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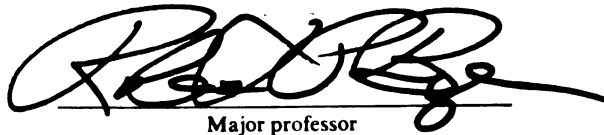
THE RELATIONSHIP OF PARENTAL GENDER, AGE,
EDUCATION, AND SOCIO-ECONOMIC STATUS
TO PARENT-NEWBORN COMMUNICATION

presented by

Cheryl Feenstra

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Family & Child Ecology



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THE RELATIONSHIP OF PARENTAL GENDER, AGE,
EDUCATION, AND SOCIO-ECONOMIC STATUS
TO PARENT-NEWBORN COMMUNICATION

By
Cheryl Feenstra

A DISSERTATION

Submitted to
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ABSTRACT

THE RELATIONSHIP OF PARENTAL GENDER, AGE, EDUCATION, AND SOCIO-ECONOMIC STATUS TO PARENT-NEWBORN COMMUNICATION

by

Cheryl Feenstra

Previous research has determined the value of early parent-infant interaction. The purpose of this descriptive study was to determine whether parent-newborn communication varies with parental gender, age, education, or socioeconomic status.

One hundred English speaking parents and their infants (50) were observed in their homes when the infant was between two and four weeks of age. Parents were observed separately during a 7 1/2 minute period while communicating with their infant. Demographic data were obtained and analyzed using descriptive techniques. Multivariate regression analysis was used to determine how much of parent-infant communication was accounted for by the five major components of vocalization, facial expression, gesture, touch and eye contact. ANOVA approaches were used to determine if the scores for the communication components differed according to the parental attributes.

Vocalization and touch were found to be the

two primary communication components used by parents. Mothers vocalized more than fathers, while fathers touched more than mothers. Young parents used less vocalization than older parents but gestured more. Those parents in the lowest SES gestured more than other groups. Education was not found to affect parent-infant communication. Repeated analysis showed that there was an interaction affect between parental gender and gender of the infant for the communication components of vocalization and eye contact. Mothers communicated more with boy babies while fathers communicated more with girl babies.

Overall these results conclude that parent-newborn communication varies with parental gender, age and SES as well as with infant gender. Results can be used to determine the most effective ways to promote parent-newborn communication and help both parents and infants develop early communication skills.

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CHERYL FEENSTRA

1996

TO MY FAMILY

Bern, Beth, Jennie, and Megan

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It takes a community to raise a child and it takes a community to produce a doctoral dissertation. Although theoretically the work of one doctoral student, the dissertation is dependent on the interacting influences of a wide variety of individuals and circumstances. Here the help of many people is acknowledged.

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Chapter I

INTRODUCTION

Over the past twenty years there has been an increasing interest among professionals working with parents and their infants in the phenomenon of parent--infant communication. After Klaus and Kennell published their book, Maternal-Infant Bonding, in 1976, work in this field expanded rapidly. The nature of communication between a new mother, a new father, and the newborn infant is both fascinating and perplexing.

Just how a parent communicates with the infant has been the subject of much research. Numerous studies of mother-infant communication have yielded various theories about the nature of this phenomenon, without consensus. Father-infant communication also has been addressed, though less frequently than mother-infant communication. There have been some differences noted in father vs. mother interaction, which is a larger subject than communication. Other differences in parent-infant communication associated with differing parental age, education, or socioeconomic status have not been clearly identified. Yet, the first few months of an infant's life may be a critical time for early development of

communication skills. Infants of parents who communicate effectively are more secure at one year of age (Blehar, Lieberman, and Ainsworth, 1977), talk earlier (Keller and Scholmerich, 1987), are more advanced and competent at age two (Olson, Bates, and Bayles, 1984), and exhibit higher IQ and language skills at age four (Bee, Barnard, Eyres, Gray, Hammond, Speitz, Snyder, and Clark, 1982), than those children who did not experience this advantage.

Statement of the Problem

This study investigated the relationship between specific components of parent-newborn [infant] communication and parental gender, age, education, and socioeconomic status (SES). The components of communication included in the study were vocalization, gesture, facial expressions, touch and eye contact.

Importance of the Study

This study helps to define the nature of parent--newborn communication and shows how dimensions of communication differ with parental variables. Communication is a very important part of being a human being. It allows persons to interact meaningfully with each other. The infant can communicate through its behavior (Als, Lester, and Brazelton, 1979), but the infant must develop the skills necessary for verbal communication. Without language, a philosophical question

arises. Is a person a person if he or she cannot communicate using language? In rare cases in history, children have been found who have grown up with beasts as their only companions, or who have been abused or neglected to such an extent that they have grown up without human interaction. These children were never able to catch up with their peers and develop normal communication and interaction skills. The critical time period for a human being to learn communication skills had been missed (Curtiss, 1977).

An infant must learn the foundations for later communication skills in face to face interactions with its parents (Field, 1977). According to Lester, et al. (1985), the precursors of language development, rudimentary symbolic functions such as syntactical elements, intentionality, and reciprocal turn-taking may be learned through cycles of social exchanges, the type of exchanges a parent has on a daily basis with its infant.

The parent has a great deal of influence on how the infant learns to communicate. By learning more about the communication process and the uniqueness of father and mother communication with the infant, it should be possible to promote optimum levels of parent-infant communication.

Ecological Framework

All living things interact with the habitat or environment which surrounds them. Families and individuals all influence and are influenced by their surroundings. Andrews, Bubolz, and Paolucci (1980) developed a model for this ecological approach called the human ecology model.

A key process in the model is adaptation by humans of and to their environment (Bubolz & Sontag, 1993). A family uses resources from their environment to provide the physical necessities of life such as food, clothing, and warmth, while at the same time gathering social resources from other people to give quality and meaning to life. The resources of the family are dependent on several things, some of which are the educational level of the parents, the amount of income earned, and the social status of the family.

Within a functional family, an infant is supported and grows. He or she is provided with the physical necessities of life and is also given love, language, and values. Communication is created and transmitted between the parents and the infant within the family. It is one of the most significant interaction processes in the family ecosystem. The family supports and affects the development of all its members, at the same time interacting with the world outside their door. The way that parents interact with their children depends a great

deal on what happens to the parents both inside and outside their own home. Relationships of the parent are all passed on to the infant through interactions between the parent and the infant. As Bronfenbrenner (1989) suggests, the characteristics of a person at a given time in his or her life are a joint function of the characteristics of the persons and of the environment over the course of the person's life up to that time. The developing child experiences relationships with his or her parents which vary substantially depending on the personal characteristics of the parent. The gender, age, educational background, and social experience of the parent all affect how a parent interacts with others, including the infant.

An infant develops and grows within a family setting, interacting with those around him or her on a daily basis. Within the family, an infant develops competence in relationships and communication, acquiring skills, attitudes, values, and language. These skills are essential to live as a human in this world.

Study Variables

The independent variables examined in this study were parental gender, age, education and socio-economic status (SES).

The dependent variable in this study was parent--newborn communication. This variable includes components

of vocalization, facial expression, gesture, touch and eye contact.

Conceptual and Operational Definitions

Conceptual and operational definitions of the study variables are stated below.

Parental Gender:

CONCEPTUAL: The sex of the person who has the major caretaking responsibility for the infant.

OPERATIONAL: The stated sex of the person who has the major caretaking responsibility for the infant.

Parental Age:

CONCEPTUAL: The stated biological number of years alive.

OPERATIONAL: The age of the parent in three age ranges: 16-20 years of age, 21-29 years of age, and 30 years of age or more.

Parental Education:

CONCEPTUAL: The number of years of formal schooling, including Kindergarten, of a parent.

OPERATIONAL: The stated number of years of formal schooling, including kindergarten, with general educational development

certificates (GED) the same as four years of high school. There were four educational levels: completion of less than 12th grade, completion through 12th grade (high school graduate or GED), completion of more than 12th grade, either college or vocational education, and college degree and above.

Parental Socioeconomic Status:

CONCEPTUAL: The status of social position of the parents.

OPERATIONAL: The social class ranking of each parent based on the score on the Hollingshead Two Factor Index of Social Position (1991), which includes occupational and educational status of an individual.

The dependent variable examined in this study was communication. This variable has several components.

Parent-Newborn Communication:

CONCEPTUAL: The exchange with another human being of thoughts and/or feelings.

OPERATIONAL: Vocalization, facial expression, gestures, touching, and eye contact between parent and newborn.

Parental Vocalization:

CONCEPTUAL: A sound produced by a human voice to relate to another human being.

OPERATIONAL: Any sound directed toward the infant by the parent. Each episode is one vocalization.

Parental Facial Expression:

CONCEPTUAL: A movement of facial muscles to form an expression to enlist or retain the infant's attention, eg. smile, frown.

OPERATIONAL: A retained expression (e.g. smile) is one expression, even if vocalization changes.

Parental Gesture:

CONCEPTUAL: A body movement used to express emotion.

OPERATIONAL: A hand, head, or other body part which is moved to elicit involvement with the infant. A pause of more than three seconds indicates a new gesture.

Parental Touch:

CONCEPTUAL: To physically contact another human.

OPERATIONAL: Any touch of the infant by the parent, other than for physical

support or caretaking of the infant.

A pause of more than three seconds indicates a new touch.

Parental Eye Contact:

CONCEPTUAL: Having the eyes of one person look directly into the eyes of another person.

OPERATIONAL: A meeting of the eyes of the parent and the infant for a minimum of three seconds. A continuous gaze is scored as one eye contact.

For this study an infant was a human baby, between two and four weeks of age.

Confounding variables which were considered include parents' previous experience with infants and which parent was the primary caregiver. The variable of race was minimized since most researchers believe that parent-infant communication is an international language which does not differ by culture or ethnicity (Chase, 1991).

Assumptions

1. Parent-infant communication consists of five basic aspects: vocalization, gesture, facial expression, eye contact and touch.

2. Communication is a primary component of the dyadic system. The system is a feedback loop in which

both parties contribute to the interaction. It is not static over time, but changes as each member of the dyad responds to the other member. The concept of communication must be examined part by part, but without putting these parts together, and looking at them as they interact and change, there is no concept.

3. Communication is valuable to both parties involved in it. There is personal value in the process of communication, both for the parent, to establish a foundation of behaviors which will mediate the nature of the parenting relationship, and for the infant, to develop skills necessary to function in a relationship with the parents and in society.

Chapter II

REVIEW OF LITERATURE

Researchers have studied aspects of parent-infant communication and have attempted to discern exactly what is involved. This review will examine three major areas important to the further study of this phenomenon. First, the terminology used by various authors to describe parent-infant communication will define some components of the phenomenon as well as demonstrate the lack of consensus about its' exact nature. Next, some of the requirements for parent-infant communication to occur will be examined. These requirements include the contributions necessary from each person in the dyad, and the physical requirements necessary for communication to occur. Finally, the review will examine the effects of parental variables on parent-infant communication.

Nature of Parent-Infant Communication

Mother-infant communication has been described by various terms in the literature. These terms have attempted to explain what happens when a parent and an infant communicate. Hopkins (1983) sees mother-infant communication as a developing system. Brazelton (1982) and Lester, Hoffman, and Brazelton (1985) see communication as a cycle of social exchanges. It is seen

as turn-taking by Cohn and Tronick (1987), and Rutter and Durkin (1987). Both Brazelton (1982) and Censullo, Lester, and Hoffman (1985), describe mother-infant communication as rhythmic patterning, noting that the rhythmicity between primary caregiver and infant is an essential ingredient in their developing relationship. Brazelton goes on to state that mother and baby synchronize their interaction. Belsky, Taylor, and Rovine (1984) looked at mother-infant communication as reciprocal exchange in which the parent adjusts the rhythm and tempo of interaction in order to maintain behavioral synchrony between interactants.

Interaction is another term frequently used for communication. Cohn and Tronick (1987) studied mother--infant interaction and identified several components of it. They also recognized that mother-infant communication is transactional, since each partner changes in response to the changes of the other. The variety of labels used to describe parent-infant communication demonstrates the difficulty in pinpointing the exact nature of this phenomenon. Although each label adds a dimension of meaning to parent-infant communication, there is not a clear understanding of its nature.

Several studies did attempt to identify components of parent-infant communication. Cohn and Tronick (1987)

described interaction as consisting of affective expressions, postures, vocalization, gestures and gazes. They observed these five components occurring in most episodes of interaction. A similar finding was reported by Yogman (1982), who studied father-infant interaction in order to determine how infants differ in their patterns of expressive behavior during interactions with fathers as compared with mothers and strangers. He used infant movement, facial appearance, look, and vocalization, and parent body position, facial appearance, look, vocalization, and touch, to score behavior. A pilot study for a program to promote greater responsiveness in adolescent parent-infant relationships used gaze, vocalization, facial expression, body position and limb movement as behaviors which both infants and parents use in communicating. These components helped to explain to young parents how communication occurs between infants and parents (Censullo, 1994). Finally, a 1992 study identified three distinct channels of communication evident in the free play interactions of 4-month-old infants and their mothers: attentional, vocal and affective (Barratt, Raoch, & Leavitt).

Requirements for Parent-Infant Communication to Occur .

In order to examine parent-infant communication, the researcher must be aware of what is necessary for this communication to occur. Both members of the dyad must

contribute something to the interactions. First of all, parents must be sensitive to their infants (Ainsworth, 1979; Brazelton, Koslowski, and Main, 1974; Lamb & Oppenheim, 1989). This involves being able to read the child's signals, know what he or she wants, know how to respond appropriately, and know what expectations are realistic. It is sensitive mothering, evidencing appropriate responsiveness to infant cues, that fosters optimal infant development (Belsky and Benn, 1982). The mother acts as interpreter of the infant's communication and must understand and act appropriately (Keller and Scholmerich, 1987).

Mothers as well as fathers use a speech type very different from adult patterns (Stern, 1974) which has been called "motherese" (Chase, 1991). This speech type is more high pitched and has more tone contrast than adult speech. The tempo is slower, the intonations are more exaggerated and the rhythm is very different from adult speech. In addition to using a different type of speech, mothers imitate the infant's facial expressions and gestures (Field, 1977).

The infant's contribution to the interactions is not as easily determined. However, it is necessary that the infant respond to the parent by some signal such as body or eye movements. Gaze is very important, as shown by Fraiberg's (1977) longitudinal study of blind infants.

Body movement in response to mother's voice also is something the infant does, though not necessarily in a synchronized fashion and not purposively (Trevarthen, 1977).

Physical requirements necessary for communication to occur are simple. The mother and infant must be physically close to each other (Bell, 1974). Signal behaviors by the infant such as crying or smiling increase the proximity of mother and baby. The baby must be in an alert state (Klaus, and Kennell, 1976). Early and extended contact enhances synchrony and mother's responsiveness (Siegel, 1982).

