family context, are important. Second, the actions of both the parent and the child provide information about the interaction. Focusing on the behavior of one dyad partner to the exclusion of the other partner, or failing to attempt to understand the parent's perception of the meaning of the behavior, may lead the professional to make incorrect conclusions about the interaction.

Hunt (1987) stressed his dissatisfaction with norm-referenced measures of infant development both in terms of measuring behaviors and designing appropriate development-fostering experiences. He proposed that there is a qualitative aspect of many behaviors and experiences that is difficult, if not impossible, to capture quantitatively. The same case might be argued for measures of infant-parent interaction. To assess the interactive behaviors and to design appropriate interventions for dyads at-risk, perhaps the most appropriate measures are not norm referenced, but instead are measures that determine the meaning of behaviors within the infant's developmental experience (Pedersen, 1982). One way in which this may be accomplished is through the process of meaning attribution.

Meaning Attribution

Research in the area of infant-parent interaction has not been as fruitful as was once hoped (Zeanah & Barton, 1989). Recently, an alternative measure of the behaviors of infants, and the parents' interpretation of those behaviors has been instituted. This method allows for interpretation of aspects of the interaction beyond the behaviors of the parent and child (Hodapp, 1988). Meaning attribution involves obtaining the perceptions of the parents about the meaning of their child's behaviors.

Individual infant differences are of little relevance unless they are taken within the context of what each trait means for each individual mother (Freel, 1995/1996; Osofsky & Connors, 1979; Zeanah & Barton, 1989). Spontaneous infant behavior is transformed into interactive behavior by parents who interpret and respond to the behavior, thereby shaping future behaviors (Cramer, 1986; Honig, 1981). Obtaining the parents' interpretation is important because the same behavior may have different meanings for different parents, or the same parent at different points in time. Zeanah and Barton (1989) provide this example:

> A controlling interaction may represent one mother's emotionally distant attempts to push her infant to achieve, a wish for the infant to be independent, whereas a similar-appearing interaction may represent another mother's efforts to prove her own absolute necessity to the infant's well-being, a wish for the infant to be dependent. (p. 136)

In order to fully understand the interaction, the perceptions and interpretations, or the subjective experience, of the parent must be investigated. This subjectivity has long been central to clinical work in infant-parent interaction, and is now a focus for researchers as well (Zeanah & Barton, 1989).

Sameroff (1993) stated that the way parents interpret the behavior of their child is related to the way in which they view development. To a large degree, success in caretaking depends on the parents' ability to correctly "read" or interpret their infants' behavior so that their own behavior can be regulated to respond appropriately (Goldberg, 1977). Many factors, including infant developmental status, child age, maternal education level, family socioeconomic status, and parental stress and social support, have been found to affect the behaviors interpreted and the meaning, or response, to those behaviors (Dunst & Trivette, 1988). To date, limited information is available about the behaviors that mothers interpret as meaningful, and virtually no information is available about the behaviors that fathers interpret as meaningful.

Maternal interpretation of infant behavior. Some studies have been designed to consider the behaviors that mothers interpret as meaningful and the subsequent interpretations of these behaviors (Baird, Haas, & Mayfield, 1993; Baird et al., 1995; Baird et al., 1998; Haas et al., 1994; Ingram, 2002). This research has revealed that not all mothers identify the same behaviors as meaningful, nor do they interpret those behaviors in the same way. An extensive search of literature revealed no studies reporting either the infant behaviors fathers identify as meaningful nor the interpretation they ascribe to those

behaviors. If, in fact, fathers and mothers are affected differentially by infant behaviors, it is important to recognize this, and to determine which infant behaviors influence parents to act as they do, or to perceive their infants in the ways they do.

Three of these studies (Baird, Haas & Mayfield, 1993; Baird et al., 1995; Haas et al., 1994) provided information gleaned from one set of data. These data were collected from 60 mothers. Twenty of the mothers had healthy, full-term infants; 20 had healthy preterm infants and 20 had preterm sick infants. The data were collected when the infants were between 11 and 26 weeks of age. The dyads were videotaped for 10 minutes. Mothers viewed the last 5 minutes of the videotape and provided information about (a) the infant behaviors they identified as meaningful, and (b) the subsequent interpretation of those behaviors. Only single behaviors were included in the analyses. If a mother identified multiple behaviors or interpretations within an instance, only the first behavior or interpretation was used.

Haas, Baird, McCormick and Reilly (1994) delineated categories of infant behaviors identified by their mothers. This study (a) identified categories of infant behaviors interpreted by their mothers, (b) examined infant behaviors interpreted across risk groups, and (c) to identified implications for early intervention. Participants in the study included 60 mother-infant dyads. Six categories and 21 subcategories of meaningful infant behavior were described. Among the risk groups, two differences were revealed. First, mothers of preterm healthy infants interpreted their infants' laughs significantly more frequently than did mothers of

preterm sick infants. Mothers of preterm healthy infants also interpreted significantly more infant attention behaviors than did mothers of full term healthy infants. The authors of this study recommended further research to identify a number of factors in infant-parent interaction; including fathers in research was one of those recommendations.

Baird, Haas and Mayfield (1993) provided information about maternal interpretation of infant behavior. This study delineated categories of interpretation of infant behavior, examined frequencies and correlations among categories of interpretation and examined maternal interpretations of infant behavior across categories of infant risk. Seven categories of interpretation with 14 subcategories were outlined in the study. Analysis of the data from the study revealed a correlation between the number of infant behaviors in the category of physical need and level of infant risk. Mothers in the three risk groups identified similar numbers of interpretations.

Baird, Peterson and Reilly (1995) outlined patterns of behavior interpretation for infants. Two hundred sixty-three behaviors described in the Baird, Haas and Mayfield (1993) study were included in this analysis. Significant correlations were reported between specific infant behaviors and the subsequent maternal interpretation. Those relationships included (a) a correlation between the infant behavior of vocalization-laugh and the maternal interpretation of emotional state-positive, (b) the infant behavior of vocalization-laugh and the maternal interpretation of attention preference, (c) the infant behavior of vocalization-whine/fuss and the maternal interpretation of physical needs, and (d)

the infant behavior of directed gaze and the interpretation of attention curiosity.

Baird, Ingram and Peterson (1998) reported on a similar study of the infant behaviors interpreted by mothers of infants with Down syndrome. Families in the study had been referred to an early intervention program. The seven mothers who participated in this study identified behaviors in 18 of the previously identified 22 subcategories of meaningful infant behavior. They gave interpretations that fell into 15 of the 16 interpretation subcategories. In addition, the mothers in this study identified behaviors that constituted an additional category of interpretation (developmental status-abilities).

Ingram (2002) reported the results of a study of maternal interpretation of the behavior of infants who had been born prematurely. Thirty-one mother-infant dyads participated in this study when the infants were between the gestational ages of 36 and 41 weeks. This gestational age is very close to the gestational age of most term infants. This means that although the infants may have been several weeks old chronologically, their gestational age was near that of most babies born at term. Mothers who participated in this study identified meaningful infant behaviors that fell into 21 categories and 15 subcategories and provided interpretations of those behaviors that fell into 10 categories and 17 subcategories. These categories and subcategories are different from those presented in the other studies by Baird and her colleagues. Table 1 provides information about the studies described above.

Table 1

Studies of Interpretation

	Baird, Haas & Mayfield 1993	Haas, Baird, McCormick & Reilly 1994	Baird, Peterson & Reilly 1995	Baird, Ingram & Peterson 1998	Ingram 2002
Participants	60 mother-infant dyads	60 mother-infant dyads	60 mother-infant dyads	7 mother-infant dyads	31 mother-infant dyads
Infant characteristics	20 healthy full-term, 20 healthy preterm, 20 sick preterm	20 healthy full-term, 20 healthy preterm, 20 sick preterm	20 healthy full-term. 20 healthy preterm, 20 sick preterm	Down syndrome	Preterm
Behavior Categories/ subcategories	NR	6/21	6/21	7/21	21/15
Interpretation Categories/ subcategories	7/14	NR	7/14	8/16	10/17

NR = Not reported

Interpretation of infant behavior by other adults. Some studies have reported on identification and/or interpretation of infant behavior by adults other

than the infants' parent (Adamson, Bakeman, Smith & Walters, 1987; Yoder & Feagans, 1988). These studies indicate that parents identify more behaviors than do adults who are not parents.

In order to compare the interpretation of infant behaviors identified as meaningful by parents to those of other adults, Adamson, Bakeman, Smith, and Walters (1987) showed videotapes of 9-, 15-, and 21-month-old infants to equal numbers of men and women who were, and were not, not parents. Participants in the study were asked to view a videotape composed of several segments of infants playing with their mothers. Participants were asked to press a button on a recording device when the infant did something to which they attributed meaning.

When asked to identify acts that the adults thought the infant was intentionally trying to communicate, parents identified significantly more behaviors than did other adults. The participants in the study, regardless of their parenting status, identified more acts as meaningful for older infants as compared to younger infants. Infants who were engaged in play with their mothers were thought to demonstrate more meaningful acts than were infants engaged in toy play. Men and women, regardless of their parent status, identified similar numbers of behaviors as meaningful. This study did not provide a comparison of the infant behaviors identified by mothers and fathers.

The parents' experience may also play a role in the infant behaviors they interpret as meaningful. Yoder and Feagans (1988) selected the mothers of 16 11-month-old infants with disabilities to view and rate 20 videotaped scenes of unfamiliar infants and adults interacting. These mothers were not instructed to

view communication in any particular way, but were asked to rate the certainty with which they could say that the infant behavior depicted in each scene was communicative. Mothers of infants with more severe disabilities attributed communicative intent to more of the unfamiliar infants than did mothers of infants with less severe disabilities. These same mothers tended to interpret different types of behaviors in their own infants depending on the severity of the infant's disability. Mothers of infants with more severe disabilities identified behaviors that were more subtle and less intense than did mothers of infants with relatively less severe disabilities.

These studies provide important information about the infant behaviors that adults, parents and non-parents, identify as meaningful. Studies such as the ones described here have lead to the development of instruments designed to assess infant-parent interaction. These systems may be used by professionals in clinical settings to assist families with issues related to interaction.

Instruments Designed to Assess Infant-Parent Interaction

In order to understand more fully the interactions between infant and parent, and to develop methods for improving the infant's social experiences, systematic assessment of the parent-infant interaction process is needed (Barnard & Kelly, 1990). Rosenberg et al. (1986) identified three important characteristics of observational systems of infant-parent interaction. These characteristics are that the system (1) permits reliable assessment of the dyad, even when the infant has a disability that may effect the pattern of his behavior;

(2) is efficient and can easily be incorporated into an intervention program; and (3) identifies strategies that interventionists can recommend to parents to enhance their interaction with the infant. Three basic paradigms for gathering the data exist: measures of infant behavior, measures of parent behavior and measures of the interactions between infant and parent.

Many instruments are available that are designed to assess components of the interaction between infants and their parents. As Greenspan and Lieberman (1989) pointed out, the first step in developing a quantitative approach to assessing infant-parent interaction is to select measures that are consistent with clinical judgment. Further, these authors caution practitioners to interpret the resulting data not in isolation, but in the context of extensive clinical knowledge and understanding of the individual case.

Traditionally, four types of instruments have been used to measure infant-parent interaction: (a) parent report measures, (b) checklists, (c) rating scales, and (d) behavioral coding systems. These are not necessarily distinct categories; parent report measures might also be checklists or rating scales, and behavioral coding systems might also include some measure of the intensity of the behavior. The salient characteristics of each, including possible advantages and disadvantages, are discussed in this section.

Parent Report Measures

Interviews with parents or parent-completed questionnaires are used infrequently in infant-parent interaction studies (Macoby & Martin, 1983). This is due, in part, to criticism of parent report measures in the 1960's. Increasingly,

parents are seen as equal partners in early education and as such, their input is valued more now than it has been in the past. One advantage of parent report measures is that they are designed to be completed by the person or people who know the child best, specifically the parent. A disadvantage is that parents sometimes do not understand the measure, or are reluctant or unable to complete it. In these instances, it is the role of the professional to assist the parent.

Another serious disadvantage of parent report measures is that professionals are often reluctant to give credence to parents' perceptions of their child's behavior. Casting such dispersions on the interpretations of the parents may lead professionals to discount all parental information — why ask for the information only to question its validity? Increased parental participation in all aspects of programming for all children is an integral part of the Individuals with Disabilities Education Act (IDEA) (1997). In order to take full advantage of parents' expertise, professionals must not only seek their input, but must give the information credence, as well.

Suen, Logan, and Bagnato (1995) reviewed studies of parent-professional congruence and reported that a major finding of the studies included moderate to high agreement between parents' and professionals' assessment of children. The authors called into question "the logic of requiring or even desiring congruence between parent and professional assessments" (p. 244). These authors support their claim by pointing out that congruence in the form of inter-rater reliability is important from two perspectives: raters need to be interchangeable and

randomly selected. Clearly, neither of these perspectives applies to parents, thus negating the question of parent-professional congruence. As an alternative, the authors suggested pooling the knowledge of parents and professionals to provide a larger understanding of the child's behavior.

Bronfenbrenner (1979) asserted "what matters for behavior and development is the environment as it is perceived rather than as it may exist in 'objective' reality" (p.4). As reported in many of the studies above, parental interpretation of an infant's behavior influences the reaction to the behavior. Longstanding patterns of transaction influence infant development much more than do individual instances of interaction.

Checklists

Checklists are organized lists of behaviors that provide the observer with an efficient method to record the presence or absence of specific behaviors (Irwin & Bushnell, 1980). Checklists may be completed by the parent or professional who may take in to account behaviors across situations. Checklists are typically organized into relatively large categories or themes that make them fairly easy to use, but provide limited information, especially for the purpose of program planning. While they are typically easy to use, there are many disadvantages to checklists. Unless the behaviors are rated in some way (e.g., never, sometimes, often, always) a checklist only provides an indication of the presence or absence of a given behavior. If a behavior is not included on the checklist, it may be undetected. Often, more detailed information about the

quality or quantity of the behavior is needed and for this reason, checklists are seldom used (Brandt, 1972).

Rating Scales

Rating scales provide a measure not only of the presence of a behavior, but a measure of its intensity as well. Use of these scales indicates an attempt to identify the intensity or frequency of a behavior, not just its presence or absence. The use of rating scales requires observers to make judgments about the quality or quantity of observed behaviors over a longer period of time or in multiple settings (Cairns & Green, 1979). Observers may make these judgments after observing the behavior for a specified period of time, or the judgments may be made based on knowledge gathered over a long period of time and in multiple environments.

Typically, parent-child interaction observational scales are designed to describe a defined set of behaviors of dyad partners who are observed at a particular point in time as they are engaged in designated activities (Comfort & Farran, 1994). Rating scales depend more on the judgment of those completing them than do coding systems, and the observed behaviors occur over a longer period of time and in a wider variety of circumstances than do other observational methods (Cairns & Green, 1979). Some researchers have reported that rating scales may have higher predictive validity of later behavior than other behavioral coding systems (Bakeman & Brown, 1980; Schaefer, 1989). Some rating scales may have equal or higher stability over time than other behavioral coding systems (Clarke-Stewart & Hevey, 1981; Schaefer, 1989).

Rating scales also have disadvantages. Because their use depends more on the judgment of those who use them, they are considered more subjective than other behavioral coding systems (Cairns & Green, 1979). Characteristics of raters may unduly influence the results of the scale. Guilford (1954) identified six possible errors that may occur when using rating scales: (a) errors of leniency, (b) errors of central tendency, (c) halo effect, (d) logical error in rating, (e) error of contrast, and (f) proximity error. Raters who display error of leniency may generally rate behaviors higher than deserved. Errors of central tendency occur when users rate behaviors in the middle range rather than at either the high or low end of the scale.

A rater may also form an opinion based on a characteristic or behavior other than the target characteristic or behavior. When this opinion influences the rater it is said to be a 'halo effect'. If behaviors appear similar to the rater, and the ratings are assigned based on this perceived similarity, a logical error occurs. A contrast error occurs when a rater assigns values based on the way they would rate themselves. Proximity errors occur when raters assign values based on the location of the scale items; that is, they tend to assign high values to items following items they rated highly, and low values to items following items they rated low. Careful training and objective descriptions of the items may help to ameliorate these errors, but the subjective nature of rating scales leaves them open to these errors (Guilford, 1954).

Behavioral Coding Systems

Behavioral coding systems provide specific information about specific behaviors at the molar or molecular level, or both. These systems rely on trained raters to observe behavior, either in the actual setting or via videotape, and then code the behaviors. Coding systems may focus on the behavior of the infant, the behavior of the parent, the interactional behavior of the dyad, or some combination of the three. Researchers define behaviors to be recorded before observations begin, and observers record (a) the frequency, (b) the duration and/or (c) the order of the specific behaviors that occur during the specified observation period (Bakeman & Gottman, 1986).

The development of a coding system requires a tremendous investment of time. Behaviors are chosen and operationally defined to minimize judgments by the coders. Coding systems provide vast amounts of very specific information about the behaviors that are included. The drawbacks of these systems are that coders must generally undergo extensive training, which limits the practical use of the system, and that behaviors not included in the coding scheme are lost to interpretation. An additional drawback is that only the presence or absence of a behavior is recorded, intensity is not measured.

Each of the four methods has distinct advantages and disadvantages. One disadvantage of them all is that none of them provide parents the opportunity to identify and interpret their infants' behaviors. In order to address parents' identification and interpretation of meaningful infant behavior with minimal interference from professionals, an alternative method is needed.

An Alternative Method

According to an African proverb, "the lion's story will never be told as long as it is the hunter who tells it" (Fenichel, 1996, p. 2). One of the many challenges of the study of infant-parent interaction is to understand the interaction from the perspective of the participants. Clearly, infants do not have the verbal skills to tell us their perceptions of the interactions. Their behavioral cues may be meaningful, but are open to multiple interpretations. Parents, however, can be reliable reporters of their perceptions. The attempt to understand the interaction from the perspective of the parent is a relatively new avenue of research. More information is needed about viable methods for obtaining this information. Parental interpretation of infant behavior may be one such method.

In a report of two studies, Sorce and Emde (1982) described the results of two different methods designed to assess the identification and interpretation of infant facial expressions. The infants were grouped according to diagnosis; one group of infants was typically developing, and the other group of infants had Down syndrome. All of the infants were between 3 1/2 and 4 months. Photographs were taken of the infants exhibiting a variety of facial expressions. In the first study, mothers of these infants looked at the photos and described their infants' emotional signal(s) and gave their interpretation of the meaning for caregiving. In the second study, mothers of typically developing children other than those included in the first study were also asked to look at the photos and then describe the infants' signals and give their interpretations for caregiving.

Results of this study suggested that infant developmental status differentially influences maternal interpretation of infant emotional signals. Infants who were typically developing and infants who had Down syndrome demonstrated differentiated patterns of emotional expression; however, mothers of these infants recognized different expressions. These results have implications both for the interpretation of infant behavior and for the study of the effect(s) of disability on infant-parent interaction.

In related work, Baird and her colleagues (Baird, Hass & Mayfield, 1993; Haas et al., 1994) used maternal interpretations of infant behavior as a method for understanding the meaning of infant behaviors within their naturalistic contexts. While still in the preliminary stages of development, this method has promise for addressing some disadvantages of other methods. Gathering information that is meaningful within context and the reduction of cultural bias are potential advantages. In addition, this approach may provide an alternative to addressing infant-parent interaction issues in a family friendly manner.