Parental Variables

Parental variables may affect parent-infant communication. Gender, age, educational level and socioeconomic status (SES) of the parents may affect how a parent communicates with his or her infant. Here these variables will be reviewed.

Gender

Both mothers and fathers are capable of skilled and sensitive social interaction with their young infants. Mothers spend more time than fathers in interaction with or being accessible to their children, even when both parents are employed (Lamb & Oppenheim, 1989), therefore many studies of infant interaction have focused only on the mother. In some cases, mother-infant interaction was

used to examine other variables like attachment (Ainsworth, 1979; and Blehar, Lieberman & Ainsworth, 1977), IQ and infant language skills (Bee, Barnard, Eyres, Gray, Hammond, Spietz, Snyder & Clark, 1982), and infant cognitive competence (Olson, Bates, & Bayles, 1984). Field (1977) studied mother-infant interaction as it was affected by early separation, infant deficits, and experimental manipulations. All of these researchers used interaction as a variable but did not attempt to study it as a phenomenon.

Other scholars examined mother-infant interaction as an entity in itself. Belsky, Taylor, and Rovine reported a study to look at reciprocal interaction in the mother-infant dyad (1984). Using time sampling, frequency count observations of 74 mother-infant dyads examined at one, three, and nine months of age they attempted to capture dimensions of the mother-infant relationship in order to advance understanding of the development of that relationship. They were looking for change and stability of individual differences over time and development. Interaction was operationalized for the mother as vocalization, response, affect, including smiles and hugs, and stimulation of the infant. Results showed that their procedure for assessing mother-infant interactions could capture a set of theoretically important dimensions of mother-infant interaction, that

interaction remains constant over time, and that as infants develop they carry more of the interactive burden in social exchanges with mother.

Two studies reported in 1985 (Censullo, Lester, & Hoffman; and Lester, Hoffman, & Brazelton), examined mother-infant interaction for patterns and rhythms. Censullo et. al. looked at 30 pairs of mothers and their infants using five dyadic phases, each with several levels, to determine whether the interaction occurred in cycles and/or was synchronous. The dyadic phases clustered specific mother-newborn behaviors as interactive units along a dimension of disengagement--engagement. These behaviors included positive affect, arousal, gaze and animation increase. Spectral analysis revealed nonrandom, reliable rhythms in dyadic mother--newborn interaction from birth in term infants and from 40 weeks gestation for preterm pairs.

Lester, et al. (1985), studied 40 mother-infant pairs to quantify social interaction rhythms in three to five month old infants. The seven categories of monadic phases which had been developed in an earlier study, avoidance, aversion, monitoring, eliciting, setting, playing and talking, were expanded to thirteen categories, and each dyad was scored second-by-second with scores ranging from one to thirteen. Both the mother and the infant received a total score which was

analyzed using spectral analysis to determine cyclicity of interaction. Results showed periodicity in behaviors, with both cycles and synchrony exhibited. The authors concluded that the interactive rhythms found in the study indicate the presence of dynamic processes in the development of social interaction. These may have implications for the development of communication and language.

The phenomenon of mother-infant interaction was further studied for the sequence of dyadic states (Cohn & Tronick, 1987). Eighteen mother-infant pairs were videotaped in an observation room at 3, 6, and 9 months of age to analyze the transitions among dyadic states. The interactions were grouped into phases clustering affective expressions, postures, vocalizations and gestures and gaze. This attempt to explain mother-infant interaction showed that mothers and infants do not change states simultaneously, but each attempts to regulate his or her behavior in response to that of the other. There is a relationship between the responses of both mothers and babies, but not in a precisely synchronized manner.

These studies have examined how a mother interacts with her infant and how the infant responds to the mother. Two limitations of these studies are noteworthy as they relate to the current study. First, the phenomenon studied was interaction, a broader concept

than communication, since it includes activities like playing games, feeding and diapering. Second, the components of interaction were not specifically identified. That is, the amount of time that a mother spends on parts of interaction like vocalization, gaze, or touch were not delineated. The components were used to examine other concepts like rhythmicity, reciprocity, and state changes, but were not studied for their own value.

Fathers also influence the development of their children, both directly through interaction and indirectly by their impact on the family's social and emotional climate. Children with highly involved fathers are characterized by increased cognitive competence, increased empathy, less sex-stereotyped beliefs and a more internal locus of control (Lamb & Oppenheim, 1989). As with mothers, father-infant interaction has been studied both as a means to examine other variables like attachment (Lamb, 1980), and as a phenomenon of itself (Clarke-Stewart, 1980; Parke & O'Leary, 1976; Parke & Sawin, 1980; Yogman, 1982; Yogman, 1987).

In a classic study by Parke and O'Leary (1976), nineteen fathers, mothers and their infants were directly observed to explore the manner in which fathers interact with their newborns and to compare father and mother patterns. The frequency of parent behaviors for such as

look, vocalize, smile, rock, touch, kiss, imitate, feed, and change position were recorded. Fathers held, rocked, and provided more auditory and physical stimulation to their infants than did their mothers, who, in turn, both fed and smiled more at their infants than did the fathers. Both first and second order effects also were analyzed. When alone, mothers and fathers differed only slightly in their patterns of interaction.

Later studies had differing results. In a short term longitudinal study of parent-infant interaction over three months beginning at birth (Parke & Sawin, 1980), parents were observed while feeding and playing with their infants partly to determine the interrelations among patterns of behavior in interactions. It was found that mothers were found to engage in more caretaking activities and verbal interaction than fathers, while fathers provided more social stimulation than mothers. A similar study showed that mothers and fathers did not differ in the frequency of the majority of behaviors (Parke and Tinsley, 1981). It was found that when fathers spend more time in caretaking activities the amount of playing done with their infants decreases (Sheilds & Sparling, 1993).

A study was done with older children, aged 15 to 30 months, to assess similarities and differences in mother and father attitudes and interactions with their

children. It found that mothers and fathers were similar in responsiveness, stimulation, affection, effectiveness, in attitudes about the child, independence, teaching and in the patterns of interrelations among their behaviors. Mothers and fathers differed in the amount of time and interaction they had with their children but were relatively similar in the quality of their interaction (Clarke-Stewart, 1980).

Later studies by Yogman (1982, 1987) with full term and preterm infants were done to determine how infants differ in patterns of expressive behaviors during interaction with fathers compared with mothers and strangers. These studies looked at the monadic phases of talk, play, set, monitor, avert, and protest/avoid and the patterns and amounts of time spent in each phase. Both fathers and mothers were found to spend about 90% of their time in the affectively positive phases of set, play and talk, with obvious cycles occurring. However, fathers had more accentuated peaks of maximal attention and valleys of minimal attention, while mothers were more gradual and modular in their phase shifts. It also was found that fathers play more games with their infants than mothers do, especially physical games which are more vigorous, arousing and stimulating than the more visual, distal games played by mothers.

These studies revealed some of the differences in

parent-infant interaction which occur related to parental gender. However, they do not focus specifically on communication rather than interaction, nor do they completely examine the various components of communication such as vocalization, facial expression, gestures, touch, and eye contact and how these are different or the same between mothers and fathers.

Age

The age of the parent has an affect on parent-infant communication. Young mothers' communicative styles seem to be less verbal, less emotionally positive, and less didactic as found in a study of 50 women using the Home Observation for Measurement of the Environment (HOME) (Coll, Hoffman, and Oh, 1987). In a study of one hundred sixty infant-mother dyads of whom half were teen mothers and half were adult mothers, teenage mothers were less vocal, less contingently responsive and engaged in less game playing during face-to-face interactions than adult mothers (Field, 1980). Communications also were found to be of lower frequency and lower quality than in a comparison group of older mothers (Schellenbach, Whitman, and Borkowski, 1992). They vocalize to their infants less and have fewer positive exchanges with their children than older mothers (Jorgensen, 1993).

Older mothers on the other hand are noted to be more sensitive toward their infants and display more mutual

gaze, vocalizations and touch than their younger counterparts (Censullo, 1994; Hans & Bernstein, 1991). Older fathers too were noted to have more communication with their infants in the form of touch than younger fathers (Sheilds, 1993).

Socially and emotionally, children of young mothers tend to experience higher levels of impairment and mild behavior disorders than children of older mothers, although this association is generally weak and is less significant than findings for educational achievement (Voydanoff & Donnelly, 1990). Overall the effect of the mother's age on her child's social and emotional development is not direct but is transmitted through other factors associated with early childbearing, such as educational and economic disadvantage and greater likelihood of marital breakup (Baldwin & Cain, 1980).

Socioeconomic Status

Comparisons of early interactions across socioeconomic status (SES) groups have frequently revealed that both lower-class infants and their mothers are less active, particularly verbally, than their middle-class counterparts. As early as the first month of life, lower-class infants received significantly less verbal stimulation from their mothers in both a lulling and chatting fashion during interaction and care-giving activities (Kilbride, Johnson, & Streissguth, 1977).

Studies of 4-month-old infants, for example, by Lewis and Wilson (1972) report less smiling and vocalizing among the lower-class infants and less contingent responsivity among their mothers, although no class differences were reported for the frequency of mother vocalizations. In a study of 160 mother-infant dyads at four months of age, the 80 lower class mothers vocalized for lesser proportions of the time and received less optimal ratings on physical activity, vocalizations, infantized behavior, contingent responsivity, and game-playing than the 80 middle class mothers observed (Field, 1980). Middle class mothers tend, on average, to talk more to their infants than less advantaged mothers (Adams & Ramey, 1980).

Socioeconomic status of the mother was examined as related to structural aspects of maternal speech by Adams and Ramey (1980). In 27 mother-infant dyads observed at six months of age, it was found that there were large individual differences for measure of sentence form, lower SES mothers used more imperatives, but there was little difference in the amount of speech to infants for SES.

The SES of the mother was closely linked to her child's cognitive test scores in one study. It was noted that most of the children of young mothers with truncated education and poor employment performed worse on

cognitive development tests than children of older mothers of higher SES (Baldwin and Cain, 1980).

Education

Research relating educational level to parent-infant communication is scarce. Because educational level is a weighted component of the SES, there should be similar relationships between SES and parent-infant communication and parental education and parent-infant communication. Usually younger parents are both less educated and poorer than older parents, so data obtained about those variables may be generalized to educational level of the parent. In a doctoral study of parent sensitivity to the infant, it was found that mothers with partial college or higher levels of education were more sensitive to infants than were those with less education. This was not found to be true of fathers (Broom, 1991). Alternatively, however, in a descriptive study of twenty-one fathers in interaction with their three-month-old infants, fathers' educational level appeared to be positively related to the sensitivity of the fathers. Here the father's educational level was correlated with the amount and quality of physical involvement with the infant (Sheilds & Sparling, 1993).

The literature has shown that there are many relationships between parental variables and parent--infant communication. However, a clear picture of how

the components of communication may differ relating to parental variables has not appeared. This study attempted to demonstrate these relationships.

Conceptual Model

Two models served to guide this study. The first was the human ecology model. The ecological approach is founded in ecology, the study of the interrelations of organisms and environment. It is built on the concept of an ecosystem, a name for the interaction system comprised of living things together with their habitat or environment which surrounds them. An ecological approach utilizes concepts from general systems theory and social systems theory (Andrews, Bubolz, & Paolucci, 1980). Human ecology has emerged as a perspective in several social science disciplines, as well as in the arts and humanities. Human ecology is concerned with interaction and interdependence of humans as individuals, groups and societies with the environment. A key process is adaptations by humans of and to their environment (Bubolz & Sontag, 1993). A family ecosystem consists of a given family system interacting with its environment. The family ecosystem has three central organizing concepts: enviroined unit, environment, and the patterning interactions and transactions between them (Andrews, Bubolz, & Paolucci, 1980).

In the family ecosystem, the enviroined unit is the

group of persons who constitute the family. A family is a unit of interacting and interdependent personalities who have a common theme and goals, have a commitment over time and share resources and living space. The family is a unity of interacting persons with an identity and character of its own, more than the sum of the individuals who make it up. It depends on the natural environment for physical sustenance and the social environment for humanness and for giving quality and meaning to life (Hook & Paolucci, 1970). Family members operate as autonomous individuals but are also mutually dependent upon each other. They have needs for having, relating, and being. These needs are met within the family as physical, psychological and spiritual resources are distributed, exchanged and used (Bubolz & Paolucci, 1993). Within the family, an individual becomes progressively more able to interact with more differentiated and complex environments on physical, social, emotional, and cognitive levels. In this study, the influence of the parents on the development of the infant is examined. The parent and infant, both within the family, interact with and communicate on a daily basis. The parents assist the infant to become progressively more able to interact with them, then more complex environments. The family is a critical microsystem for human development.

The environments of the family furnish the resources necessary for life and constitute the life-support system. Environment consists of the totality of the physical, biological, social, economic, political, aesthetic, and structural surroundings for human beings and the context for their behavior and development. Three interrelated environments are conceptualized. The natural physical-biological environment includes physical and biological components as they exist unaltered in nature, such as climate, soil, plants and animals. The human built environment includes alterations and transformations made by humans of the natural physical--biological environment such as roads, urban settlements, and polluted air and water. The social-cultural environment includes things such as the presence of other human beings, cultural constructions like language and values, and social and economic institutions like industrial systems and market economy. The environments are embedded within each other (Bubolz & Sontag, 1993). The environment which is most relevant to the current study is the social-cultural environment. Here the infant is influenced by his or her parents and by the language which they speak.

The family ecosystem itself can be viewed as an environment that supports the development of individual subsystems or family members. The sociopsychological and

behavioral environment of roles, rules, and interactions supports the development of those human characteristics that serve as integrative functions for society such as the building of trust, love, relatedness, and order. Family aspirations, values, and child rearing styles interact with the material resource base of the family. Family communication is very important within the family environment as it influences the atmosphere of the home and the way that infants and children learn to interact. The conditions of the home environment critically influence the development and continuing growth of both children and adults (Andrews, Bubolz, & Paolucci, 1980).

A third component of the family ecosystem is the organization derived from patterns of transactions between envired units and the environment. This organization relates the family system to the environment and is created and constantly evolving through reciprocally directed transactions or exchanges of energy between and among systems and environments. Family members structure a pattern of communication for transforming matter-energy and information.

Communication is the process of interaction by which information and meaning are created and transmitted between parents and their children or between the family and other systems in the environment. It is one of the most significant interaction processes in the family

ecosystem (Bubolz & Sontag, 1993). Communication requires a feedback system. The parent must recognize and understand the methods of communication of his or her infant, and must be able to transmit messages utilizing a similar system. Each member of the dyad must learn the nuances of behavior patterns of the other member of the dyad. The rules for communication are constantly altered by each member of the dyad, and flexibility and change are necessary for maintaining optimal interaction (Brazelton, Koslowski, & Main, 1974).

Both individual and family attributes can influence parent-infant communication. Individual attributes of the parent could be values, personality, education, intelligence, spouse interactions, beliefs, parental goals, perception of the child, physical ability, and health (Bristor, 1983). Individual attributes of the infant could be temperament (Thomas & Chess, 1997), state of consciousness (Ashton, 1973), and responsiveness to tactile, visual and auditory stimuli (Brazelton, et al., 1974). Family attributes which might have an influence on parent-infant communication might include any or all of the following: family size, patterns of interaction, housing, sex roles, goals, labor force participation, and resources such as education, money, medical care, and social support. These attributes could directly or indirectly influence parent-infant communication by

changing the amounts of time, space or energy available to the dyad.

From an ecological perspective, the larger environment could also have an influence on the parent---infant communication process, though in an indirect way. It could affect each individual member of the dyad. This in turn would affect the way each member interacts with the other member. Cultural values and rules, "rules" learned from neighbors, friends, and extended family would all have an influence on the way a mother or father communicates with the infant. This, in turn, would influence the way an infant communicates back to the parent. It is important to consider individual, family and environmental attributes when examining the transactional patterns of parents and infants.

Within the family, energy is required for system maintenance and existence. Additional energy is required for transactions with other systems beyond the family, like educational, religious, or economic systems. Still higher levels of energy are needed for adaptive behavior to cope with changing environments and rules. The family uses information, goods and services to support the production, consumption, and socialization functions of the family. They use communication, decision making, and technology to organize themselves, to sustain themselves and to develop the family members (Bubolz & Sontag,

1993). They then reach outcomes which give them a certain quality of life and quality of the environment, hopefully for human betterment. The family produces output to the environment of material goods, information, waste products and human resources (Andrews, Bubolz, & Sontag, 1980).

One of the major outputs of a family system is human resources. Bronfenbrenner (1979) proposed a model which helps to understand how individuals develop within the family system. The individuals within the family perceive, conceptualize and act in relation to their environment. Bronfenbrenner described the individual's environment as a set of nested structures, each inside the next, like a set of Russian dolls. He proposed four levels of environmental systems, differentiated on the basis of their immediacy with respect to the developing person. The family is the principal microsystem context within which development takes place. Mesosystems (e.g. relations among home and school), exosystems (e.g. like work settings), and the macrosystem which includes cultural beliefs, value systems, and institutions are also powerful influences upon human development. The micro-, meso-, and exosystems are embedded in the macrosystem. The chronosystem adds the dimension of time to the model, since the fluidity of time encompasses all life situations (Bronfenbrenner, 1989).

Within this ecosystem, an individual develops and changes. Bronfenbrenner proposed that the characteristics of a person at a given time in his or her life are a joint function of the characteristics of the person and of the environment over the course of the person's life up to that time. Within the microsystem the pattern of activities, roles, and interpersonal relations experienced by the developing person in a given face-to-face setting with particular physical and material features, and containing other persons with distinctive characteristics of temperament, personality, and systems of belief shapes development. The developmental processes taking place within a setting can vary substantially as a function of the personal attributes of significant others present in the setting as well as the belief systems, resources, life styles, life course options, and patterns of social interchange that are imbedded in the system (Bronfenbrenner, 1989). There is dyadic interaction between individuals which causes both of them to change and develop. An infant must develop competence within the family to carry out family functions and to later participate in community affairs and utilize community institutions. The basic elements of human competence such as communication and relationships must be learned within the family. Communication is not static over time, but changes as

each member of the dyad responds to the other member. Transactions occur which allows both parent and child to change and grow. Individuals acquire a repertoire of skills, attitudes, and values within the family which are required to persevere and perform in all levels of the ecosystem.

These two models directed this research. The study looks at the family as a system, examining the dimensions of parent-infant transaction, not extensive concepts of communication theory. The family ecosystem supports the development of family members. Parents, with all of their personal characteristics and attributes influence how a newborn learns to communicate. The environments in which the family exists all influence and are influenced by the family and the individuals within the family. Parental gender, age, education and SES all are interrelated and affect the development of communication between parent and newborn.

Chapter III

METHODOLOGY

Research Questions

The overall purpose of this research was to determine whether parent-newborn communication varies with parental gender, age, education, or socioeconomic status. Components of parent-newborn communication have been variously stated in the literature and were explored as to their validity and their relationship to a parent's gender, age, education, and socioeconomic status.

In order to accomplish this objective, several specific research questions were addressed.

1. Are there differences in the degree of utilization of communication components in parent-newborn communication?
2. Are there differences in the degree of utilization of communication components in mother-newborn communication?
3. Are there differences in the degree of utilization of communication components in father-newborn communication?
4. Is there a relationship between parental gender and parent-newborn communication?
5. Is there a relationship between parental age and

parent-newborn communication?

6. Is there a relationship between parental education and parent-newborn communication?
7. Is there a relationship between parental socioeconomic status and parent-newborn communication?

Research Hypotheses

Because a number of hypotheses were posed for several of the research questions, the research question is restated before each set of hypotheses. The following hypotheses were proposed addressing the research questions.

Research Question 1: Are there differences in the degree of utilization of communication components in parent-newborn communication?

Ho 1: There will be no difference in the degree of utilization of communication components in parent-newborn communication.

Ha 1: There will be a difference in the degree of utilization of communication components used in parent-newborn communication.

Research Question 2: Are there differences in the degree of utilization of communication components in mother-newborn communication?

Ho 2: There will be no difference in the degree of utilization of communication components used

in mother-newborn communication.

Ha 2: There will be a difference in the degree of utilization of communication components used in mother-newborn communication.

Research Question 3: Are there differences in the degree of utilization of communication components in father-newborn communication?

Ho 3: There will be no difference in the degree of utilization of communication components used in father-newborn communication.

Ha 3: There will be a difference in the degree of utilization of communication components used in father-newborn communication.

Research Question 4: Is there a relationship between parental gender and parent-newborn communication?

Ho 4: There will be no relationship between parental gender and parent-newborn communication.

Ha 4: There will be a relationship between parental gender and parent-infant communication.

Ho 5: There will be no relationship between parental gender and the communication component of vocalization.

Ha 5: Mothers will use more vocalization than fathers in parent-newborn communication.

Ho 6: There will be no relationship between

parental gender and the communication component of facial expression.

Ha 6: Mothers will use more facial expressions than fathers in parent-newborn communication.

Ho 7: There will be no relationship between parental gender and the communication component of gesture.

Ha 7: Fathers will use more gestures than mothers in parent-newborn communication.

Ho 8: There will be no relationship between parental gender and the communication component of touch.

Ha 8: Fathers will use more touch than mothers in parent-newborn communication.

Ho 9: There will be no relationship between parental gender and the communication component of eye contact.

Ha 9: There will be a difference between the scores of mother-newborn and father-newborn communication for eye contact.

Research Question 5: Is there a relationship between parental age and parent-newborn communication?

Ho 10: There will be no relationship between parental age and parent-newborn communication.

Ha 10: Older parents will have higher parent-infant

communication scores than younger parents.

Ho 11: There will be no relationship between parental age and the communication component of vocalization.

Ha 11: Older parents will vocalize more to their infants than younger parents.

Ho 12: There will be no relationship between parental age and the communication component of facial expression.

Ha 12: There will be a relationship between parental age and the communication component of facial expression.

Ho 13: There will be no relationship between parental age and the communication component of gesture.

Ha 13: There will be a relationship between parental age and the communication component of gesture.

Ho 14: There will be no relationship between parental age and the communication component of touch.

Ha 14: There will be a relationship between parental age and the communication component of touch.

Ho 15: There will be no relationship between parental age and the communication component of eye contact.

Ha 15: There will be a relationship between parental age and the communication component of eye contact.

Research Question 6: Is there a relationship between parental education and parent-newborn communication?

Ho 16: There will be no relationship between parental education and parent-newborn communication.

Ha 16: Parents with higher levels of education will have higher parent-infant communication scores than parents with lower levels of education.

Ho 17: There will be no relationship between parental education and the communication component of vocalization.

Ha 17: Parents with higher levels of education will have higher parent-newborn scores for vocalization than parents with lower levels of education.

Ho 18: There will be no relationship between parental education and the communication component of facial expression.

Ha 18: There will be a relationship between parental education and the communication component of facial expression.

Ho 19: There will be no relationship between parental education and the communication component of gesture.

Ha 19: There will be a relationship between parental education and the communication component of gesture.

Ho 20: There will be no relationship between parental education and the communication component of touch.

Ha 20: There will be a relationship between parental education and the communication component of touch.

Ho 21: There will be no relationship between parental education and the communication component of eye contact.

Ha 21: There will be a relationship between parental education and the communication component of eye contact.

Research Question 7: Is there a relationship between parental socioeconomic status and parent-newborn communication?

Ho 22: There will be no relationship between parental SES and parent-newborn communication.

Ha 22: Parents of higher SES will have higher parent-newborn communication scores than

parents with lower SES.

Ho 23: There will be no relationship between parental SES and the communication component of vocalization.

Ha 23: Parents with a higher SES will vocalize more to their newborns than parents with lower SES.

Ho 24: There will be no relationship between parental SES and the communication component of facial expression.

Ha 24: There will be a relationship between parental SES and the communication component of facial expression.

Ho 25: There will be no relationship between parental SES and the communication component of gesture.

Ha 25: There will be a relationship between parental SES and the communication component of gesture.

Ho 26: There will be no relationship between parental SES and the communication component of touch.

Ha 26: There will be a relationship between parental SES and the communication component of touch.

Ho 27: There will be no relationship between parental SES and the communication component

of eye contact.

Ha 27: There will be a relationship between parental SES and communication component of eye contact.

Note that hypotheses 4, 10, 16, and 22 deal with relationships between overall communication scores and parental variables, while hypotheses 5-9, 11-15, 17-21 and 23-27 deal with relationships between parental variables and components of communication.

Design of this Study

In order to examine the communication between a parent and the infant, and to determine the relationship between parental variables and communication patterns, the following study was carried out.

The non-experimental, descriptive study was cross-sectional using parents and infants in dyads of mother--newborn and father--newborn. The setting was partially controlled. It occurred in a western Michigan community which is primarily Caucasian and is stable economically. Significance of the data was determined by using the decision rule of $p \leq .05$. The null hypothesis was rejected if there was a five percent or more probability that the null hypothesis could have occurred by chance.

Instrumentation

Two instruments were used to collect the data. The first was a demographic data sheet (Appendix A). It

included items such as age, race, sex, marital status, education, occupation, and primary caregiver status. The education was divided into four categories: completion of less than 12th grade or GED, completion of 12th grade or GED, completion of more than 12th grade (college or vocational), and college graduate. The socio-economic data were classified according to the Hollingshead Two Factor Index of Social Position (1991). The occupational scale is a 7 point scale which ranks professions into different groups and businesses by their size and value. The educational scale is also divided into 7 positions. In the two-factor index, occupation is given a weight of 7 and education a weight of 4. The range of scores in each of five social classes is 11-17, class I, 18-31, class II, 32-47, class III, 48-63, class IV, and 64-77, class V. Extensive use of the tool in the United States has established its reliability at approximately 90% (Appendix B).

The second tool used was an instrument designed specifically for this study, called Parent-Infant Communication Tool (PICT) (Appendix C). It was coded into headings for vocalization, facial expression, gesture, touch, and eye contact. It was designed to determine which aspects of parent-infant communication are used most often by the parent. The researcher manually marked each instance of the five aspects of

communication as they occurred during a seven and one half minute period, with alternating 45 second intervals of recording and not recording.

Scoring was achieved in two ways. First the frequency score for each of the five categories was obtained. This score was the raw score for the category. Next, the five raw scores were added for each person. This was the combined raw score, the total score.

Prior to the study, the instrument was tested for reliability by administering it to three families meeting the criteria of the study, but who were not included in the study sample. Parents scored similarly on the tool and it proved workable. A videotape was made of one family to allow the researcher to score that interaction at different times. Intrarater reliability was found to be approximately 90%.

The tool has construct validity since it is based on the work of Cohn and Tronick (1987). A similar measure was used by Yogman (1982), who studied infant movement, facial appearance, look and vocalization, and parent body position, facial appearance, look, vocalization, and touch. Face validity was established by submission of the tool to two nurses who work with parents and infants. Both nurses felt that the components of communication listed on the tool were accurate reflections of what happens when a parent communicates with his or her

newborn infant.

Sampling Procedures

The population studied were parents and their infants in a medium-sized midwestern community. One hundred parents and their 50 infants constituted the study group. To qualify to be in the study, each family group must have contained two parents and a full term (37 week), healthy singleton infant who was between two and four weeks of age. The parents spoke English and were living with each other and the infant, though were not necessarily legally married. The infant was the first infant raised by this set of parents. Neither of the parents had raised an infant prior to this one. Families were obtained through lists of births in a local hospital between May and August, 1995.

After permission was obtained from the University's Committee on Research Involving Human Subjects (UCRIHS), and the hospital's human research committee, birth records were examined. Those parents who met the qualifications specified above were listed. No attempt was made to stratify the sample.

Those parents who met the study criteria were personally contacted by the researcher while they were still in the hospital. The researcher is a registered nurse with both obstetric, newborn and community health experience. The study was explained, questions answered,

and written permission obtained to participate in the study (Appendix D). Arrangements were made for the researcher to call or write to the parents within two weeks to establish a date for a home visit. A phone call was then made to set up the appointment to meet with the parents and the infant in their home. The mother-newborn dyad and the father-newborn dyad were both to be available.

Data Collection Procedures

A visit was made on a day and time convenient to the family, when both parents and the newborn were at home. The infant was between two and four weeks of age. One parent was asked to fill out the demographic questionnaire while the other parent and the newborn were observed during an interaction. To reduce any bias resulting from the order of observation, the parent who was observed first in each family alternated between the mother and the father. The PICT was used during a seven and one half minute observational period after the parent had been instructed to play with the newborn without using any toys. The parents all held the infant while sitting down.

Data Analysis

By examining the data obtained, it was possible to state how the parent-newborn pairs communicate and how differences in parental gender, education, age and SES

were related to the communication. The demographic data were analyzed using descriptive techniques. The mode, mean, median, range and standard deviation for age, education, and SES status were determined.

To answer research questions one, two and three regarding the differences in the degree of utilization of communication components in parent-newborn communication, in mother-newborn communication and in father-newborn communication, the scores obtained from each component of the PICT were added for fathers and also for mothers. This raw score for each communication component for fathers and for mothers was examined for frequencies, range and standard deviation. Next, the total scores for fathers and for mothers were examined for central tendencies, range, and standard deviation. Finally, the total scores for both fathers and mothers were combined to get a family score. This too was examined for central tendencies, range, and standard deviation. The means of these scores were compared using a t-test. In addition, a multivariate regression analysis was done using the family score. This analysis showed the influence of each of the five components of the communication score on the parent-newborn communication score. The overall significance was determined using an F test, and the significance of each variable determined using a t-test. The null hypothesis was rejected with a significant F or

t test(<.05).