Toward Fuller Understanding of Infant-Parent Interaction

Although all of the complex factors involved in infant-parent interaction are not yet fully understood, it is critical to persevere in the attempt to understand the factors involved in infant-parent interchanges. Assessment of infant, parent and dyadic characteristics, especially as they relate to infant-parent interaction, has the potential to influence the environments in which infants grow and develop (c.f., Als & Gilkerson, 1995; Johnson, 1995). Although many instruments have

been developed to assess the interactive skills of infants with their parents, no one instrument is recommended as a comprehensive assessment (Adylett, 1993). Specifically, more information is needed about (a) infant-parent interaction for infants with developmental concerns, (b) the inclusion of cultural issues in the understanding of interaction, and (c) including fathers and other adults in studies of infant-parent interaction.

Disturbances in early parent-child interaction may be important contributors to the child's future developmental disturbances. Certain child characteristics, such as premature birth or the presence of a disability, may affect the dyad's interactions. Additionally, aspects of the parent's behavior may serve to enhance, or hinder the child's development (Mahoney & Powell, 1988). If interventions are to support balanced relationships, they must focus on the behaviors of both dyad partners (MacDonald & Carroll, 1994).

Cultural differences may account for variance in both the observed interactions and the interpretation of those interactions. The tradition of comparative paradigms in which parents and children of diverse cultural and ethnic backgrounds are compared to the dominant culture has serious shortcomings and consequences (Garcia Coll & Meyer, 1993). Currently, no measures of infant-parent interaction that include information about dyads of diverse cultural backgrounds are available. Similarly, none of the measures reviewed for this document included specific information for the coder of a different cultural, racial, or social background than that of the dyad.

Additionally, more information is needed about the effects of infants' interactions with significant others in their lives, including fathers. Intervention for difficulty with interaction must be provided within the context of the family because families have the largest share of responsibility for producing competent members of society (Garbarino & Gaboury, 1992). Without the interaction, modeling, and nurturance of parents and primary caregivers, there would be little emotional development in infancy (Watkins, 1986). These interventions may have the greatest potential for influencing the ultimate outcome of the children as they develop into healthy, socially competent adults who are sensitive to and supportive of their own children (Grossmann, Fremmer-Bombik, Rudolph, & Grossmann, 1988).

III. METHODS

As the importance of the early stages of infant development becomes more evident, increasing attention is given to specific elements that influence development. Among those elements is the social interaction of infants and their caregivers. Several studies (Baird, Haas & Mayfield, 1993; Baird, Haas & McCormick, 1993; Baird et al., 1995; Baird et al., 1998; Ingram, 2002) have delineated the infant behaviors that mothers interpret as meaningful. However, no studies that addressed the infant behaviors identified and interpreted as meaningful by fathers could be found.

The purpose of this study was to extend existing research to investigate the infant behaviors that parents interpret as meaningful by including both fathers and mothers as participants in the study. Specifically, the study was designed to investigate the infant behaviors that mothers and fathers identify and interpret as meaningful. The research questions addressed in this study were (a) Do mothers and fathers identify equal numbers of infant behaviors as having meaning? (b) Do mothers and fathers of infants identify different infant behaviors as being meaningful? (c) Do mothers and fathers identify equal numbers of interpretations of the infant behaviors they identify as meaningful?, and (d) Do mothers and fathers interpret the behaviors they identify differently?

For the purpose of organization, this chapter is divided into sections. The first section contains information about the participants. The second section contains information about the instrumentation of the study. Instrumentation included a parent questionnaire, a parent interpretation of infant behavior form, and videotaping. The final section of the chapter outlines the procedures used in the study, including data analysis and the qualitative and quantitative procedures used.

Participants

The participants for this study were triads of thirteen infants, six male and seven female, and their mothers and fathers. At the time of the study, the members of each triad were living together. Several methods were utilized to recruit participants. Two hundred fifty fliers were distributed to businesses and organizations (e.g., local La Leche League, child care centers, church nurseries, play groups). In addition, advertisements soliciting participants were placed in a local newspaper. These methods outlined the requirements of the study (i.e., that the infant be between three and six months of age, that the parents be living together with the infant, and that both parents be willing to participate). No parents responded to the fliers or advertisements; all were recruited through contacts with the researcher. At the end of six months of data collection, the decision was made to end the data collection phase of the study and analyze the data that had been collected.

Parents

Twenty-three of the parents identified themselves as Anglo. One father identified himself as Hispanic and two mothers identified themselves as being of at least partial Native American ancestry. Mothers ranged in age from 21 to 38 years (M = 29.9, SD = 3.33) and fathers ranged in age from 22 to 41 years (M = 32, SD = 2.98).

One mother reported having less than a high school diploma and two mothers and one father had high school diplomas. Two of the parents, one mother and one father, reported having some college and five of the parents had a bachelor's degree. Six fathers and three mothers had masters' degrees and six of the parents, three mothers and three fathers, had doctoral degrees. The levels of education were closely related by couple. The infants with mothers who reported not graduating from high school or having a high school diploma had fathers who had completed relatively less formal education. The parents with doctoral degrees were couples – each mother with a doctoral degree was partnered with a father with an equivalent degree. Table 2 provides information about the parent participants.

Table 2

Description of Participants

Infant	Gender	Age	Parent (mos)	Age (yrs)	Education	Number of infant behaviors Identified as meaningful
1	M	3	M	20	High School	16
	F	22			Some college	10
2	F	5	M	30	Bachelor's	14
	F	32			Master's	24
3	M	4	M	35	Ph.D.	16
	F	35			Ph.D.	9
4	F	3	M	28	Bachelor's	7
	F	34			Master's	11
5	F	5	M	28	Bachelor's	11
	F	34			Master's	9
6	M	3	M	36	Some college	6
	F	32			Master's	3
7	F	4	M	36	Ph.D.	21
	F	35			Ph.D.	3
8	M	5	M	29	Master's	16
	F	36			Master's	10
9	F	4	M	24	High School	2
	F	27			Bachelor's	4
10	F	4	M	29	less than high school	11
	F	34			High School	2
11	M	5	M	38	Ph.D.	17
	F	41			Ph.D.	4
12	M	5	M	30	Master's	29
	F	31			Master's	8
13	F	4	M	23	Bachelor's	30
	F	26			Bachelor's	6

Infants

Infant participants in the study were between 3 and 6 months of age. This age range was chosen based on a proposed sequence of the development of attachment as outlined by Bowlby (1982). The first stage (from birth to 8-12 weeks) is described as 'indiscriminate responsiveness to humans.' During this stage, infants become oriented to people in their environment, but do not discriminate between individuals they interact with regularly and those they do not know. Phase 2 of Bowlby's sequence is known as 'Focusing on Familiar People.' It is considered to last from 3 to 6 months of age. It is during this phase that infants begin to show recognition of familiar people by responding differently to them as compared to strangers. During this phase, infants often engage in rudimentary interactions with people who are familiar with them by cooing, babbling and selectively smiling. Attempts at interactions by strangers may elicit only an intense stare. Also, during this phase, a principle attachment figure, usually the mother, emerges. The emergence of these characteristics during this phase of development led to the decision to limit the infant participants to this age range.

Seven of the infants were female; six were male. Four of the infants (31%) were three months old, three (23%) were four months old and six (45%) were five months old. Seven of the children were only children, three had one sibling and three had two siblings. None of the parents reported that their child had a diagnosed disability. None of the parents indicated that they had concerns about their child's development and none reported that their child had been hospitalized

or had a serious illness. One mother reported that her infant had mild reflux. Two of the infants were born four weeks prematurely, but neither had indications of problems associated with prematurity, as reported by their parents. Table 2 provides information about the infant participants.

Instrumentation

The data for this study were collected in the families' homes with (a) the *Parent Questionnaire* form designed specifically for the study (see Appendix B), (b) a 5-minute videotaped segment of infant-mother-father interaction, and (c) a *Parent Interpretation of Infant Behavior* form on which the investigator recorded parental identification and interpretation of infant behavior (see Appendix B). Each parent was given the *Parent Questionnaire* form to complete during the home visit. The *Parent Interpretation of Infant Behavior Form* was completed by the primary investigator during a structured interview. For the purposes of organization, a section is included for each of these data collection methods.

Parent Questionnaire

The *Parent Questionnaire* form used in this study was designed to obtain pertinent information about the family. Information regarding the infant included birth date, birth status (single or multiple birth), and significant illnesses or suspected disabling conditions. Information about the parents included age and educational level, as well as information about each parent's perceived responsibility for infant care, their perception of amount of time spent with the

infant, and their perception of infant temperament. The *Parent Questionnaire* form for this study is found in Appendix B.

Parent Interpretation of Infant Behavior Form

The *Parent Interpretation of Infant Behavior form*, which can be found in Appendix B, was designed for use with parents. This form was adapted for use in this study from a similar form used in studies of maternal interpretation of infant behavior (Baird, Haas & Mayfield, 1993; Baird, Haas & McCormick, 1993; Baird et al., 1995; Baird et al., 1998; Haas et al., 1994). The forms were completed by the primary investigator during a structured interview process at the home visit.

Videotape

Five-minute videotape recordings were made at the home visit. Video recordings were made with a camera with time-lapse capabilities so that the exact time of the infant behavior identified as meaningful could be recorded. Videotape recordings were viewed by the parents to obtain the information about which of the infant's behaviors were meaningful to them. Use of the videotape recordings permitted both parents to see and interpret the same sample of infant behaviors. The videotaping process, which permitted pauses in the stream of behavior for interpretation, allowed for each of the infant's behaviors to be a potential target for identification and interpretation.