Research questions four through seven asked if the scores for the communication components differed according to the parental attributes of gender, age, education, and SES. To answer these questions, ANOVA was used. This allowed examination of each of the communication components versus each independent variable. The significance was determined using an F test.

Additional analysis was done on some of the variables. A repeated analysis was done with the family considered the observation. Baby's gender was used as an additional independent variable, using parent gender as the dependent variable. The data were observed for interactions. Multivariate regression analysis also was used to investigate the relationship between the communication components for each parent and other variables.

Chapter IV

Results

This chapter presents study findings organized into two sections. The first section presents demographic data obtained about the families involved in the study. The second section reports the results of ANOVA and multivariate regression analyses related to the seven research questions.

Demographic Data

One hundred parents and their 50 infants took part in this study over a three and one half month period in the summer of 1995. Fifty fathers with an average age of 27.8, range of 18 to 36, and fifty mothers with an average age of 26.2, range of 16 to 35, took part in the study. Fathers were close to two years older than mothers on the average ($t=3.94$, $p<.05$). All infants were between two and four weeks of age. There were 24 boys (48%) and 26 girls (52%). The majority of infants were born vaginally (72%). Ninety two percent (46) of the couples were married, and 8% (4) were unmarried but living together.

As a group, the parents were quite highly educated. Fifty (50%) of them were college graduates, 27 (27%) had education beyond high school, 14 (14%) were high school

graduates and 9 (9%) had less than a 12th grade education. More fathers than mothers were high school graduates (18% vs. 10%), but more mothers than fathers were college graduates (54% vs. 46%).

All of Hollingshead's (1991) five social classes were represented, with a fairly even distribution among the classes (Table 1). The social class of fathers and mothers were calculated separately, since social class is based on education and occupation. Forty percent (40%) of the mothers were in the lowest two classes while 32% of the fathers were in these classes. Thirty eight percent (38%) of the mothers were in the top two classes while 48% of the fathers were in these classes.

Research Questions

In this section the research questions asked in this study will be identified, followed by the hypotheses which follow from them. Then the results will be presented.

Research Question 1: Are there differences in the degree of utilization of communication components in parent-newborn communication?

H₀₁ There will be no difference in the degree of utilization of communication components in parent-newborn communication.

Table 2 presents the relative contribution of the variables to the prediction of communication, when other

Table 1 Frequency of Socioeconomic Classes among Parents

Social Class	Mother (50)		Father (50)	
	f	%	f	%
Class I	12	24	11	22
Class II	7	14	13	26
Class III	11	22	10	20
Class IV	13	26	12	24
Class V	7	14	4	8

NOTE: SES classes according to Hollingshead with I being the highest class and V the lowest class.

Table 2 Multiple Regression Analysis of Communication on Eye Contact, Facial Expression, Touch, and Vocalization

Independent Variable	B	Beta	t
Eye Contact	0.12	0.15	2.45*
Facial Expression	0.14	0.17	2.80*
Touch	0.54	0.57	9.46*
Vocalization	0.66	0.64	10.80*
$R^2 = .71, F(4,95) = 57.65^*$			

NOTE: B = unstandardized regression coefficients
Beta = standardized regression coefficients

* $p = < .01$

variables are controlled. Vocalization has the greatest influence on parent-infant communication. It has a beta weight of .64 which indicates that vocalization has a relatively high contribution to the prediction of the total communication score. Touch has the next greatest contribution, with eye contact and facial expression following. The R-squared indicates that 71% of the variance in communication scores can be explained by the combined influence of these four independent variables.

Table 3 shows that there is a great deal of difference in the degree of utilization of communication components in parent-newborn communication. Vocalizations are by far the most frequently used component of parent-infant communication, accounting for 57% of the total score. Touch, facial expression, eye contact and gestures following in decreasing importance.

The null hypothesis is rejected.

Research Question 2: Are there differences in the degree of utilization of communication components in mother-newborn communication?

Ho2 There will be no difference in the degree of utilization of communication components used in mother-newborn communication.

Research Question 3: Are there differences in the degree of utilization of communication components in father-newborn communication?

Table 3 Use of Communication Components for Parents Together and by Gender

Communication Components	Parents together			Mother			Father			t
	$\bar{x}$	SD	% total	$\bar{x}$	SD	% total	$\bar{x}$	SD	% total	
Vocalization	26	7.2	57	28	6.1	58	24	7.9	55	2.9*
Facial Expression	4	3.5	9	4	3.5	9	4	3.5	9	- .51
Gesture	1	1.4	2	1	1.5	3	1	1.3	2	- .26
Touch	14	6.7	30	14	6.7	28	14	6.8	32	- .29
Eye Contact	1	1.5	2	1	1.7	2	1	1.4	2	- .60
Total	46	11.2	100	48	9.6	100	44	12.4	100	1.78+

NOTE: N = 100 parents, 50 mothers, 50 fathers

* $p = < 0.05$

+ $p = .08$

Ho3 There will be no difference in the degree of utilization of communication components used in father-newborn communication.

These two research questions can be answered in the affirmative. The pattern of utilization of the communication components is the same for mothers and for fathers and for both parents together (Table 3).

Vocalization accounts for more than half of the communication by both mothers and fathers with their infant. Touch is the second most frequent component used by parents with their infants, accounting for 28% of mothers' total communication and 32% of fathers' total communication. The other three components account for very little of parent-infant communication.

Null hypotheses two and three are rejected.

Research Question 4: Is there a relationship between parental gender and parent-newborn communication?

Ho4 There will be no relationship between parental gender and parent-newborn communication.

Ho5 There will be no relationship between parental gender and the communication component of vocalization.

Ho6 There will be no relationship between parental gender and the communication component of facial expression.

Ho7 There will be no relationship between parental

gender and the communication component of gesture.

Ho8 There will be no relationship between parental gender and the communication component of touch.

Ho9 There will be no relationship between parental gender and the communication component of eye contact.

Table 3 shows that there is a statistically significant difference in the amount of vocalization done by mothers and fathers ($t=2.9$, $p<.05$), with mothers vocalizing more than fathers. Facial expression, gesture, touch and eye contact show differences in the means of each communication component but they are not significant. Although not statistically significant ($t=1.78$, $p=.08$), there was a considerable difference in the total number of times communication components were used by mothers and by fathers with their newborns. An analysis of variance of these results is presented in Tables 4 and 5. Differences in vocalization were statistically significant with $F=(1,48)9.7$, $p<.05$.

The relationship between parental gender and parent-newborn communication becomes clear when the interaction effects are examined. There is an interaction between vocalization by gender of the parent and baby's gender which is statistically significant,

Table 4 Anova of Vocalization by Gender of Parent and of Infant

Source	Sum of Squares	DF	Mean Squares	F
Parental Gender + residual	1343.81	48	28.0	
Vocalization	271.23	1	271.2	9.7*
Baby Gender x Vocalization	145.19	1	145.2	5.2*

* $p = < .05$

Table 5 Anova of Eye Contact by Gender of Parent and of Infant

Source	Sum of Squares	DF	Mean Squares	F
Parental Gender + residual	100.8	48	2.1	
Eye contact	1.1	1	1.1	.50
Baby Gender x Eye Contact	9.9	1	9.9	4.69*

* $p = < .05$

$F=(1,48)5.2$, $p=<.05$. Figure 1 gives a graphic picture of the vocalization of each parent with his or her newborn of different genders. Mothers vocalize more overall and more to male than female babies while fathers vocalize more to female than male babies.

Differences in eye contact were not statistically significant, but the interaction effect between eye contact by gender of parent and baby's gender was significant with $F(1,48)=4.69$, $p=<.05$. Figure 2 represents this effect. Mothers have more eye contact overall and have more eye contact with male than female babies, while fathers have more eye contact with female than male babies.

Null hypotheses four and five are rejected. Null hypotheses six through nine are retained.

Research question 5: Is there a relationship between parental age and parent-newborn communication?

Hol0 There will be no relationship between parental age and parent-infant communication.

Hol1 There will be no relationship between parental age and the communication component of vocalization.

Hol2 There will be no relationship between parental age and the communication component of facial expression.

Hol3 There will be no relationship between parental

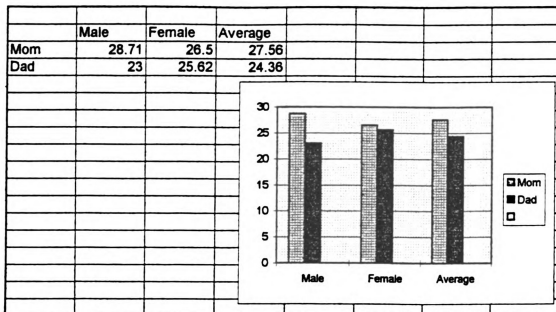


Figure 1. Frequency of Parental Vocalization with Male and Female Infants in 7 1/2 Minute Observation

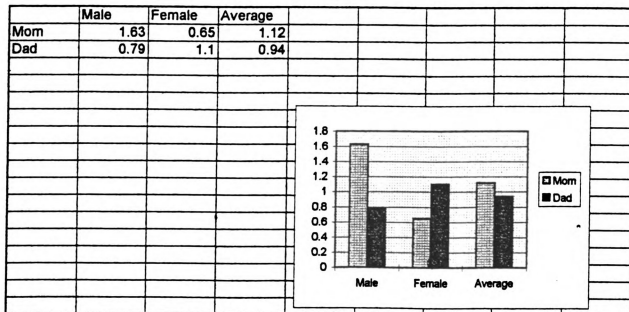


Figure 2. Frequency of Parental Eye Contact with Male and Female Infants in 7 1/2 Minute Observation

age and the communication component of gesture.

Hol4 There will be no relationship between parental age and the communication component of touch.

Hol5 There will be no relationship between parental age and the communication component of eye contact.

The mean scores of the communication components by age of the parent are presented in Table 6. Parents aged 21 through 29 used the most vocalization, with a significant difference between the youngest parents and those aged 21 through 29, with $F(1,48)=4.95$, $p<.05$. The use of gestures was also significantly different depending on the age of the parent. Those parents aged 16 through 20 used significantly more gestures ($F(2,97)=3.9$, $p<.05$) than parents aged 21 through 29. These results show that there is a relationship between parental age and parent-newborn communication. Younger parents use less vocalization than older parents and more gestures than older parents.

Null hypotheses ten, eleven, and thirteen are rejected. Null hypotheses twelve, fourteen and fifteen are retained.

Research question 6: Is there a relationship between parental education and parent-newborn

Table 6 Analysis of Variance Scores of Communication by Age of Parent

Communication Components	16-20 (N=8)		21-29 (N=66)		30-36 (N=26)		F
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
Vocalization	20	10.8	27	7.0	24	5	4.95*
Facial Expression	2	1.5	4	3.4	4.5	3.8	1.28
Gesture	2	2.4	1	1.1	1.6	1.3	3.9*
Touch	14	6.4	13	6.9	14.5	6.6	.4
Eye Contact	1	1.3	.9	1.4	1.4	1.9	.96
Total	40	14.7	47	11.1	46	9.8	1.37

* $p = < .05$

communication?

Ho16 There will be no relationship between parental education and parent-newborn communication.

Ho17 There will be no relationship between parental education and the communication component of vocalization.

Ho18 There will be no relationship between parental education and the communication component of facial expression.

Ho19 There will be no relationship between parental education and the communication component of gesture.

Ho20 There will be no relationship between parental education and the communication component of touch.

Ho21 There will be no relationship between parental education and the communication component of eye contact.

Parents who were college graduates vocalized more and used more facial expressions with their infants than did parents who were high school graduates. Parents who were high school graduates used more touch and gestures than parents who were college graduates. Although these differences were not significant, the results are presented in Table 7. No relationship is seen between parental education and parent-newborn communication.

Table 7 Use of Communication Components by Education of Parents

Communication Components	High School Graduate (N=14)		College Graduate (N=50)		t
	$\bar{x}$	SD	$\bar{x}$	SD	
Vocalization	24.6	9.1	25.6	6.0	-.48
Facial expression	3.9	4.6	4.5	3.3	-.60
Gesture	1.6	1.6	1.1	1.3	1.08
Touch	15.3	6.1	14	7	.61
Eye contact	1.1	2.1	1.1	1.4	.01
Total	46.4	15.9	46.4	10.2	.01

* $p = < .05$

Null hypotheses sixteen through twenty-one are retained.

Research question 7: Is there a relationship between parental socioeconomic status and parent-newborn communication.

Ho22 There will be no relationship between parental SES and parent-newborn communication.

Ho23 There will be no relationship between parental SES and the communication component of vocalization.

Ho24 There will be no relationship between parental SES and the communication component of facial expression.

Ho25 There will be no relationship between parental SES and the communication component of gesture.

Ho26 There will be no relationship between parental SES and the communication component of touch.

Ho27 There will be no relationship between parental SES and the communication component of eye contact.

The relationship between parental SES and parent--newborn communication is shown in Table 8 which gives the mean scores of the five communication components by SES of the parent and an analysis of variance. Vocalization scores are high in the lowest, the highest and the middle classes. Gesture shows a statistically significant

Table 8 Analysis of Variance Scores of Communication by Socioeconomic Status of Parent

Communication Components	Socioeconomic Status										F
	I		II		III		IV		V		
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
Vocalization	27.4	5.2	24	7	28	8.7	24	7.4	27	6.1	2.09
Facial expression	4.7	3.3	5.3	3.6	3.7	3.3	3.8	3.9	3.4	2.8	.97
Gesture	1.1	1.2	1.1	1.4	.7	1.1	1.1	1.3	2.6	1.7	4.31*
Touch	13.7	7.2	14	6.9	14	7.2	13	5	13	9	.12
Eye contact	1.3	1.4	1.1	1.4	.81	1.4	.80	1.7	1.4	1.9	.56
Total	48	9	45	12	48	12	43	11	48	10	1.00

NOTE: SES classes according to Hollingshead with I being the highest class and V the lowest class.

* $p = < .05$

difference between the lowest class and any other class, $F(4,95)=4.31$, $p<.01$. The mean score for gesture in parents of the lowest SES is more than twice that of any other class. Little variance is noted in the other communication components by parental SES. Overall the only relationship between parental SES and parent-newborn communication is that the lowest SES class gestures more than any other class.

Null hypotheses 22 and 25 are rejected. Null hypotheses 23, 24, 26, and 27 are retained.

Means, standard deviations, and correlations for communication components are given in Table 9. None of the communication components show strong correlation among themselves. The total communication score is quite strongly correlated with vocalization and is statistically significant ($.74$, $p<.01$).