Additionally, the use of videotape allowed for an important aspect of this study. By using videotape, both parents had the opportunity to view the same set of infant behaviors. Because infants' behavior can change dramatically within a very short time, attempting to have parents identify and interpret behaviors in

vivo might have resulted in very different behaviors being exhibited by the infant, making comparison of identification and interpretation patterns across parents impossible.

Interviewing

Data for this study were collected through structured interviews with parents. The interviews focused on gathering information about the parents' identification of their child's behavior that held meaning for them, and their interpretation of the meaning of those behaviors. Interviewing is a basic mode of inquiry. It provides a means for understanding the experiences of other people and the meaning they make of those experiences (Seidman, 1991). In this study, as in all interviews, meaning is, at least in part, a function of the participant's interaction with the interviewer (Seidman, 1991). The interviewing process used in this study required parents to bring information that they may identify and interpret subconsciously during other interactions with their infant to a conscious level. The interviewing process was chosen to provide parents with an open-ended array of answers that another method, such as a checklist of possible behaviors, would not provide.

Interviewing procedure. Following the 5-minute videotaping of infant-mother-father interaction, one parent was asked to leave the room so that he or she did not overhear the other parent's responses and be influenced by them. Except for one instance in which the infant slept in her mother's arms during the interview, the infants were not present in the room during the interviewing process.

The parent who remained with the principle investigator was asked to view the videotape and indicate when the infant had behaved in a way that was meaningful to him or her. When the parent stopped the videotape, indicating that the infant had behaved in a way that was meaningful to him or her, the researcher asked the parent "What did he (she) do?" and the parent's response was recorded verbatim on the parent interpretation of infant behavior form. The parent was then asked, "What did that mean?" Again, the response was recorded verbatim on the response form.

When the answers to these questions were recorded, the videotape was started again. This procedure was repeated for the duration of the videotape. When the parent had viewed the entire 5-minute videotape with the researcher and his or her responses were recorded, he or she was given the demographic form and asked to leave the room. The process was repeated with the other parent.

The process of videotaping and interviewing the parents undoubtedly influenced their perception of the infant and may have changed the parent's focus of attention. Every effort was made not to intrude on the interactions of the

triad during the videotaping process, or to influence the quantity or quality of the parents' answers during the interview process. The interviewer attempted to achieve this by (1) assuring the parents that the purpose of the study was to obtain their interpretation and, thus, there were no 'wrong' answers; (2) maintaining a neutral facial expression during the interview process; and (3) giving neutral or positive feedback to parents such as 'ok' or 'good'.

Procedures

Participants were contacted to schedule a home visit for data collection during a time when both parents would be available and the parents predicted that the infant would be rested and ready for play. The procedures for the study were explained to the parents, and both verbal and written consent to continue were obtained from both parents (*Parental Informed Consent Form* – Appendix A). Parents were then asked to choose a location in or around the home in which interactions typically occurred. A standard set of age-appropriate toys (Appendix C) was provided, and parents were given the instruction that they could use any and all of the standard set of toys, their own toys, or no toys at all.

Data Collection

Once the parents had chosen a location, the investigator prepared the video camera and obtained verbal indications from both parents that they were ready for videotaping to begin. The triad was then videotaped for five minutes using a camera with time-lapse capabilities. If at any point during the videotaping

all three members of the triad could not be videotaped, the focus remained on the infant.

Following the videotaping procedure, one parent was asked to complete the *Parent Questionnaire* in another room of the house, and the other parent was interviewed. When the interview process had been completed with one parent, it was initiated with the other parent, following the same procedure. The order in which the mothers and fathers were asked to view the videotape and respond to the questions on the parent interpretation of infant behavior form was alternated. In all, videotaping, completion of the forms and interpretation of the infant's behavior by both parents took approximately one hour per visit. Once the data was collected from all the families who participated in the study, data analysis began.

Variables

The variables for this study were the infant behaviors identified as meaningful by mothers and fathers and the subsequent interpretation of those behaviors. Meaningful infant behaviors were determined solely by the parents, who indicated that the infants' behaviors carried meaning for them. Behaviors were identified within 'instances'. Many instances were of single infant behaviors, others instances included two meaningful behaviors; still others consisted of three meaningful infant behaviors. The parents also provided their interpretations of the infant behaviors they identified as meaningful. Interpretations were the meanings that parents assigned to their infants' behaviors. As with infant

behaviors identified as meaningful, interpretation instances were also single, double or triple.

Data Analysis

The data from this study were analyzed both qualitatively and quantitatively. Qualitative procedures were used to analyze the data collected through interviews with mothers and fathers. Specifically, from the raw data, categories of behaviors and interpretations were determined using content analysis procedures (Berg, 1989). Quantitative procedures were used to determine if differences existed between the behaviors identified as meaningful and the interpretations of those behaviors by mothers and fathers. For the purposes of organization, separate sections describing the qualitative and quantitative procedures used in this study are provided.

Qualitative Procedures

The nature of the data collected in this study required that the data be examined qualitatively before it could be analyzed quantitatively. The qualitative procedure of content analysis was used in this study to determine categories of behaviors and interpretations. This qualitative procedure was used to address two of the research questions proposed: (a) Do mothers and fathers identify different infant behaviors as being meaningful? and (b) Do mothers and fathers interpret the behaviors they identify as meaningful differently?

Content Analysis

Content analysis is a “multipurpose research method developed specifically for investigating a broad spectrum of problems in which the content of communication serves as the basis of inference” (Holsti, 1961, p. 597). It may further be defined as "any technique for making inferences by systematically and objectively identifying specified characteristics of messages" (Holsti, 1961, p. 601). A central idea in content analysis is that the many words of a text are classified into fewer categories, based on content (Weber, 1990).

Content analysis is useful when data accessibility is a problem and the investigator's data are limited to the messages produced by individuals. In this study, the raw data are the parents’ identification of meaningful infant behavior and their subsequent interpretation of the behaviors. To avoid leading parents to answer in specific ways by providing them with predetermined answers in the form of a checklist, data were collected in a structured interview format. Only after all of the interviews were completed were the responses transcribed and analyzed.

Following all of the parent interviews, the behaviors identified as meaningful and the subsequent interpretations of those behaviors were categorized by the principle investigator and another doctoral candidate in the field of early childhood special education. Both have extensive experience in the field of early childhood special education and experience with the process of content analysis. Through the process of content analysis, they established

definitions for the categories, and assigned behaviors and interpretations to those categories.

Categories of behaviors identified as meaningful and the interpretations of the behaviors were established independently of one another. For the purpose of the analysis, the statements of both behavior and interpretation given by the parents were treated as vernacular. Thus, the interpretation of “I’m tired of this” was coded as state-preference; the interpretation “she’s tired” was coded as state-physical. The interpretation “he wants to explore and play with it” was treated as a single interpretation because the verb ‘wants’ refers to both exploring and playing with the object.

Reliability

To provide a measure of reliability, the category definitions and lists of raw data (behaviors and interpretations) were given to three individuals who, after being trained, re-coded the behaviors and interpretations as defined above. Each of the individuals has a master’s degree and experience in early childhood special education. The coders were provided with a training session that was approximately 90 minutes in length, during which the procedures for coding the data were explained and practiced. Following the training, they individually re-coded all of the behaviors and interpretations according to the previously established definitions.

The coders achieved relatively high reliability on the behaviors. One coder achieved 94.6% reliability and two coders achieved 99.3% reliability on the behaviors. Reliability on the interpretations was somewhat lower. One coder

achieved 85.8% reliability; one achieved 82.5% reliability, and one achieved 78% reliability on the interpretation categories.

Quantitative Procedures

Paired-sample t-tests were performed to answer the two research questions (1) Do mothers and fathers identify equal numbers of infant behaviors as being meaningful? and (2) Do mothers and fathers identify equal numbers of interpretations for the infant behaviors they identify as meaningful?

Paired-sample t-tests are used to make comparisons when the data being analyzed are drawn from populations that are related in some way. In this instance, mothers and fathers viewed the same segment of videotape of their infant. They were asked to identify and interpret the behaviors that were meaningful to them. Thus, mothers and fathers had the same potential pool of behaviors from which to draw.

IV. RESULTS

The purpose of this study was to investigate the infant behaviors that mothers and fathers identify and interpret as meaningful. Specifically, the research questions were (a) Do mothers and fathers identify equal numbers of infant behaviors as having meaning? (b) Do mothers and fathers of infants identify different infant behaviors as being meaningful? (c) Do mothers and fathers identify equal numbers of interpretations of the infant behaviors they identify as meaningful? and (d) Do mothers and fathers interpret the behaviors they identify differently?

This section provides information about the data collected in the study. Following data collection, infant behaviors and parents' interpretations were categorized using the coding process described in Chapter 3. The first section of this chapter gives information about instances of behavior and interpretation data collected in the study. Categories of both behaviors identified as meaningful and their subsequent interpretations are presented in the second section. Finally, information about the results of hypothesis testing is presented.

Instances of Behavior and Interpretation

The parents who participated in this study identified a total of 259 instances of meaningful behavior. An ‘instance’ occurred when a parent indicated that the infant had performed a behavior or set of behaviors that had meaning for him or her. Each instance was accompanied by an instance of interpretation. Because some instances contained more than one behavior or interpretation, there are more behaviors and interpretations than there are instances.

When multiple behaviors or interpretations were identified within a single instance, the behaviors or interpretations were coded separately. In some instances, the behaviors or interpretations were coded within the same category. For example, one mother identified her infant’s behavior by saying “She smiled and laughed.” The behaviors “smiled” and “laughed” were coded as two separate emotional state-positive behaviors. Other instances of multiple behaviors or interpretations were coded in different categories. The interpretation of “he was cooing and waving,” for example, was coded in both the ‘verbal’ (cooing) and ‘motor’ (waving) categories.

A total of 299 infant behaviors were identified as meaningful by parents within 258 instances. Two hundred twenty of the behaviors were single behaviors; that is, the parent indicated that only one behavior demonstrated by the infant carried meaning for him or her. Thirty-five instances included two behaviors identified within a single instance. Examples included: “she reached out for the toy and brought it to her mouth,” and “she looked at the camera and

smiled.” In three instances, three behaviors were identified as meaningful (for example, “he was smiling, looking, and laughing”).

An Outlier

One of the instances of behavior consisted of a parent stating that the infant had not performed a behavior (“She didn’t grab the phone”). In the coding process, this behavior was treated as an outlier and was removed from the process, leaving 258 instances to be included in the analysis. The associated interpretation of that behavior (“She doesn’t want it”) fit into an interpretation category, and was included in the analysis; thus, there were 259 instances of interpretation. Table 3 provides information about the instances of infant behavior identified as meaningful by mothers and fathers.

Table 3

Instances of Behavior and Interpretation

	Mothers	Fathers	Combined
Behaviors			
Total	196	103	299
Instances	169	89	258
Interpretations			
Total	177	92	269
Instances	169	90	259

Content Analysis of Infant Behavior

A total of 299 behaviors were identified as meaningful by the parents. Using content analysis, these behaviors were categorized as follows: (a) motor, defined as an action or attempted action involving movement not related to speech or the eyes; (b) verbal, defined as vocalizations, making sounds other than laughing and crying; (c) visual, defined as related to seeing or observing objects in the environment; (d) emotional state — positive, defined as responses (actions or sounds) indicating pleasure; (e) emotional state — negative, defined as responses (actions or sounds) indicating discomfort or displeasure; and (f) alertness, defined as indications of awareness without specific descriptors.

Categories were intentionally left rather broad. For example, while it would have been possible to break the category of “motor” into subcategories describing movement of different parts of the body, the decision was made not to attempt to differentiate between subtle movements. Definitions and examples of the infant behavior categories identified through the content analysis process are presented in Table 4.

Table 4

Behavior Definitions and Examples

Definition	Examples
Motor: action or attempted action involving movement not related to speech or the eyes	tries to, turned, reached
Verbal: vocalizations, making sounds other than laughing and crying	talking, cooing
Visual: related to seeing or observing objects in the environment	looking, eye contact
Emotional state — positive: responses (actions or sounds) indicating pleasure	laughing, smiling
Emotional state — negative: responses (actions or sounds) indicating discomfort or displeasure	whimpering, crying, frowning
Alertness: indications of awareness without specific descriptors	noticing, attending to, exploring

Content Analysis of Interpretation

Following identification of a behavior that carried meaning for the parent, he or she was asked to provide an interpretation of the behavior. As with the categorization process for meaningful infant behavior, content analysis was used

to determine categories of interpretation. Seven categories of interpretation emerged from the content analysis. As with the behavior definitions, the decision was made to leave the categories of interpretation rather broad.

Using content analysis, the interpretations given by the parents were defined. Four major categories emerged from the content analysis. They are (a) intent, (b) state, (c) knowledge, and (d) ambiguous. Subcategories of the interpretation of infant state also emerged. They are (a) state-preference, (b) state-physical, (c) state-emotional, and (d) state-nonspecific. Although categories were intentionally broad, differences in the descriptors of “state” were significant enough to warrant the development of subcategories. Definitions and examples of interpretations are presented in Table 5.

Table 5

Interpretation Definitions and Examples

Definition	Examples
Intent: Indications of goal-oriented activity	trying to, exploring, imitating
State-preference: Indications of making a choice	likes, wants, is interested in
State-physical: Outward indications of level of comfort or alertness	hungry, sleepy
State-emotional: Outward indications of feeling	bored, happy, loves
State-nonspecific: Other indications of condition	hurts, responding to, awareness
Knowledge/general awareness: indications of ability or changes attributed to maturation; attention	knows, understands, can do/ is able to, sees, hears
Ambiguous: Parent is unsure or is unable to interpret the behavior	I don't know, I'm not sure

Results of Hypothesis Testing

Both qualitative and quantitative measures were used to analyze the data collected in this study. These analyses were designed to address the hypotheses of the study. The hypotheses were (a) mothers and fathers will identify similar

numbers of infant behaviors as meaningful, (b) mothers and fathers will identify similar infant behaviors as meaningful, (c) mothers and fathers will provide equal numbers of interpretations for the infant behaviors they identify as meaningful and (d) mothers and fathers will give interpretations of their infants' behaviors that fall into similar categories. Hypotheses B and D were tested through the qualitative analysis procedure of content analysis. Paired-sample t-tests were performed to determine the answers to Hypotheses A and C.

Do Mothers and Fathers Identify Equal Numbers of Behaviors?

The data were analyzed by using paired samples t-tests to determine if a statistically significant difference existed between the number of behaviors identified by mothers and fathers. The null hypothesis stated that no statistically significant difference would be found between the two sample groups. Both the total number of behaviors and the instances were analyzed. The .05 level of significance was set as the minimally acceptable level for statistical significance, the criterion commonly used in social science research (Cohen & Cohen, 1983).

Numbers of Behaviors Identified as Meaningful

Table 6 provides information about the difference in the number of infant behaviors identified as meaningful by mothers and fathers. Mothers identified a total of 196 behaviors as meaningful. Fathers identified a total of 103 behaviors as meaningful. Mothers' identification of meaningful infant behavior ranged from 2 to 30 (M = 15.08, SD = 8.22). Fathers' identification of meaningful infant behavior ranged from 2 to 24 (M = 7.92, SD = 5.75). The difference in the number of infant behaviors identified as meaningful by mothers and fathers was

statistically significant. Results of hypothesis testing for this hypothesis indicated that mothers identify significantly more infant behaviors as meaningful than do fathers (t = 6.82; p<.001).

Table 6

Numbers and Instances of Behaviors Identified as Meaningful by Mothers and Fathers

	Mothers			Fathers			
	N	M	SD	N	M	SD	t
behaviors	196	15.08	8.22	103	7.92	5.75	6.82*
instances	169	13.23	7.45	89	6.85	3.72	6.44*

* P < .001

Instances of Behavior Identified as Meaningful

The difference in the instances of behavior identified as meaningful by mothers and fathers was statistically significant also. Mothers identified a total of 169 instances of meaningful behaviors; their instances of behavior identified as meaningful ranged from 2 to 28 (M = 13.23, SD = 7.45). Fathers identified 89 instances of meaningful infant behavior. Fathers' instances of behavior identified as meaningful ranged from 2 to 14 (M = 6.85, SD = 3.72). Mothers provided more instances of infant behaviors identified as meaningful (t = 6.44, p<.001).

Do Mothers and Fathers Identify the Same Infant Behaviors?

The second null hypothesis of the study stated that mothers and fathers would identify similar infant behaviors as being meaningful. As noted previously, the qualitative analysis of the data from this study revealed six categories of infant behavior identified as meaningful by mothers and fathers. The categories were (a) **motor**, (b) **verbal**, (c) **visual**, (d) **emotional state-positive**, (e) **emotional state– negative**, and (f) **alertness**. Both mothers and fathers identified behaviors in all of the categories.

Comparison of Mothers' and Fathers' Identification of Meaningful Behavior

The largest category of behavior for both mothers and fathers was **motor** behavior. Roughly half of the behaviors identified by both mothers and fathers fell into this category. Of the 196 behaviors identified as meaningful by mothers, 103 (52.5%) were motor behaviors. Of the 103 behaviors identified as meaningful by fathers, 51 (49.5%) were motor behaviors.

Emotional state-positive behaviors also constituted a large portion of the total behaviors identified as meaningful. Parents identified 55 behaviors in this category. Mothers identified 30 of the behaviors in this category (15.3% of their total) while fathers identified 25 (24.3%) behaviors. Although raw numbers of behaviors identified in this category were similar, they represent the largest difference in percent between mothers and fathers.

Another relatively large category was that of **visual** behavior. Fifty-two behaviors were identified that fell into this category. Forty-one of those behaviors were identified by mothers, which constituted 20.9% of the behaviors they

identified as meaningful, and 11 were identified by fathers, constituting 10.7% of the behaviors they identified as meaningful.

There were fewer behaviors identified in the remaining categories. **Verbal** behaviors constituted 17 behaviors identified by parents. This was the only category in which fathers identified more behaviors than did mothers. Mothers identified 7 (6.8%) of their total behaviors in this category while fathers identified 10 behaviors, or 9.7% of their total behaviors. Few **emotional state-negative** behaviors were identified in this study. Only 11 behaviors were identified in this category; 6 (3%) by mothers and 5 (4.9%) by fathers.

The category of **alertness** was the smallest of the categories of infant behavior identified as meaningful, but a relatively large discrepancy occurred between mothers' and fathers' identification. Ten behaviors were identified, 9 (4.6%) by mothers and only 1 (.9) by a father. Table 7 presents information about the infant behaviors identified as meaningful by mothers and fathers.

Table 7

Infant Behaviors Identified as Meaningful by Mothers and Fathers

	Mothers	Fathers	Total Number (percent)
Behaviors	196	103	299
Motor	103 (52.5%)	51 (49.5%)	154 (51.5%)
Verbal	7 (3.6%)	10 (9.7%)	17 (5.7%)
Visual	41 (20.9%)	11 10.7%)	52 (17.4%)
Emotional State — positive	30 (15.3%)	25 (24.3%)	55 (18.4%)
Emotional State — negative	6 (3%)	5 (4.9%)	11 (3.7%)
Alertness	9 (4.6%)	1 (.9%)	10 (3.3%)

Do Mothers and Fathers Provide Equal Numbers of Interpretations?