Table 9 Means, Standard Deviations, and Correlations for Communication Components

Variable	Total	Touch	Vocalization	Eye Contact	Facial Expression
Touch	.48				
Vocalization	.74	-.09			
Eye Contact	.18	-.29	.11		
Facial Expression	.57	-.07	.37	.40	
Gesture	.26	.01	.14	.13	.08
$\bar{X}$	46	13.7	26	1.0	4.2
SD	11.1	6.7	7.2	1.5	3.5

Chapter V

Discussion

Implications of the Results on the Ecological Framework of the Study

Bubolz' and Sontag's theory of human ecology theory (1993) and Bronfenbrenner's theory of human development (1989) made up the theoretical framework for this study. These two theories provided the basis for looking for a relationship between parent-infant communication and parental variables of gender, age, education and SES. The communication between a parent and an infant was viewed as a transaction within the family or microsystem. The parental variables of gender and age were seen as personal developmentally instigative characteristics (Bronfenbrenner, 1989) while the variables of education and SES were seen as influences from the exosystem and macrosystem (Bronfenbrenner, 1989) or social-cultural environment (Bubolz & Sontag, 1993). This study was approached from the perspective that parental variables could influence parent-newborn communication. Communication is one of the most significant interaction processes in the family ecosystem, influencing family members as well as those outside the microsystem. Communication is affected by the interrelationships of

the family members with their environments, so it is important to expand research to examine more of its aspects. In this study only the communication occurring between parents and their infants, as influenced by parental gender, age, education and SES were considered, though the many additional influences of the other environments certainly could be explored.

The personal attributes of gender and age of the parents were found to have a relationship to parent--newborn communication in this study. Mothers vocalized more than fathers, and more to girl babies than boy babies. Fathers used more touch than mothers. There was an interaction affect between fathers and infant gender. Fathers have more eye contact with their girl babies than their boy babies. The implication, in view of the theoretical framework, in that developmental processes taking place within the family vary with the personal attributes of significant members in the setting.

The parental attributes of education and SES are influenced a great deal by the social-cultural environments, mesosystems and macrosystems of the parent. Although all of the interrelationships among these systems were not explored in this study, they must be considered. The personal and background characteristics of the parents do influence everyone with whom they interact, here their own infants.

These relationships were supported in the current study, though not to a great extent. There was no relationship found between parental education and parent-newborn education. There was, however, a relationship found between parental SES and parent-infant communication. Those parents of the lowest SES used significantly more gesture than parents of any other class. This lends some credence to the theorists' views that parent-infant communication is influenced by the multitude of interactions that occur between a person and the people, objects, and incidents in that person's environment over the continuum of time.

Communication Components

This study found that parent-newborn communication contains five major components: vocalization, facial expression, gesture, touch and eye contact. Approximately 70% of the variation in parent-newborn communication scores can be explained by the combined influence of these components. This is similar to the findings of Cohn and Tronick (1987) who described interaction as affective expressions, postures, vocalization, gestures and gazes. It is also consistent with Yogman's 1982 findings which scored father behavior in interaction with his infant for body position, facial appearance, look, vocalization and touch.

These components of communication are very basic to

human interaction. Although infants do not understand speech, nor can they speak back, they do learn communication skills beginning in the earliest hours and weeks of their lives. From birth, infants possess sensory capabilities that indicate a state of readiness for social interaction. Communication has been shown to be more than just talking to or making sounds for the infant.

Vocalization, whether words or sounds, is a communication technique used both with adults and with very small infants. The human infant appears to be particularly tuned in to the rhythms of human speech in preference to all other sounds (Condon & Sander, 1974). It is the most commonly mentioned communication or interaction component in all studies of parent-infant communication (Brazelton, 1982; Yogman, 1982; Hopkins, 1983; Belsky, Taylor, & Rovine, 1984; Censullo, Lester, & Hoffman, 1985; Cohn & Tronick, 1987; Rutter & Durkin, 1987; Barratt, Roach & Leavitt, 1992; and Censullo, 1994). Vocalization is an elicitor of visual attention by parents and infants (Barratt, Roach, & Leavitt, 1992) and is used as an important communication technique. It is a component of parent-infant communication which accounts for about 57% of the total communication in this study.

Facial expression is used for much of non-verbal

communication. Happiness, sadness, signs of enjoyment, displeasure and fear, for example, can all be exhibited by facial expression. Small infants focus best at a distance of 8-12 inches from an object. Parents normally hold their infants in the enface position, about 8-12 inches from themselves, while "talking to" them. This places the infant in the ideal position to observe the facial expressions on their parents' faces. From birth onward, infants are able to fix their eyes and gaze intently at objects (Bobak & Jensen, 1993), which allows them to observe the facial expressions of their parents. As part of vocalization, as well as between vocalizations, parents give the non-verbal messages to their infants through their facial expressions. Both Cohn and Tronick (1987) and Yogman (1982) used facial expression when they observed parent-infant interaction in their studies. More recently, Censullo (1994) used facial expression between parents and their infants as an important component of establishing a parent-infant relationship in adolescent parents.

Gestures are also used as a component of communication. Parents move their heads, arms, hands, or fingers to elicit involvement with the infant. Even two to four week old infants are able to follow a moving object with their eyes, especially if it is within their focal distance (Bobak & Jensen, 1993). In communication

with their infants, parents use this ability of their infants to get and hold their attention. In most episodes of interaction between mothers and infants, Cohn and Tronick (1987) observed the parents using gestures. The importance of this communication component is reiterated by its inclusion in Censullo's pilot study to promote greater responsiveness in adolescent parent--infant relationships (1994).

Expressions of affection and touch are mentioned by several authors as part of parent-infant interaction (Yogman, 1982; Cohn & Tronick, 1987; and Barratt, Roach, & Leavitt, 1992). Sensory pathways for tactile (touch) activities are the first to be completed during fetal development (Purpura, 1975) which makes the newborn infant well prepared to receive and process tactile messages. New parents use touch as one of the first attachment behaviors: fingertip touch, soft stroking of the face, and gentle massage of the infant's back (Bobak & Jensen, 1993). The touch necessary for holding and caretaking is part of interaction, but not communication, as described in this study. Touch such as stroking the cheek, head or limb of the infant or kissing the infant are used by the parent to communicate with the infant.

Eye contact is the final component of parent-infant communication to be identified. The ability of infants to gaze into their parents' eyes permits them to

establish a subtle communication. As stated above, infants can and do focus on objects 8-12 inches away from them from birth on. Parents spend much time getting their infants to open their eyes and look at them. Eye contact appears to have a cementing effect on the development of a beginning and trusting relationship and is an important factor in human relationships at all ages. It is a communication component identified by several authors as an important part of parent-infant communication (Yogman, 1982; Cohn & Tronick, 1987; and Censullo, 1994).

Parental Variables

Gender

Both mothers and fathers have skilled and sensitive social interaction with their young infants. However, in this study, mothers communicated more with their newborns than fathers did, looking at the total number of communication components used in a given time period. This finding is different from that of Parke and Tinsley (1981) who found that mothers and fathers did not differ in the frequency of observed behaviors such as holding infant, changing position, looking at infant, smiling, vocalizing, touching, rocking, dressing infant, exploring infant, imitating infant, feeding infant, and giving infant to the other parent. In fact, they found this to be true in both a highly educated, middle-class, involved set of parents as well as in a lower-class, less involved

set of parents. Similar findings occurred in a study which compared the behaviors of American and German mothers and fathers. The authors concluded that parents, regardless of gender, interact in relatively similar ways when they are holding their infants (Parke & Tinsley, 1981).

A later report by the same authors was different from the first (Parke & Tinsley, 1987). It supported the findings of the current study. It stated that mothers and fathers differ in the amount of time that they spend in actual interaction with their infants. In a longitudinal study of middle- and working-class families in which mothers, fathers, and their infants were observed at 1, 3, and 9 months of age, mothers were found to respond to, stimulate, express positive affection toward, and provide more basic care for their infants at all time points. It was also reported that in a comparison of families in which the father elected to stay home as primary caregiver for one month or more versus a traditional family, mothers in both families surpassed fathers in holding and affectional behavior. The authors concluded that in unstructured naturalistic settings, mothers and fathers clearly differ in terms of their degree of involvement with their infant.

The propensity of mothers to be more involved with, to communicate more with their infants than fathers may

be a biological predisposition. Since studies done with parents in America, Sweden and Israel all found the same phenomenon, more general sex-role expectations, rather than immediate competing role demands may account for the differences between maternal and paternal behavior (Parke & Tinsley, 1987; Lamb & Oppenheim, 1989; Frodi, Lamb Hwang & Frodi, 1983). This does not imply that the father is in any way less competent than the mother in communication with the infant. In spite of the fact that a father may spend less time in communication with the infant, he may be as sensitive as mothers to infant cues and as responsive to them in other contexts.

Vocalization is the primary method of parent communication with the newborn. In this study mothers were found to do more vocalizing than fathers do. Parke and O'Leary's classic 1976 study showed the opposite to be true. In that study fathers held, rocked, and provided more auditory and physical stimulation to their infants than did their mothers, who in turn, both fed and smiled more at their infants than did the fathers. Even when first and second order effects were analyzed, there was little difference in the patterns of interaction. A later study by Parke (Parke & Sawin, 1980) found that mothers had more verbal interaction than fathers, while fathers provided more social stimulation than mothers.

An explanation for the differing results may be the

actual phenomenon being observed. In this study vocalization was being measured as a specific component of parent-infant communication, so it was carefully defined. In some other studies vocalization was part of a total observation of interaction and may or may not have been observed specifically. In general, though, other studies support the results of the current study in that mothers have more vocalizations with infants than do fathers. This too could be part of a biological predisposition on the part of mothers. It could also be accounted for by culture. Since the above studies as well as this one were all done with American parents, there may be a cultural predisposition for parents to communicate primarily by vocalization and for mothers to vocalize more than fathers.

Touch accounts for 30% of the parent-newborn communication score. In the current study, fathers did more touching than mothers did, though the difference was not statistically significant. This also was found by Parke and O'Leary (1976), who noted that fathers provided more physical stimulation than mothers did. Fathers of older infants were also found to be more physical with their infants than mothers were (Yogman, 1982, 1987). Most of the observations in these studies were of the physical interactions between parents and their infants. In these cases, mothers spent more time touching their

infants for caretaking purposes, while fathers touched their infants to play with them. Since all the parents in the current study were told to play with their infants without using any toys and were not engaged in any caretaking activities during the time of observation, touch was only used to communicate in some way with the infant, whether in affection or play.

Fathers may use more touch to communicate with their infants than vocalization because of culturally determined appropriate behavior of fathers with infants. Or perhaps fathers have some biological propensity to be more physical with their infants and less verbal. Since fathers and mothers were observed within minutes of each other, and, at times after watching the other parent communicate with the infant, the primary and secondary affects of the others' presence was similar. This could, however, have caused either parent to communicate with the infant differently because of the secondary effect of the presence of the other parent.

Age

The age of the parent did have an effect on parent--infant communication. As found by several authors (Field, 1980; Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982; Coll, et al, 1987; Hans & Bernstein, 1991; Schellenbach, et al, 1992; Jorgensen, 1993; Censullo, 1994), young parents are less verbal and

vocalize less to their children than older parents. Studies also have found that younger parents use less touch and mutual gazing than older parents (Field, 1980; and Ragozin, et.al., 1982). In this study those parents between 16 and 20 years of age used significantly less vocalization with their infants than did parents aged 21 through 29. These young parents used significantly more gestures, however, than did older parents. The other communication components varied somewhat according to parental age, but not significantly so.

Reasons for this communication pattern vary. It may be that adolescent parents experience different stresses than older parents which may cause them to communicate differently with their infants (Baldwin & Cain, 1980). This pattern may also be due to psychological factors such as degree of emotional maturity or egocentrism. As parents age, they become more sure of themselves and are then able to communicate differently with the world around them, including their own infants. Older parents with a first born infant also may have waited a long time to become parents and may treat the infant differently than young parents whose infant may not have been as eagerly anticipated.

A further explanation for the different communication pattern in younger parents may be an interaction between young age and lower SES. Younger

parents are not usually as educated or have as high a level of occupation as older parents, therefore are of lower SES. As explained further below, parents of the lowest SES use significantly more gestures than those of other SES.

A final consideration may be that younger parents have less realistic beliefs about infant developmental milestones (Jorgensen, 1993) than older parents and thus do not know that young infants are capable of or interested in listening to their parents vocalize. They also may be of the understanding that infants respond best to parent gestures. The communication pattern of less vocalization and more gestures is thought to help explain why children of young parents tend to experience higher levels of impairment and mild behavior disorders than children of older mothers (Baldwin & Cain, 1980).

Education

Education levels of the parent were thought to be related to parent-infant communication. Usually younger parents, especially those under age 21, are less educated than their older counterparts. As quoted by Schlesinger (1988), only 20% of the single teenage mothers interviewed for a study had completed high school compared to 65% of married, older mothers. Younger parents also do not communicate to their infants the same way as older parents do. Therefore it is logical that

those parents with less education would communicate differently with their infants.

In this study overall the score for frequency of communication was the same for all groups. There was not a statistically significant difference in any of the communication components related to educational level of the parent. However there were some differences found. College graduates used vocalization and facial expression more often than high school graduates, while high school graduates used more gesture and touch than college graduates. There were too few parents with less than a high school education to analyze.

Although statistically it appears that educational level of the parent makes no difference in parent-newborn communication, these results provide support for the findings of other authors. Mothers and fathers with higher levels of education were found to be more sensitive to their infants (Broom, 1991; Shields & Sparling, 1993) than parents with less education. Also, the educational level of fathers was correlated with the amount and quality of physical involvement with the infant, i.e., the higher the educational level, the more and the better quality of involvement with the infant (Shields & Sparling, 1993). These findings cannot be directly correlated to more vocalization and facial expression, or more gesture and touch, but it can be

noted that parents with differing levels of education interact differently with their infants.

Socioeconomic Status

It was hypothesized that parents of higher SES would have higher parent-newborn communication scores than parents of lower SES. The study found no statistically significant difference in total communication scores among the parents of different SES. In looking at the communication components, it was found that there was a pattern of more vocalization by parents in the high, middle and low classes, with less in the middle high and middle low classes (Table 8). This is difficult to interpret, and is not statistically significant.

The finding is similar to that of Adams and Ramey (1980) which found that middle class mothers tend to talk more to their infants than less advantaged mothers, but overall, there was little difference in the amount of speech to infants based upon the SES of the mother. Perhaps results can be interpreted in light of a 1980 study by Faran and Ramey which showed that SES is more strongly related to parent-infant interactions as the child gets older. The infants here were very young.

It was found that parents of the lowest SES gestured significantly more than parents in any other SES. The amount of gesturing was very noticeable, since these parents were found to gesture more than twice as much as

any other socioeconomic group. In studies of mother--infant interaction, lower class mothers engaged in less verbal activity than their middle-class counterparts (Lewis & Wilson, 1972; Kilbride, et al., 1977; Field, 1980). Commonly, people of different social classes use communication components differently. Those persons in the lower socioeconomic classes use fewer words and more gestures in communicating than those persons in the upper socioeconomic classes. This pattern seems to be used in communication with infants as well as adults, as shown in this study.

Additional Findings

Although not anticipated, infant gender was found to be related to how parents communicated with their infants. The study showed an interaction effect between the gender of the parent and the gender of the infant (Figures 1 & 2). For both vocalization and eye contact, there was a statistically significant difference in the way mothers and fathers communicated with their newborns of different genders. Mothers vocalized more and had more eye contact with their male newborns, while fathers vocalized more and had more eye contact with their female newborns.

In the literature infant gender has been associated with differences in parental behavior. Many studies do not account for its effects, yet the preponderance of

evidence supports the theory that infant gender is a major determinant of parental treatment.

Two studies that found no evidence of differential treatment focused exclusively on mother-infant dyads and involved small samples. Friedman et. al. (1976) noted no difference in mutual visual regard for 16 middle class mother-infant pairs observed at four, six, and eight months of age. Thoman, Acebo, Becker and Freese (1979) observed no differences in patterns of interaction for 10 first-time mother-infant pairs at two, three, four, and five weeks of age.

A study using exclusively father-infant dyads also found no differences. Fortier (1988) observed attachment behavior (talk to, talk about, look at, touch and stroke, nuzzle) of 60 fathers with their one-month-old first and later born infants. No differences in paternal behavior during a structured play session were attributable to infant gender.

Studies that compared parental behaviors in dyads and triads also found no differences related to infant gender. Field's (1978) laboratory observations of 36 middle-class parents with four-month-olds found no differences in caretaking, play, smile, or mimicry. Home observations of middle-class parents during the infants' first year of life noted no differences in similar types of behaviors (Field, 1978; Belsky, Gilstrap, & Rovine,

1984).

However, more studies report differential treatment related to infant gender than do not. Three studies focusing exclusively on mother-infant pairs found differences. Thoman, Leiderman, and Olson (1972) compared breastfeeding behaviors of 40 mothers of first-born and later-born infants at 48 hours of age. First-time mothers talked and smiled more at female infants than they did to male infants. Lewis (1972) and Lewis and Lee-Painter (1974) noted many differences in the 32 mother-infant pairs observed at three months of age. Overall, male infants got more proximal (touch and hold) treatment and females received more distal (vocal, smile) treatment. Reiber's 1976 study of nine families with first-borns found similar results.

There is evidence that these differences may be true regardless of SES or ethnic status. Forty-five low-income, black mother-infant pairs were observed in feeding situations at three days of age. In general, boys were rocked, rubbed, patted, and vocalized to more than female infants (Bakeman & Brown, 1977).

Several studies comparing parental behaviors found differences related to infant gender. In a 1971 study (Rebelsky & Hanks), it was reported that middle-class fathers initially vocalized more frequently to daughters than to sons. However, during the first three months,

the pattern reversed with fathers talking more to male infants and mothers talking more to female infants.

Palkovitz (1984) on the other hand, noted that a sample of 40 fathers vocalized more to five-month-old daughters than to sons. No maternal differences were noted.

Parke and O'Leary's 1976 observations of parent--infant triads and dyads at six and 48 hours after birth found that both parents tended to touch male infants more than female infants with both parents present. In a related study, fathers touched and vocalized more to male infants than to females in both dyads and triads. Mothers, on the other hand, showed the opposite pattern - vocalizing and touching male infants less, but only when alone with the infant. Mothers exhibited no differences due to infant gender when fathers were present. Parke and Sawin (1980) found that both parents' affectional behaviors focused more on the opposite gender child, while attending and stimulating behaviors were more frequent with same gender infants.

While the data suggest no consistent pattern, there does appear to be modest support for the hypothesis that infant gender affects parental behavior in both two--person and three-person family groupings. The literature suggests that parents tend to vocalize more to infants of the opposite gender. Support for these findings is given in this study as fathers vocalize and gesture more with

female infants and mothers vocalize and gesture more with male infants at two to four weeks of age.

Perhaps there is a cultural bias among American, English speaking parents for the child of the opposite gender from their own. Traditionally, male infants have been preferred over female infants. This could account for the communication with the male infant by the mother. However, it is unclear why a father would vocalize more and have more eye contact with a female infant than a male infant.

Chapter VI

SUMMARY AND CONCLUSIONS

Summary

This study was conducted to investigate the relationship between specific components of parent--newborn communication and parental gender, age, education, and SES. One hundred parents and their 50 infants were recruited in the hospital after the birth of their first infant. Parents completed questionnaires and were observed in their homes when the infants were between two and four weeks old. Parent-newborn communication was directly observed, and the frequency of communication components was recorded. Each parent was observed separately with the newborn for a 7 1/2 minute period.

Three research questions which asked about the differences in the degree of utilization of communication components were answered. Vocalization, facial expression, gesture, touch, and eye contact were all used by parents with their infants. Vocalization and touch accounted for 87% of the communication between parents and their infants. Four research questions which asked about the relationship between parental gender, age, education, and SES and parent-newborn communication were

answered. Parental gender, age, and SES all are related to parent-infant communication while parental education is not.

As anticipated, it was found that parent-newborn communication occurs frequently between mother, fathers and their newborn infants. Most communication performed by the parent is done through vocalizations. These are the sounds, words and noises which are made to the newborns. Mothers vocalize more than fathers, but both parents use this method of communication the majority of the time. Touch is the second most used method of communication and is used more by fathers than by mothers, even with newborns. Gestures, eye contact and facial expressions are also a part of this communication, but are much less frequently used. There is some variation in how parents communicate with their newborns related to their age, their education, and their SES. Parents less than 21 years of age vocalize less than older parents, but gesture more. Parents of low SES gesture more than parents of higher SES. Education makes little difference in how parents communicate with their newborns. These findings generally support the findings of other authors who have studied parent-infant communication and interaction.

Limitations of the Study

This study has several limitations which lessens its

generalizability to the entire population of parents and infants.

1. The study sample was not obtained in a random manner.

2. The sample is limited in its overall representation of all parents who have infants. The sample is of only English speaking Caucasian parents, includes only first time parents, includes infants who have two parents, and infants who are full term, healthy and are singletons. The sample is rather homogeneous, with an disproportional number of highly educated parents, and low numbers of parents under the age of 21. The study sample was self-selected and voluntary in nature. Those who agreed to participate may in some way be different from those who did not, therefore limiting external validity. Each parent may communicate differently with the infant because he or she has a partner.

3. The variable of culture was not considered in the study. Parental communication with an infant may vary with cultural background.

4. The method of gathering data may constitute threats to measurement reliability since parent-infant interaction behaviors may have been influenced by having an observer present.

Implications for Practical Use and Further Research

Since all parents communicate in some manner with their infant, this study broadened the base of knowledge available on how this communication occurs, and if there is a difference in parent-newborn communication considering parental gender, age, education and SES. The first few months of the infant's life may be a critical time for early development of the skills involved in communication. The infant is dependent on the parents for language development, a skill essential to establishing relationships necessary to interacting in this world. By face to face interactions with the parents an infant learns the foundations for later communication skills. The precursors of language development are learned through cycles of exchanges that a parent has on a daily basis with the infant.

The observation of early interactions between a parent and an infant offers a window into the parent--child relationship and into later social, cognitive, and language development. It provides information on the communication style of mothers and fathers and how these styles vary with parental variables. The infant develops within the ecosystem of the family and is influenced by the personal attributes of both mother and father.

Knowledge about how parents differ can offer a vehicle for reinforcing appropriate communication techniques or discussing alternative techniques for

communicating with infants. Health care professionals or parent educators can integrate this knowledge into prenatal classes, parenting classes or other educational settings. Knowing that early interaction is essential to later child competence, IQ and language skills, those working with new parents can teach them the importance of communication with their infant. Depending on the gender, age, and SES of the parent, the health care professional or parent educator can tailor teaching to encourage mothers and fathers to talk to, touch, and gesture to their infants. They can also encourage eye contact with the infants and using facial expressions with them. By knowing that mothers vocalize more than fathers do, that young parents vocalize less than older parents and gesture more, that parents of lower SES gesture more than those parents of other SES, the health care professional can work specifically with the parent to help them to achieve the best communication possible with their own infant. They can promote early and regular parent-infant communication.

This study leads to additional questions about parent-infant communication. Since the study used an analytical research design to help develop a synthetic model, more work should be done. The human ecology model is very complex. To integrate all aspects of the model is extremely difficult and complicated. Further studies of

parent-infant communication should attempt to consider more aspects of the human ecology model, especially affects of other individual and family properties like values, goals and resources. If conceivable, additional aspects of the model like family adaptation to the new infant and/or the physical environment in which the family lives could be included. With many additional studies a larger study could be done to utilize all the information into an integrated model. This would help to verify the usefulness of the human ecology model.

Research should be done using a more varied sample of parents, especially for ethnic and cultural background. The small numbers of parents under the age of 21 should be enlarged to achieve a clearer picture of how these parents communicate with their infants. The study should be expanded to include parents who have had previous children to determine if there are differences between these groups. The current study had an unusually high number of highly educated parents. Results would be more accurate with a more representative sample of the general population.

In retrospect, some change should have been made regarding data collection. The amount of time spent observing each parent communicating with the newborn seemed excessive. It was difficult for the two to four week old infants to remain alert for the 15 to 20 minutes

it took to perform the observation. The parents tried to have the infants fed and awake when the researcher arrived at the home, but such young infants do not normally stay awake and happy for the thirty minutes it took to conduct the home visit. A shorter observation time would probably have been sufficient to obtain valid information and allowed the infant to be alert for a shorter time.

A second change would be in the categories on the PICT tool. During observations of the 100 parents, it was noted that many parents, especially fathers, sometimes rock and/or bounce their infants while communicating with them. This is supported in the literature in that fathers have more physical and playful interaction with their infants (Parke & O'Leary, 1976) than mothers. A component should be added to the PICT to record these interactions.

The categories on the PICT of eye contact and gestures were not often used. On average, only one eye contact and one gesture was noted during each observation period. However, it seems inappropriate to delete these components, since they are supported by the literature and seem very important to the parents. Eye contact, though infrequently observed, was greatly desired by the parents, who tried very hard throughout each communication period to get the infant to look at them.

The information learned here about parent-newborn communication should stimulate further research to determine the most effective ways to promote this phenomenon and help both parents and infants develop early communication skills.

APPENDICES

Appendix A

Family Number _____

Demographic Information

Please complete the following.

Today's date _____

Your age _____

Are you baby's mother _____ or father _____

Marital status Married _____
 Single _____
 Divorced _____

Educational level _____ less than 12th grade
 _____ high school graduate or GED
 _____ more than high school
 _____ college graduate

Occupation _____

Annual Income that you make _____

Are you the person who does most of baby's care?

Yes _____ No _____

Baby's birth date _____

Baby's gender M _____ F _____

Type of delivery Vaginal _____ Caesarean _____

Appendix B

HOLLINGSHEAD'S TWO-FACTOR INDEX OF SOCIAL POSITION

Variable measured: Positions individuals occupy in the status structure.

Description: There are two- and three-factor forms of the index that have been used extensively. The two-factor index is composed of an occupational scale and an educational scale. The three-factor index includes a residential scale. Since the residential scale was based on sociological analysis previously made by Davis and Myers in New Haven, many communities would not be amenable until residential areas were mapped into a six-position scale. The two-factor index requires only knowledge of occupation and education.

The occupational scale is a 7-point scale representing a modification of the Edwards system of classifying occupations into socioeconomic groups. The Edwards system does not differentiate among kinds of professionals or the size and economic strength of businesses. The Hollingshead index of social position ranks professions into different groups and business by their size and value.

The educational scale is also divided into seven positions. In the two-factor index, occupation is given a weight of 7 and education is given a weight of 4. If one were to compute a score for the manager of a Kroger store who had completed high school and one year of business college, the procedure would be as follows:

<i>Factor</i>	<i>Scale Score × Factor Weight =</i>		<i>Partial Score</i>
Occupation	3	7	21
Education	3	4	<u>12</u>
Index of Social Position Score			33

The range of scores in each of five social classes (of New Haven, Connecticut) are as follows:

- Class I: 11-17
- Class II: 18-31
- Class III: 32-47
- Class IV: 48-63
- Class V: 64-77

Where published: August B. Hollingshead, *Two Factor Index of Social Position* (copyright 1957), privately printed 1965, Yale Station, New Haven, CT. August B. Hollingshead and Frederick C. Redlich, *Social Class and Mental Illness: A Community Study* (New York: John Wiley, 1958), 387-97.

The researcher will find Hollingshead's account of the background and rationale for the two-factor scale in August B. Hollingshead, "Commentary on 'The Indiscriminate State of Social Class Measurement,'" *Social Forces* 49 (June 1971): 563-67.

Reliability and validity of Index of Social Position: High correlation is reported between the Hollingshead and Redlich measure and the index of class position devised by Ellis, Lane, and Olesen.¹

Various combinations of the scale score for occupation and education are reproducible in the Guttman sense, for there is no overlap between education-occupation

combinations. If an individual's education and occupation are known, one can calculate his or her score; if one knows an individual's score, one can calculate both occupational and educational level.

Hollingshead and Redlich report a correlation between judged class with education and occupation as $R_{1(23)} = .906$. Judged class with residence, education, and occupation, $R_{(234)} = .942$.

Hollingshead and others have made extensive studies of the reliability of scoring and validity of the index on more than 100 variables.

Slomczynski, Miller, and Kohn report that "the use of the Hollingshead index of occupational status for research in the U.S. is validated by longitudinal measurement models that show the Hollingshead index to be as strong an indicator of occupational status as is Treiman's International Prestige Scale, the Hodge-Siegel Index, or the Duncan Socio-Economic Index."²

Utility: Because of the difficulty in obtaining residential information where adequate ecological maps do not exist, the two-factor variation of the Index of Social Position has been used widely. Only occupation and education are needed, and these data are relatively easy to obtain. The scale score can be quickly computed and individual social position established.