The third hypothesis stated that mothers and fathers would provide equal numbers of interpretations for the infant behaviors they identify as meaningful. Mothers and fathers had the same opportunity to view infant behavior and identify behaviors, so the reasoning behind this hypothesis was that parents would identify equal numbers of interpretations within equal numbers of instances. Both instances of interpretation and the raw number of interpretations were considered.

Numbers of interpretations for behavior. Table 8 provides information about the instances and raw numbers of interpretations for infant behavior. The differences between mothers and fathers for both the instances and total number of interpretations of infant behavior was statistically significant. Mothers provided 177 interpretations (M = 13.61, SD = 8.09) within 169 instances (M = 13.23, SD = 7.63). Fathers provided 92 interpretations (M = 7.07, SD = 3.57) within 90 instances (M = 6.92, SD = 3.66). Mothers and fathers provided a total of 269 (M = 10.35, SD = 6.97) interpretations for their infants' behaviors within 259 instances (M = 9.96, SD = 6.55). These findings indicate that mothers and fathers give different numbers of interpretations for their infants' behaviors. As with behaviors identified as meaningful, mothers' provided significantly more interpretations than did fathers (t = 6.77, p<.001).

Table 8

Interpretations of Infant Behaviors by Mothers and Fathers

	Mothers		Fathers		
	M	SD	M	SD	t
Interpretations	13.61	8.09	7.07	3.57	6.77*
Instances	13.23	7.63	6.92	3.66	6.82*

* (p = <.001)

Do Mothers and Fathers Interpret Behaviors Similarly?

The fourth hypothesis stated that mothers and fathers will give interpretations for their infants' behaviors that fall into similar categories. Qualitative analysis revealed four categories of interpretation; one of those categories, **state**, had four subcategories. The categories are (a) **state-preference**, (b) **state-physical**, (c) **state-emotional**, (d) **state-nonspecific.** The remaining categories are (a) **intent,** (b) **knowledge-general**, (c) **ambiguous**.

The number of interpretations in the first category, **intent**, was fairly evenly distributed between mothers and fathers. Mothers provided 13% of their total interpretations in this category. Fathers' interpretations in this category equaled 17.3% of their interpretations. Although mothers identified more interpretations of intent, fathers' interpretations in this category constituted a larger percentage of their total interpretations.

The interpretation category of **state** was the only category of either behavior or interpretation that was sub-divided as patterns of differentiation among the sub-categories emerged during the content analysis process. The larger category constituted more than half of the interpretations for mothers and fathers, respectively. Mothers provided 51.4% of their interpretations in this category, and fathers provided 66.3% of their interpretations in this category. The percentages of interpretations in the subcategories are closely aligned for mothers and fathers. Interpretations in the state-preference category numbered 67 (37.9%) for mothers and 32 (34.8%) for fathers. **State-physical** interpretations constituted 4% of the interpretations for both mothers and fathers.

Mothers and fathers also provided similar percentages of **state-emotional** interpretations. Mothers' interpretations in this category constituted19% of their total interpretations and fathers' interpretations 20.7% of their total interpretations. Mothers provided slightly more interpretations in the category of **knowledge** than did fathers. Mothers' and fathers' interpretations in this category totaled 18.6% and 12%, respectively.

The only category of either identification of meaningful infant behavior or interpretation of those behaviors that did not include contributions from both mothers and fathers was the interpretation category of **ambiguous**. Interpretations were coded into this category when the parent responded that (a) he or she did not know what the infant intended or (b) he or she was unable to interpret the behavior. Only four interpretations fell into this category; four fathers each gave one such interpretation, totaling 4.3% of their total interpretations.

As with the infant behaviors identified as meaningful, parents gave interpretations for their infants' behavior that fell into all categories with one exception. The finding is that mothers and fathers do give interpretations for their infants' behaviors that fall into the same categories. Table 9 provides information about the interpretations given by mothers and fathers of the infant behaviors they identified as meaningful.

Table 9

Interpretation Categories

	Mothers	Fathers	Total Number (Percent)
Interpretations	177	92	269
Intent	23 (13%)	16 (17.3%)	39 (14.5%)
State-preference	67 (37.9%)	32 (34.8%)	99 (36.8%)
State-physical	8 (4.5%)	4 (4.3%)	12 (4.5%)
State-emotional	35 (19.8%)	19 (20.7%)	54 (20%)
State-nonspecific	11 (6.2%)	6 (6.5%)	17 (6.3%)
Knowledge	33 (18.6%)	11 (12%)	44 (16.4%)
Ambiguous	0	4 (4.3%)	4 (1.5%)

V. DISCUSSION

The purpose of this study was to investigate the infant behaviors that parents identify as meaningful and parents' interpretations of those behaviors. Specifically, the study was designed to obtain information about differences and similarities of maternal and paternal identification and interpretation of their infant's behavior. The research questions that guided the study of the infant behaviors identified as meaningful were: (a) Do mothers and fathers identify equal numbers of infant behaviors as having meaning? and b) Do mothers and fathers identify different infant behaviors as being meaningful? The research questions that guided the study of the interpretations of infant behaviors were (c) Do mothers and fathers provide equal numbers of interpretations for their infants' behaviors? and (d) Do they interpret those behaviors differently?

To accomplish that goal, thirteen triads were videotaped in their homes. The triads consisted of fathers, mothers and their infants who were between the ages of three and six months. The videotaping lasted for five minutes, after which the parents were asked to view the tape and answer a few simple questions. The questions were designed to determine what infant behavior the parents thought was meaningful and what, if any, interpretation they could give for that behavior. It was hypothesized that mothers and fathers would identify similar numbers of

infant behaviors as having meaning and that those behaviors would fall into similar categories. It was also hypothesized that mothers and fathers would provide similar numbers of interpretations and that those interpretations would fall into similar categories.

Interpretation of the Findings

This study was considered to be a first step in an attempt to identify and understand the infant behaviors that both mothers and fathers interpret as meaningful. Research has provided evidence that the interactions between parents and their infants are important. While some information about fathers' interactions with or attachment to their infants is available, information about fathers' interpretation of or response to their infants' behavior has not been previously available.

Hypotheses

The hypotheses of this study were designed to direct enquiry toward questions relating to the numbers and categories of infant behaviors identified as meaningful by mothers and fathers. Additionally, information about the interpretations of those behaviors, specifically the numbers and categories of interpretations, were investigated. This study differs from previous studies of parental interpretation of infant behavior by including fathers.

Hypothesis one. The first hypothesis of this study stated that mothers and fathers will identify similar numbers of infant behaviors as meaningful. Statistical analysis revealed that mothers and fathers do, indeed, identify different numbers

of infant behavior as being meaningful. Mothers identified 196 behaviors within 169 instances; fathers identified 103 behaviors within 89 instances. Thus, given the opportunity to view the same videotaped segment of interaction, the fathers in this study identified about half as many infant behaviors as carrying meaning as did the mothers.

This finding contradicts the findings reported by Adamson, Bakeman, Smith and Walters (1987) who asked men and women who were not parents to identify infant behaviors that they interpreted as meaningful from videotaped segments. Men and women in the study identified equal numbers of behaviors of infants who were 9, 15, and 21 months of age. There were several differences between the two studies that may account for the varied results. First, the participants in the Adamson et al. study were not parents and the participants in the current study were parents. The ages of the infants may have influenced the findings. The infants in the Adamson et al. study were 9, 15 and 21 months of age. The infants in the current study were between 3 and 6 month old.

The finding related to this hypothesis appear to be related to other studies reported previously. Specifically, both Lamb (1977a) and Levy-Shiff & Israelashvili1986) reported differences in father-infant interactions as compared to mother-infant interactions. Lamb (1977a) reported that infants were significantly more positive in reacting to play with fathers than in reacting to play with mothers. Levy-Shiff and Israelashvili (1986) reported that mothers engaged in caregiving activities more frequently than did fathers. The results of the current study may help to explain that phenomenon. Fathers may not interact with their

children because they only “see” infant behavior about half as often as mothers do, or at least do not see it in a way that is meaningful.

Hypothesis two. The second hypothesis of this study stated that mothers and fathers will identify similar infant behaviors as being meaningful. Qualitative analysis of the responses given by the parents who participated in the study indicated that they do, indeed, attribute meaning to similar infant behaviors. Six categories of meaningful infant behavior were identified in the study; both mothers and fathers identified behaviors in each category.

The category with the largest percentage of behaviors for both mothers and fathers was **motor**. Approximately half of all the behaviors for mothers (53%) and fathers (50%) fell into this category. This came as a surprise; based on the results of other studies that examined the nature of interactions with infants for mothers and fathers, it was expected that fathers would identify a greater percentage of **motor** behaviors (Lamb 1977a, 1977b).

Visual behaviors also constituted a relatively large proportion of the behaviors identified as meaningful; 21% of the behaviors mothers identified fell into this category and 11% of the behaviors identified by fathers fell into this category. Mothers appeared to be more attuned to the visual behaviors of their infants, evidenced by this difference.

The next largest category, that of **emotional state-positive** was also somewhat of a surprise. From the review of the literature, it was expected that mothers would pay more attention to emotional behaviors and would identify a greater percentage of behaviors in this category than fathers. This was not the

case; 24% of the behaviors fathers identified as meaningful fell into this category whereas only 15% of the behaviors mothers identified fell into this category. An explanation for this phenomenon may be attributed to one participant in the study. One father identified 15 **emotional state-positive** behaviors for his infant. This set of interpretations alone contributed more than all the other fathers' combined.

Fathers identified more **verbal** behaviors than did mothers. Nearly 10% of the behaviors identified by fathers fell into this category and less than 4% of the behaviors identified by mothers fell into this category. Lamb (1977a, 1977b) reported that fathers typically spend more time playing with infants than do mothers. These findings may be related; it is possible that fathers identify more verbal behaviors and interpret them as play-related, or that fathers play more, so they are more 'in tune' with verbal behaviors.