Research applications:

- Bell, Gerald D. "Processes in the Formation of Adolescents' Aspirations." *Social Forces* 42 (December 1963): 179-86. (See p. 182)
- Ellis, Robert A. "Social Stratification and Social Relations: An Empirical Test of the Disjunctiveness of Social Classes." *American Sociological Review* 22 (October 1957): 570-78. (See p. 571)
- Hollingshead, August B., and Frederick C. Redlich. "Social Stratification and Psychiatric Disorders." *American Sociological Review* 18 (April 1953): 163-69. (See p. 165)
- . "Social Stratification and Schizophrenia." *American Sociological Review* 19 (June 1954): 302-6. (See p. 302)
- . "Social Mobility and Mental Illness." *American Journal of Psychiatry* 112 (September 1955): 179-85. (See pp. 180-82)
- . *Social Class and Mental Illness: A Community Study*. New York: John Wiley, 1958. (See pp. 390-91)
- , Robert Ellis, and E. Kirby. "Social Mobility and Mental Illness." *American Sociological Review* 19 (October 1954): 577-84. (See p. 579)
- Hollingshead, August B., Frederick C. Redlich, and L. Z. Freeman. "Social Class and the Treatment of Neurotics." In *The Social Welfare Forum*, 194-205. New York: Columbia University Press, 1955. (See pp. 195)
- Hunt, Raymond G., Orville Gurslin, and Jack L. Roach. "Social Status and Psychiatric Science in a Child Guidance Clinic." *American Sociological Review* 23 (February 1958): 81-83. (See p. 81)
- Kohn, Melvin L. "Social Class and Parental Values." *American Journal of Sociology* 64 (January 1959): 337-51. (See p. 338)
- and Eleanor E. Carroll. "Social Class and the Allocation of Parental Responsibilities." *Sociometry* 23 (December 1960): 372-92. (See p. 374)
- Lawson, Edwin D., and Walter E. Bock. "Correlations of Indexes of Families' Socio-Economic Status." *Social Forces* 39 (December 1960): 149-52. (See p. 150)
- Lefton, Mark, Shirley Angrist, Simon Dintz, and Benjamin Pasamanick. "Social Class, Expectations, and Performance of Mental Patients." *American Journal of Sociology* 68 (July 1962): 79-87. (See p. 82)
- Leslie, Gerald R., and Kathryn P. Johnsen. "Changed Perceptions of the Maternal Role." *American Sociological Review* 28 (December 1963): 919-28. (See p. 923)
- Levinger, George. "Task and Social Behavior in Marriage." *Sociometry* 27 (December 1964): 433-48. (See pp. 442, 446)
- Lewis, Lionel S. "Knowledge, Danger, Certainty, and the Theory of Magic." *American Journal of Sociology* 69 (July 1963): 7-12. (See p. 9)

- and Joseph Lopreato. "Arationality, Ignorance, and Perceived Danger in Medical Practices." *American Sociological Review* 27 (August 1962): 508-14. (See p. 508)
- Mizruchi, Ephraim H. "Social Structure and Anomia in a Small City." *American Sociological Review* 25 (October 1960): 645-54. (See p. 647)
- Psathas, George. "Ethnicity, Social Class and Adolescent Independence from Parental Control." *American Sociological Review* 22 (August 1957): 415-23. (See p. 417)
- Rosen, Bernard C. "The Achievement Syndrome: A Psychocultural Dimension of Social Stratification." *American Sociological Review* 21 (April 1956): 203-11. (See p. 204)
- . "Race, Ethnicity, and the Achievement Syndrome." *American Sociological Review* 24 (February 1959): 47-60. (See p. 48)
- . "Family Structure and Achievement Motivation." *American Sociological Review* 26 (August 1961): 574-85. (See p. 576)
- . "Socialization and Achievement Motivation in Brazil." *American Sociological Review* 27 (October 1962): 612-24. (See p. 613)
- . "The Achievement Syndrome and Economic Growth in Brazil." *Social Forces* 42 (March 1964): 341-54. (See p. 345)
- and Roy d'Andrade. "The Psychosocial Origins of Achievement Motivation." *Sociometry* 22 (September 1959): 185-218. (See p. 189)
- Slomczynski, Kazimierz M., Joanne Miller, and Melvin L. Kohn. "Stratification, Work, and Values." *American Sociological Review* 46 (December 1981): 720-44. (See p. 727)
- Smith, Bulkeley, Jr. "The Differential Residential Segregation of Working Class Negroes in New Haven." *American Sociological Review* 24 (August 1959): 529-33. (See p. 530)
- Strodtbeck, Fred L., Margaret R. McDonald, and Bernard C. Rosen. "Evaluation of Occupations: A Reflection of Jewish and Italian Mobility Differences." *American Sociological Review* 22 (October 1957): 546-53. (See p. 547)
- Wechsler, Henry. "Community Growth, Depressive Disorders, and Suicide." *American Journal of Sociology* 67 (July 1961): 9-16. (See p. 15)
- Yarrow, Marian R., Phyllis Scott, Louise deLeeuw, and Christine Heinig. "Child-Rearing in Families of Working and Nonworking Mothers." *Sociometry* 25 (June 1962): 122-40. (See p. 124)

Notes

1. R. Ellis, W. Lane, and V. Olesen, "The Index of Class Position: An Improved Intercommunity Measure of Stratification," *American Sociological Review* 28 (April 1963): 271-77.
2. Slomczynski, Kazimierz M., Joanne Miller, and Melvin L. Kohn. "Stratification, Work, and Values," *American Sociological Review* 46 (December 1981): 727.

Hollingshead's Two-Factor Index of Social Position

The following two scales are reprinted by permission from Hollingshead and Redlich, *Social Class and Mental Illness: A Community Study* (New York: John Wiley, 1958). Copyright 1958 by John Wiley and Sons, Inc.

The Occupational Scale

1. Higher Executives of Large Concerns, Proprietors, and Major Professionals

A. *Higher Executives (Value of corporation \$500,000 and above as rated by Dun and Bradstreet)*

Bank

Presidents
Vice-Presidents
Assistant vice-presidents

Business

Vice-Presidents
Assistant vice-presidents
Executive secretaries
Research directors
Treasurers

B. Proprietors (Value over \$100,000 by Dun and Bradstreet)**Brokers**

Contractors
Dairy owners

Farmers

Lumber dealers

C. Major Professionals

Accountants (CPA)

Actuaries

Agronomists

Auditors

Architects

Artists, portrait

Astronomers

Bacteriologists

Chemical engineers

Chemists

Clergymen (professional trained)

Dentists

Economists

Engineers (college graduates)

Foresters

Geologists

Judges (superior courts)

Lawyers

Metallurgists

Military: commissioned officers,
major and above

Officials of the executive branch of
government, federal, state, local:
e.g., Mayor, City manager, City plan
director, Internal Revenue director

Physicians

Physicists, research

Psychologists, practicing

Symphony conductor

Teachers, university, college

Veterinarians (veterinary surgeons)

2. Business Managers, Proprietors of Medium-Sized Businesses, and Lesser Professionals**A. Business Managers in Large Concerns (Value \$500,000)**

Advertising directors

Branch managers

Brokerage salesmen

Directors of purchasing

District managers

Executive assistants

Export managers, international
concerns

Government officials, minor, e.g.,
Internal Revenue agents

Manufacturer's representatives

Office managers

Personnel managers

Police chief; Sheriff

Postmaster

Production managers

Sales engineers

Sales managers, national concerns

Store managers

B. Proprietors of Medium Businesses (Value \$35,000-\$100,000)

Advertising

Clothing store

Contractors

Express company

Farm owners

Fruits, wholesale

Furniture business

Jewelers

Poultry business

Real estate brokers

Rug business

Store

Theater

C. Lesser Professionals

Accountants (not CPA)

Chiropractors

Chiropractors

Correction officers

Director of Community House

Military: commissioned officers,
lieutenant, captain

Musicians (symphony orchestra)

Nurses

Opticians

Engineers (not college graduate)
 Finance writers
 Health educators
 Labor relations consultants
 Librarians

Optometrists, D.O.
 Pharmacists
 Public health officers (MPH)
 Research assistants, university
 (full-time)
 Social workers

3. Administrative Personnel, Owners of Small Businesses, and Minor Professionals

A. Administrative Personnel

Advertising agents
 Chief clerks
 Credit managers
 Insurance agents
 Managers, departments
 Passenger agents, railroad
 Private secretaries
 Purchasing agents
 Sales representatives

Section heads, federal, state and
 local governmental offices
 Section heads, large businesses and
 industries
 Service managers
 Shop managers
 Store managers (chain)
 Traffic managers

B. Small Business Owners (\$6,000-\$35,000)

Art gallery
 Auto accessories
 Awnings
 Bakery
 Beauty shop
 Boatyard
 Brokerage, insurance
 Car dealers
 Cattle dealers
 Cigarette machines
 Cleaning shops
 Clothing
 Coal businesses
 Contracting businesses
 Convalescent homes
 Decorating
 Dog supplies
 Dry goods
 Engraving business
 Feed
 Finance companies, local
 Fire extinguishers
 Five and dime
 Florist
 Food equipment
 Food products
 Foundry
 Funeral directors

Furniture
 Garage
 Gas station
 Glassware
 Grocery, general
 Hotel protection
 Jewelry
 Machinery brokers
 Manufacturing
 Monuments
 Music
 Package stores (liquor)
 Paint contracting
 Poultry
 Real estate
 Records and radios
 Restaurant
 Roofing contractor
 Shoe
 Signs
 Tavern
 Taxi company
 Tire shop
 Trucking
 Trucks and tractors
 Upholstery
 Wholesale outlets
 Window shades

C. Semiprofessionals

Actors and showmen
 Army, master sergeant
 Artists, commercial
 Appraisers (estimators)

Navy, chief petty officer
 Oral hygienists
 Physiotherapists
 Piano teachers

Clergymen (not professionally trained)
 Concern managers
 Deputy sheriffs
 Dispatchers, railroad
 Interior decorators
 Interpreters, courts
 Laboratory assistants
 Landscape planners
 Morticians

Publicity and public relations
 Radio, TV announcers
 Reporters, court
 Reporters, newspapers
 Surveyors
 Title searchers
 Tool designs
 Travel agents
 Yard masters, railroad

D. Farmers

Farm owners (\$20,000-\$35,000)

4. Clerical and Sales Workers, Technicians, and Owners of Little Businesses (Value under \$6,000)

A. Clerical and Sales Workers

Bank clerks and tellers
 Bill collectors
 Bookkeepers
 Business machine operators, offices
 Claims examiners
 Clerical or stenographic
 Conductors, railroad
 Factory storekeepers

Factory supervisors
 Post Office clerks
 Route managers
 Sales clerks
 Sergeants and petty officers, military services
 Shipping clerks
 Supervisors, utilities, factories
 Supervisors, toll stations

B. Technicians

Dental technicians
 Draftsmen
 Driving teachers
 Expediter, factory
 Experimental tester
 Instructors, telephone company, factory
 Inspectors, weights, sanitary, railroad, factory
 Investigators
 Laboratory technicians

Locomotive engineers
 Operators, PBX
 Proofreaders
 Safety supervisors
 Supervisors of maintenance
 Technical assistants
 Telephone company supervisors
 Timekeepers
 Tower operators, railroad
 Truck dispatchers
 Window trimmers (stores)

C. Owners of Little Businesses (\$3,000-\$6,000)

Flower shop
 Grocery

Newsstand
 Tailor shop

D. Farmers

Owners (Value \$10,000-\$20,000)

5. Skilled Manual Employees

Auto body repairers
 Bakers
 Barbers
 Blacksmiths
 Bookbinders
 Boilermakers
 Brakemen, railroad
 Brewers
 Bulldozer operators
 Butchers
 Cabinet makers
 Cable splicers
 Carpenters
 Casters (founders)
 Cement finishers
 Cheese makers
 Chefs
 Compositors
 Diemakers
 Diesel engine repair and
 maintenance (trained)
 Diesel shovel operators
 Linoleum layers (trained)
 Masons
 Masseurs
 Mechanics (trained)
 Millwrights
 Moulders (trained)
 Painters
 Paperhangers
 Patrolmen, railroad
 Pattern and model makers
 Piano builders
 Piano tuners
 Plumbers
 Policemen, city
 Postmen
 Printers
 Radio, television maintenance
 Repairmen, home appliances

Small Farmers

Owners (Value under \$10,000)

Electricians
 Engravers
 Exterminators
 Firemen, city
 Firemen, railroad
 Fitters, gas, steam
 Foremen, construction, dairy
 Gardeners, landscape (trained)
 Glass blowers
 Glaziers
 Gunsmiths
 Gauge makers
 Hair stylists
 Heat treaters
 Horticulturists
 Linemen, utility
 Linotype operators
 Lithographers
 Locksmiths
 Loom fixers
 Machinists (trained)
 Maintenance foremen
 Rope splicers
 Sheetmetal workers (trained)
 Shipsmiths
 Shoe repairmen (trained)
 Stationery engineers (licensed)
 Stewards, club
 Switchmen, railroad
 Tailors (trained)
 Teletype operators
 Tool makers
 Track supervisors, railroad
 Tractor-trailer trans.
 Typographers
 Upholsterers (trained)
 Watchmakers
 Weavers
 Welders
 Yard supervisors, railroad

Tenants who own farm equipment

6. Machine Operators and Semiskilled Employees

Aides, hospital
 Apprentices, electricians, printers,
 steam fitters, toolmakers
 Assembly line workers
 Bartenders
 Bingo tenders
 Bridge tenders
 Building superintendents
 (construction)

Practical nurses
 Pressers, clothing
 Pump operators
 Receivers and checkers
 Roofers
 Setup men, factories
 Shapers
 Signalmen, railroad
 Solderers, factory

Bus drivers
 Checkers
 Coin machine fillers
 Cooks, short order
 Deliverymen
 Dressmakers, machine
 Elevator operators
 Enlisted men, military services
 Filers, sanders, buffers
 Foundry workers
 Garage and gas station attendants
 Greenhouse workers
 Guards, doorkeepers, watchmen
 Hairdressers
 Housekeepers
 Meat cutters and packers
 Meter readers
 Operators, factory machines
 Oilers, railroad

Sprayers, paint
 Steelworkers (not skilled)
 Standers, wire machines
 Strippers, rubber factory
 Taxi drivers
 Testers
 Timers
 Tire moulders
 Trainmen, railroad
 Truck drivers, general
 Waiters-waitresses ("better placed")
 Weighers
 Welders, spot
 Winders, machine
 Wiredrawers, machine
 Wine bottlers
 Wood workers, machine
 Wrappers, stores and factories

Farmers

Smaller tenants who own little equipment

7. Unskilled Employees

Amusement park workers
 (bowling alleys, pool rooms)
 Ash removers
 Attendants, parking lots
 Cafeteria workers
 Car cleaners, railroad
 Carriers, coal
 Countermen
 Dairy workers
 Deck hands
 Domestics
 Farm helpers
 Fishermen (clam diggers)
 Freight handlers
 Garbage collectors
 Gravediggers
 Hod carriers
 Hog killers
 Hospital workers, unspecified
 Hostlers, railroad
 Janitors (sweepers)
 Laborers, construction

Laborers, unspecified
 Laundry workers
 Messengers
 Platform men, railroad
 Peddlers
 Porters
 Relief, public, private
 Roofer's helpers
 Shirt folders
 Shoe shiners
 Sorters, rag and salvage
 Stage hands
 Stevedores
 Stock handlers
 Street cleaners
 Struckmen, railroad
 Unemployed (no occupation)
 Unskilled factory workers
 Waitresses ("hash houses")
 Washers, cars
 Window cleaners
 Woodchoppers

Farmers

Sharecroppers

The Educational Scale

The educational scale is premised upon the assumption that men and women who possess similar educations will tend to have similar tastes and similar attitudes, and they will also tend to exhibit similar behavior patterns.