Relatively few **emotional state-negative** behaviors were identified in this study. Only 3% of the behaviors identified by mothers and less than 5% of the behaviors identified by fathers fell into this category. The design of the study may help to explain this finding. When the principle investigator contacted the family to schedule the home visit, parents were asked to choose a time that would be good for the baby. Had the data collection occurred at other times, the infants' behaviors may have led to more behaviors being identified in this category.

Alertness behaviors were identified infrequently in this study. Mothers' identification of **alertness** behaviors constituted less than 5% of their total identifications, fathers' identification of these behaviors constituted less than 1%

of their total. A possible explanation of this finding is the age of the infants at the time of the study. Infants between the ages of 3 and 6 months have a limited repertoire of behaviors. This lack of easily identifiable behaviors may be interpreted as inattention to their environment.

Hypothesis three. The third hypothesis of this study dealt with numbers of interpretations of their infants' behaviors provided by mothers and fathers. The hypothesis was that mothers and fathers would give equal numbers of interpretations of their infants' behaviors. As with the number of behaviors identified as meaningful, mothers and fathers provided unequal numbers of interpretations of their infants' behaviors. Mothers provided 177 interpretations of their infants' behaviors within 169 instances. Fathers provided 92 interpretations within 90 instances. This difference was statistically significant.

Similar to the infant behaviors identified as meaningful, fathers provided approximately half as many interpretations for their infants' behaviors as did the mothers. Mothers and fathers provided interpretations that were approximately equivalent in complexity. That is, mothers provided single interpretations 95% of the time and fathers provided single interpretations 98% of the time. The age of the infants may have influenced this finding. Compared to older infants, those between the ages of 3 and 6 months engage in relatively few behaviors. Parents may be unused to considering the potential complexity of their infants' behaviors and may focus on only one behavior at a time.

Hypothesis four. The final hypothesis of this study addressed the categories of interpretation of infant behavior. It was hypothesized that mothers

and fathers would identify similar types of infant behaviors as meaningful. Qualitative analysis of the data indicates that this hypothesis holds true, with one exception.

Four categories of interpretations were delineated from the responses given by the parents who participated in the study. Subcategories emerged in one of these categories, resulting in a total of seven categories of interpretation of infant behavior.

The largest category of interpretation was **state-preference**. Thirty eight percent of the mothers' and 35% of the fathers' interpretations fell into this category. The definition of **state-preference** is an indication of goal-oriented activity, often evidenced by statements that the infant was "trying to" do something. Many behaviors were linked to this category. An infant making noises (verbal) might have lead his parent to interpret that he was trying to talk; an infant who was looking around (visual) might have lead to the interpretation that he was trying to see something.

Because infants have a limited repertoire of behavior, but possess a great deal of potential to expand that repertoire, it is important that parents attribute meaning to, and thus support, their infant's attempts to interact with the larger world (Puckett & Black, 2001). Most of the parents in the study did provide interpretations in this category. Only two parents, both fathers, failed to provide interpretations of **state-preference**. One of those fathers gave 2 interpretations, total, and the other father gave 3.

Another relatively large category of interpretation was that of **state-emotional**. **State-emotional** behaviors are defined as those behaviors that are an outward indication of feeling. Mothers' interpretations in this category comprised nearly 20% of their interpretations and fathers' interpretations comprised over 20% of their interpretations. The timing of the home visits, which were scheduled at a time when parents predicted that their infants would be rested and ready for play probably played a role in the number of interpretations in this category. Had the home visits been completed at a time when the infant was unhappy, perhaps more interpretations of **state-emotional** behaviors would have emerged.

The category of **knowledge** comprised 18% of mothers' and 12% of fathers' interpretations. Interpretations in this category arose from parents' attribution of ability or changes in infants' abilities due to maturation. The category of **intent** comprised 13% of mothers' and 17% of fathers' interpretations. Interpretations in this category arose from parents' attribution of goal-oriented activity to the infants' behaviors. Both of these interpretations are important indicators of parents' attribution of cognitive or developmental skills to the infant. Although slight differences exist between mothers' and fathers' interpretations in these areas, it appears that they are remarkably similar in their awareness of their infants in these areas.

Two additional categories, **state-physical** and **state-nonspecific** comprise the remainder of the categories in which mothers and fathers contributed. **State-physical** interpretations are those in which the parent

interpreted that the infant was demonstrating an outward indication of level of comfort or alertness. Both mothers and fathers provided 4% of their interpretations in this category. **State-nonspecific** interpretations arose from parents' determination of indications of condition not included in other categories. Some prior studies comparing mothers' and fathers' interactions with their infants indicate that mothers and fathers behave differently toward their children (Lamb 1977a, 1977b; Levy-Schiff, 1986). The explanations for this difference did not include the possibility that fathers identify and interpret their infants' behaviors differently than do mothers. The remarkably similar results in these two categories indicate that while fathers identify and interpret significantly fewer infant behaviors than do mothers, their awareness of infant state is not substantially different. It appears from these findings that mothers and fathers are equally "aware" of their infants' indications of comfort, alertness and general condition.

All of the categories of both behavior identified as meaningful and interpretations of those behaviors contained contributions from both mothers and fathers with one exception. That exception is the interpretation category of **ambiguous**. Only four interpretations were given in this category, and all four were given by fathers (four different fathers gave one such interpretation each). Under the circumstances of data collection, parents may have felt pressured to give an answer. Mothers may have been more uncomfortable than were fathers in admitting that they did not know or were unsure of the meaning of their infant's behavior.

Limitations and Recommendations of the Study

This study was designed to obtain and analyze parental identification and subsequent interpretation of infant behavior. First, and foremost, this study is limited by the number of participants. Only thirteen triads participated in the study, so generalization of information to the population at large may be limited; analysis of the data revealed that in some cases, one parent was responsible for a preponderance of the data in a certain category. For example, in the behavior category of emotional state-positive, one father identified 15 of his infant's behaviors as emotional state-positive. His identifications alone constituted 27% of the total number of behaviors in the category and 60% of the behaviors that fathers identified in this category. This highlights the uniqueness of each dyad, and that their unique interactions are what is most meaningful to them, not comparison of their "dance" to any other.

Second, only families in which both parents were living with the infants were included in the study. Many children are raised in single-parent homes, and the information obtained from this study may not apply to them. Third, characteristics of the parents who agreed to participate in the study may have influenced the outcome; there may be substantial differences in parents who agree to have a researcher study their interactions with their infant, and those who, for whatever reason, are not willing to participate in such a study.

Fourth, all families who participated in the study lived in Alabama, so geographical or cultural factors may have influenced the outcomes of the study. Fifth, although 250 fliers were produced and distributed in an attempt to identify

families to participate, no response was generated from those fliers. All of the participants in the study came to the attention of the researcher through contacts in the community. This, too, may have influenced the findings of the study.

Sixth, the process by which the information was gathered (i.e., videotaping followed by a structured interview) may have influenced both the parents' interaction with their infant and their subsequent identification and interpretation of the infant's behavior. Five minutes of videotaping may not have been sufficient to provide a representative sample of either infant behavior or parental interpretation. Although the study was designed to be as non-intrusive as possible, the process of gathering the data surely influenced the subjects to act in ways they would not have had they not been involved in this study. Just how this influence occurred, and to what extent mothers, fathers, and infants were influenced is unknown.

Seventh, without a scaffold of possible infant behaviors or interpretations from which to choose, the parents were free to identify any behaviors, and to assign any meaning to that behavior. A predetermined list may have encouraged them to think of behaviors they had not previously considered, or it may have hindered them as they considered their infant's behavior. This influence may have been different for mothers and fathers.

And finally, in this, as in any qualitative study, the experiences, beliefs, and limitations of the researcher influenced this study (Maxwell, 1996). Qualitative analysis presupposes subjective judgments, and these necessarily influence the outcome of the study.

Recommendations for future research include addressing some of the issues addressed above. Continuing similar research with a larger and more diverse sample size may provide a measure of external validity of the findings or it may provide additional categories of behavior and interpretation. Studies of parental interpretation have, thus far, been limited to determining categories of behavior and interpretation. A next step could include an analysis of the parents' responses to the infant following different identifications or interpretations. A study of the interaction effects of parent gender and child gender in identification and interpretation of meaningful infant behavior may provide useful information. Longitudinal research to compare the effects of parenting styles characterized by high and low levels of identification and interpretation may lead to the development of intervention procedures to assist parents to read their infants' signals.

Implications of the Study

This study was a preliminary look at the infant behaviors that mothers and fathers interpret as meaningful, and the interpretations of those behaviors. As compared to other studies of interpretation of infant behavior, this study focused not on infant characteristics, but on the parent characteristic of gender. Although it was a small study, it reinforces three very important concepts in early development. These are (a) the importance of environment for infant development, (b) brain development in infancy and (c) the importance of the role of fathers in infant development.

Importance of Environment

As stated above, it is vital that parents notice and respond to their infant's behavior (Greenspan & Lieberman, 1989). As long ago as 1972, Bell and Ainsworth reported that infants whose parents responded promptly to their cries cried less than infants who were not attended to in a timely manner, and when they did cry, the crying was of shorter duration. Timely reactions from parents teach infants that their behavior is meaningful and that they can have an impact on their environment. Without a response from the environment, infants may fall victim to learned helplessness, which decreases the probability that they will make further attempts to interact with the environment. This, in turn, has an impact on brain development and learning. Early interactions can, and do, influence development and learning for a lifetime. Sensitive, responsive caregiving is the key to unlocking the infant's potential; failure to unlock this potential in the first few years of life can rarely be overcome (Shore, 2002).

Papousek and Papousek (1983) suggested than one component of infant-parent interaction is parental intuition; that is, some behaviors occur without the parent's conscious awareness. Parents who are highly intuitive may have identified fewer infant behaviors or assigned different meaning to them than did parents who were less intuitive. It is important to remember that each infant is an individual, each parent is an individual, and therefore, each infant-parent interaction pattern will be individual. It is more important to recognize and respect the individuality of the dyad than to compare their interactions to the interactions of others.

Brain Development in Infancy

Overwhelming evidence exists to underline the importance of environment for healthy brain development. The early experiences of the infant have a decisive impact on the brain, which, in turn, influences capacities in later life (Shore, 1997). Infants come into the world ready to learn, and they depend on the people in their lives to provide opportunities for enhancing the development of their brain. This development occurs within windows of opportunity. When developmental opportunities are not provided within the window, the infant's development suffers.

Gaensbauer (2004) asserts that experiences in infancy, even as early as the perinatal period, can have long-lasting effects on development. Infants between the ages of 2 and 6 months retain internal representations of events, particularly traumatic events that they are unable to express verbally. In some instances, reparation can be made, but attempting to make reparation is much more difficult than providing the appropriate tools for development during the window of opportunity that exists (Kotulak, 1997; Shore, 2002).

Fathers and Infants

This investigation suggests that while mothers identify more infant behaviors as meaningful than do fathers, and they provide more interpretations for those behaviors, there are not substantial differences between the types of behaviors identified as meaningful nor the types of interpretations given by mothers and fathers. The implication of the lack of differences is that special considerations need not be taken to include fathers in training of reading diverse

types of infant signals. The difference in number implies that fathers may need help in “seeing” the behavior in the first place. It is important that mothers, fathers and other caregivers are cognizant of the infants’ various means of communication, whether those means are whimpering, facial expressions, various cries, vocalizations, wiggling or any other means of communication. When the adult is aware of and able to respond to the infant’s unique communicative attempt, he or she is more likely to respond to and interact with the infant in appropriate ways (Puckett & Black, 2001).

Inclusion of fathers in studies of infancy is not common and, as reported previously, no studies of fathers’ identification of infant behavior could be found. Some studies that include fathers appear to point out the differences between mothers and fathers on a variety of measures. Liddell, Henzi and Drew (1987) reported that mother-father-child triads were clearly distinguishable from mother-child dyads in terms of the behaviors observed.

Whether or not fathers and mothers “see” different infant behaviors or interpret those behaviors differently is a secondary consideration to fathers’ involvement in their infant’s early development. The more fathers are actively involved in their children’s lives, the better the children’s outcomes in social and emotional development, but only if the fathers are affectionate, sensitive to their children’s needs and able to respond appropriately to their children’s emotions (Golombok, 2000).

Fathers provide different kinds of experiences for their infants than do mothers (Lamb, 1977a; Levy-Shiff & Israelashvili, 1988). Studies of parenting,

particularly those that target infant development, must include fathers in order to give a full picture of the influences that parents have on their children. The adults in the child's environment matter, and in order to provide the necessary experiences that are critical for child development, fathers must be included in the study of their development (Shore, 2002).

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APPENDICES

APPENDIX A

PARENTAL INFORMED CONSENT LETTER

Parental Informed Consent Letter

A Study of the Infant Behaviors that
Mothers and Fathers Interpret as Meaningful

You are invited to participate in a study of infant behavior. We hope to learn about the behavior of infants as they interact with their parents, and how parents interpret this behavior as meaningful. You are invited to participate because you have a baby between three and six months of age, both parents live together with the baby and both parents are willing to participate in the study.

If you decide to participate, Jo Ellyn Peterson, principal investigator, will videotape you and your child for 5 minutes in your home, and then you will be asked to view the videotape and answer a few questions. If at any time you are uncomfortable with the procedure, you are free to withdraw from the study. If you participate in this study, you may request a copy of the videotape and one will be made for you.

Any information obtained in this study and that can be identified with you will remain confidential and will be disclosed only with your permission. In order to protect your confidentiality, only your baby's first name will be used to identify your family's information.

Your decision whether or not to participate will not jeopardize your further relations with Auburn University. Also, you may discontinue participation in the study at any time without penalty. If you decide at some later time to withdraw from the study, you may also withdraw any information that has been collected about you.

If you have any questions, we invite you to ask us. Dr. Caroline Dunn (844-5943) or Jo Ellyn Peterson (821-2490) will be happy to answer them. You will be given a copy of this form to keep.

You are making a decision whether or not to participate in this research study. Your signature below indicates that you have decided to participate having read all the information above.

_____	_____
Parent's signature Date	Parent's signature Date
_____	_____
Witness Date	Investigator's signature Date

Your initials below indicate your desire to have the videotape destroyed at the end of the study, or your permission for the investigators to use it for educational purposes. Please initial one:

____This videotape may be used for educational purposes.
____This videotape will be destroyed following the study.

APPENDIX B

PROCEDURAL FORMS

- Flier
- Parent Interpretation of Infant Behavior Form
- Parent Questionnaire

Attention Parents

Are you interested in participating in a research study about the infant behaviors that moms and dads interpret as meaningful? If you choose to participate, a researcher will arrange to come to your home at a time that is convenient for you. She will videotape you playing with your baby for five minutes. Then each parent will watch the video and answer a few simple questions. The visit will take less than an hour.

You are eligible to participate in the study if:

- your baby is between three and six months old

and if:

- both parents live together with the baby, and
- both parents are willing to participate

For participating in the study you will receive:

- A copy of the your videotape and
- A description of the results of the study when it is completed

This study is part of a doctoral dissertation in the department of Rehabilitation and Special Education at Auburn University. If you meet the criteria listed above and are interested in participating in the study, please call Jo Ellyn Peterson at (334) 821-2490.

If you would like more information about the study you may call Jo Ellyn Peterson at the number above or Dr. Caroline Dunn at (334) 844-2086.

Baby's Name _____ Parent: Mom (1 2) Dad (1 2) Date _____

Parent Interpretation of Infant Behavior

Please watch the videotape with me and stop the tape when you see your baby do something that is meaningful to you. I'll write down a description of the behavior, and what that behavior meant to you.

#	Infant Behavior (What did he/she do?)	#	Parent Interpretation (What did that mean?)

Parent Questionnaire

This study is designed to get information about moms, dads, and babies as they play together. As you answer the following questions, please answer the questions about "your baby" with your youngest child in mind. If you are not married, please consider the baby's other parent as you answer the questions about "spouse." Please feel free to add any additional information in the margins or on the back of the form. Thank You!

Today's date: _____

Information about your baby

First name: _____ Sex: _____

Baby's date of birth: _____ Baby's age: _____

Was he or she a single birth? (not a twin or triplet) yes no

Was he or she born more than 2 weeks early? yes no

If yes, how early was he/she born? _____

Has he or she been in the hospital or seriously ill at home? yes no

If yes, please explain_____

Does he or she have a diagnosed disability? yes no

If yes, what is it? _____

Does his or her developmental progress worry you? yes no

If yes, please explain: _____

Is the baby cared for by someone other than a parent on a regular basis? yes no

If yes...

how many hours per day (on average)? _____

who provides the care (babysitter, grandparent, brother or sister)? _____

where is the care provided?

_in our home

_child care center

_other (where?) _____

When you and your spouse are together with the baby, who usually has primary responsibility for the care of the baby?

____ I have primary responsibility

____ My spouse has primary responsibility

____ We share the responsibility equally

____ It depends on the situation. Please explain:_____

_____

_____

Compared to the amount of time I thought I would spend with this baby, I actually spend:

____ much less time than I thought

____ a little less time than I thought

____ about as much time as I thought

____ a little more time than I thought

____ much more time than I thought

How easy or difficult is this baby to care for?

_____ much easier than I thought

_____ a little easier than I thought

_____ about as easy/difficult as I thought

_____ a little more difficult than I thought

_____ much more difficult than I thought

Demographics

Please answer the following questions about yourself.

I am the baby's mom ____ dad

My age: _____

My children (not including the baby)

Name	Sex	Age	Does this child live with you?
_____	___	_____	yes no
_____	___	_____	yes no
_____	___	_____	yes no
_____	___	_____	yes no

My Race:

____ African American ____ Asian

____ Caucasian ____ Native American

____ Hispanic ____ Aleut

____ Pacific Basin ____ Other _____

My occupation:

_____

(Please name a job, not a company)

Highest grade completed:

K 1 2 3 4 5 6 7 8 9 10 11 12

Bachelor's Masters Masters Plus Doctorate

I have had:

____ a great deal of experience with babies and young children

____ some experience with babies and young children

____ a little experience with babies and young children

____ no experience with babies and young children

When I am with babies, including my own, I feel:
(**Please mark one in each column**)

____ very comfortable	____ very competent
____ usually comfortable	____ usually competent
____ usually uncomfortable	____ usually incompetent
____ always uncomfortable	____ always incompetent

Annual household income (both you and your spouse):

____ less than $15,000	____ $40,001 to $50,000
____ $15,001 to $20,000	____ $50,001 to $60,000
____ $20,001 to $30,000	____ $60,001 to $70,000
____ $30.001 to $40,000	____ more than $70,000

To receive a videotape and/or the results of the study, please check below and include your mailing address.

____ I would like a copy of the videotape

____ I would like the results of the study

Name _____
Address _____

_____

APPENDIX C

STANDARD TOY SET

Standard Toy Set:

Doll and bottle
Rattle - shaped like telephone receiver
Pop beads
Picture book
Small rubber car
Poppin' Pals pop-up toy
Football - small, blue

Note: All toys are commercially available and manufacturer's guidelines suggested that they are safe for use with children under one year of age. Parents were invited, but not required, to use the toys during the data collection process.