The educational scale is divided into seven positions:

1. *Graduate professional training:* Persons who completed a recognized professional course that led to the receipt of a graduate degree were given scores of 1.
2. *Standard college or university graduation:* All individuals who had completed a four-year college or university course leading to a recognized college degree were assigned the same scores. No differentiation was made between state universities and private colleges.
3. *Partial college training:* Individuals who had completed at least one year but not a full college course were assigned this position.
4. *High school graduation:* All secondary school graduates, whether from a private preparatory school, public high school, trade school, or parochial school, were given this score.
5. *Partial high school:* Individuals who had completed the tenth or eleventh grades, but had not completed high school were given this score.
6. *Junior high school:* Individuals who had completed the seventh grade through the ninth grade were given this position.
7. *Less than seven years of school:* Individuals who had not completed the seventh grade were given the same scores irrespective of the amount of education they had received.

Appendix C

Parent-Infant Communication Tool

Instruct the parent to spend 5 minutes playing with the infant without using any toys. Observe the parent-infant dyad for a five minute period. Observe and record all communication components for a 30 second period. Then wait for 30 seconds. Do not record any observations noted during that time. Repeat alternating 30 second observation and non-observation periods until the five minutes have elapsed. Observe for five components of communication.

1. Vocalization - Any sound directed toward the infant by the parent. Each episode, whether long or short (e.g. entence or nonsense noise) is one vocalization.
2. Facial expression - Any movement of facial muscles to form an expression to enlist or retain the infant's attention, eg. smile, frown, "funny face". A retained expression like a smile is one expression, even if vocalization changes.
3. Gesture - A hand, head, or other body part which is moved to elicit involvement with the infant. After a pause of more than 3 seconds record a new gesture.)
4. Touch - Any touch of the infant by the parent, other than for physical support of caretaking of the infant. After a pause of more than 3 seconds record a new touch.
5. Eye contact - A meeting of the eyes of the parent and the infant for a minimum of three seconds. A continuous gaze is scored as one eye contact.

Family numberParent-Infant Communication ToolMOMDAD

	45sec	45sec	45sec	45sec	45sec	total
voc'n						
facial exprsn						
gestr						
touch						
eye contct						
TOTAL						GRAND TOTAL

Appendix D
Consent Form for Research Project Participants

The purpose of this study is to examine how parents and their infants communicate. An infant must learn how to communicate with all those around him or her and a parent has a great deal of influence on how he or she learns to do that. The results of this study should help us understand how this happens and make it possible to help parents and infants develop early communication skills.

This research is being conducted by Cheryl Feenstra, RN, as course completion work for a doctoral degree in family-child ecology at Michigan State University. Any questions can be directed to Mrs. Feenstra at 957-6255 (days) or 772-1421 (evenings).

As participants, we understand that we will be asked to complete a brief form and communicate with our baby while being observed. The time involved will be about 30 minutes when our baby is between two and four weeks old. It is not anticipated that being in the study will result in any physical, psychological, or economic risk. There is no cost to be in the study, nor will we receive any direct benefits as a result of participation.

All results will be treated with strict confidence and we will remain anonymous in any report of research findings. We will be assigned numbers for the study and our names will not be retained in any manner. If we request, results will be made available to us, but no names will be used.

We freely consent to take part in this study. We may choose not to participate in parts of the study and may discontinue our part in the study at any time without penalty.

We have read and understand the information presented.

Parent _____ Witness _____

Parent _____

Date _____

MICHIGAN STATE UNIVERSITY

Appendix E

December 5, 1994

TO: Cheryl Feenstra
1712 88th. Ave.
Zeeland, MI 49464

RE: IRB#: 94-563
TITLE: THE RELATIONSHIP OF PARENTAL GENDER, AGE,
EDUCATION AND SOCIOECONOMIC STATUS TO
PARENT-NEWBORN COMMUNICATION.
REVISION REQUESTED: N/A
CATEGORY: 1-D
APPROVAL DATE: 12/05/94

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

**PROBLEMS/
CHANGES:**

Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)336-1171.



OFFICE OF
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University Committee on
Research Involving
Human Subjects
(UCRIHS)

Michigan State University
225 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX 517/432-1171

Sincerely,

David E. Wright
David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Robert Boger

Appendix F



602 Michigan Avenue
Holland, Michigan 49423-4999
(616) 392-5141

February 22, 1995

Cheryl Feenstra, RNC, MSN
1721 88th Avenue
Zeeland, MI 49464

Dear Cheryl:

I am pleased to inform you that on February 21, 1995, upon recommendation of the Institutional Review Committee, the Hospital Board gave approval for you to conduct your research project, "The Relationship of Parental Gender, Age, Education and Socioeconomic Status to Parent-Newborn Communication".

As you know, you will be asked to attend an Institutional Review Committee meeting to give a report on the results of your research project. This can be anytime after the completion of your study but no later than March, 1996. In addition, any changes in the study tool must be addressed immediately to me.

I wish you much success in conducting this study and look forward to reviewing the results. Please feel free to contact me at 616/394-3207 with any questions.

Sincerely,

Reezie DeVet

Reezie DeVet, RN
Vice President Patient Operations
and CNO

cc: Judy Javorek

Our Mission -- To Improve the Health of the Communities We Serve

LIST OF REFERENCES

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- Adams, J. L., & Ramey, C. T. (1980). Structural aspects of maternal speech to infants reared in poverty. Child Development, 51, 1280-1284.
- Ainsworth, M. D. (1979). Infant-mother attachment. American Psychologist, 34, 10, 932-937.
- Als, H., Lester, B. M., & Brazelton, T. B., (1976). Dynamics of the behavioral organization of the premature infant: A theoretical perspective. In Field, T. M., Sostek, A. M., Goldberg, S., & Shelman, H. H. (Eds.). Infants born at risk. New York: Spectrum.
- Andrews, M. P., Bubolz, M. M., & Paolucci, B. (1980). An ecological approach to study of the family. Marriage Family Review, 3, 29-49.
- Ashton, T. (1973). The state variable in neonate research: A review. Merrill Palmer Quarterly, 19, 3-20.
- Bakeman, R. & Brown, L. (1977). Behavioral dialogue: An approach to the assessment of mother-infant interaction. Child Development, 48, 195-203.
- Baldwin, W. & Cain, V. S. (1980). The children of teenage parents. Family Planning Perspectives, 12, 34-44.
- Barnard, K. (1978). Nursing child assessment teaching scale manual. Seattle: University of Washington.
- Barnard, K. W., Booth, C. L., Mitchell, S. K., & Telzrow, R. W. (1984). Newborn nursing models. (Grant No. R01-NU-00719). Final report to Division of Nursing, Bureau of Health Manpower. Health Resources Administration. Department of Health and Human Resources. U. S. Public Health Service.

- Barratt, M. S., Roach, M. A., & Leavitt, L. A. (1992). Early channels of mother-infant communication: Preterm and term infants. Journal of Child Psychology and Psychiatry, 33, 7, 1193-1204.
- Bee, H. L., Barnard, K. W., Eyres, S. J., Gray, C. A., Hammond, M. A., Spietz, A. L., Snyder, C., & Clark, B. (1982). Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. Child Development, 53, 1134-1156.
- Bell, R. Q. (1974). Contributions of human infants to caregiving and social interaction. In Lewis, M., & Rosenblum, L. A. (Eds). The effect of the infant on its caregiver. New York: Wiley & Sons.
- Belsky, J., & Benn, J. (1982). Beyond bonding: A family-centered approach to enhancing early parent-infant relations. In Bond, L. A., & Joffe, J. M. (Eds.). Facilitating infant and early childhood development. Hanover: University Press of New England.
- Belsky, J., Gilstrap, B., & Rovine, M. (1984). Stability and change in mother-infant and father-infant interaction in a family setting: 1 to 3 to 9 months. Child Development, 55, 692-705.
- Belsky, J., Taylor, D. G., & Rovine, M. (1984). The Pennsylvania infant and family development project, II: The development of reciprocal interactions in the mother-infant dyad. Child Development, 55, 706-717.
- Blehar, M. C., Lieberman, A. F., & Ainsworth, M. D. (1977). Early face-to-face interaction and its relation to later infant-mother attachment. Child Development, 48, 182-194.
- Bobak, I. M., & Jensen, M. D. (1993). Maternity and gynecologic care. The nurse and the family. 5th Ed. St. Louis: Mosby.
- Brazelton, T. B., Koslowski, B., & Main, M. (1974). The origins of reciprocity: The early mother-infant interaction. In Lewis, M. & Rosenblum, L. A. (Eds.). The effect of the infant on its caregiver. New York: Wiley & Sons.

- Brazelton, T. B. (1982). Mother-infant reciprocity. In Klaus, M. H., Leger, T. & Trause, M. A. (Eds.). Maternal attachment and mothering disorders. Skillman, NJ: Johnson & Johnson.
- Brazelton, T. B., Koslowski, B., & Main, M. (1974). The origins of reciprocity: The early mother-infant interaction. In Lewis, M. & Rosenblum, L. A. (Eds.). The effect of the infant on its caregiver. New York: John Wiley & Sons.
- Bristor, M. W. (1983). The effects of perinatal coaching on mother-infant interactions. Unpublished doctoral dissertation, Michigan State University, East Lansing.
- Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1989). Ecological systems theory. Annals of child development, 6, 187-249.
- Broom, B. L. (1991). Impact of marital quality and psychological well-being on parental sensitivity for first-time mothers and fathers: A nursing study. (Doctoral dissertation, University of Texas at Austin, 1991).
- Bubolz, M. M., & Sontag, M. S. (1993). Human ecology theory. In Boss, P., Doherty, W., LaRossa, R., Schumm, W., & Steinmetz, S. K. (Eds.). Sourcebook of family theories and methods: A contextual approach. New York: Plenum.
- Censullo, M. (1994). Strategy for promoting greater responsiveness in adolescent parent/infant relationships: Report of a pilot study. Journal of Pediatric Nursing, 9, 1, 326-332.
- Censullo, M., Lester, B., & Hoffman, J. (1985). Rhythmic patterning in mother-newborn interaction. Nursing Research, 34, 342-346.
- Chase, M. (1991). Study of baby talk is in its infancy; grown-ups go gaga. The Wall Street Journal, LXXII, 152, May 20, 1991.
- Cohn, J. F., & Tronick, E. Z. (1987). Mother-infant face-to-face interaction: The sequence of dyadic states at 3, 6, and 9 months. Developmental Psychology, 23, 69-77.

- Coll, C. T. G., Hoffman, J., & Oh, W. (1987). The social ecology and early parenting of caucasian adolescent mothers. Child Development, 58, 955-963.
- Condon, W. S., & Sander, L. W. (1974). Neonate movement is synchronized with adult speech: Interactional participation and language acquisition. Science, 183, 99.
- Curtiss, S. (1977). Genie: A psycholinguistic study of a modern-day 'Wild Child'. New York: Academic Press.
- Farren, D. C. & Ramey, C. T. (1980). Social class differences in dyadic involvement during infancy. Child Development, 51, 254-257.
- Field, T. M. (1977). Effects of early separation, interactive deficits, and experimental manipulations on infant-mother face-to-face interaction. Child Development, 48, 763-771.
- Field, T. M. (1978). Interaction behaviors of primary versus secondary caretaker fathers. Developmental Psychology, 14, 183-185.
- Field, T. M. (1980). Interactions of preterm and term infants with their lower-and middle-class teenage and adult mothers. In T. M. Field (Ed.) High risk infants and children. New York: Academic Press.
- Fortier, J. C. (1988). The relationship of vaginal and cesarean births to father-infant attachment. Journal of Obstetric, Gynecologic and Neonatal Nursing, 17, 128-134.
- Fraiberg, S. (1977). Blind infants and their mothers: An examination of the sign system. In Lewis, M. & Rosenblum, L. A. (Eds.). The effect of the infant on its caregiver. New York: Wiley & Sons.
- Friedman, S., Thompson, M., Crawley, S., Criticos, A., Crake, D., Iacobbo, M., Rogers, P., & Richardson, L. (1976). Mutual regard during mother-infant play. Perceptual and Motor Skills, 42, 427-431.
- Frodi, A. M., Lamb, M. E., Hwang, C. P., & Frodi, M. (1983). Father-mother-infant interaction in traditional and nontraditional Swedish families: A longitudinal study. Alternative Lifestyles, 5, 142-163.

- Hans, S. L. & Bernstein, V. J. (1991). Adolescent parenting programs: Assessing parent-infant interaction. Evaluation and Program Planning, 14, 87-95.
- Hollingshead, A. (1991). Two-factor index of social status. In D. C. Miller (Ed.) Handbook of research-design and social measurement. Fifth edition. Newbury Park, NJ: Sage Publications.
- Hook, N. C., & Paolucci, B. (1970). The family as an ecosystem. Journal of Home Economics, 62, 5, 315-318.
- Hopkins, B. (1983). The developmnet of early non-verbal communication: An evaluation of its meaning. Journal of Child Psychiatry, 24, 1, 131-144.
- Jorgensen, S. R. (1993). Adolescent pregnancy and parenting. In Gulotta, T., Adams, G. R., & Montemayor, R. (Eds.), Adolescent sexuality. Newbury Park, CA: Sage.
- Keller, H., & Scholmerich, A. (1987). Infant vocalizations and parental reactions during the first 4 months of life. Developmental Psychology, 2, 1, 62-67.
- Klaus, M. H., & Kennell, J. H. (1976). Maternal-infant bonding. St. Louis: Mosby
- Lamb, M. E., & Oppenheim, D. (1989). Fatherhood and father-child relationships. In Cath, S. H., Guritt, A., & Gunsberg, L. (Eds.). Fathers and their families. Hillsdale, NJ: Analytic Press.
- Lester, B. M., Hoffman, J., & Brazelton, T. B. (1985). The rhythmic structure of mother-infant interaction in term and preterm infnats. Child Development, 56, 15-27.
- Lewis, M. (1972). State as an infant-environment interaction: An analysis of mother-infant interactions as a function of sex. Merrill-Palmer Quarterly, 18, 95-121.
- Lewis, M., & Lee-Painter, S. (1974). An interactional approach to the mother-infant dyad. In M. Lewis & L. A. Rosenblum (Eds.), The effect of the infant on its caregiver. New York: Wiley & Sons.

- Olson, S. L., Bates, J. E., & Bayles, K. (1984). Mother-infant interaction and the development of individual differences in children's cognitive competence. Developmental Psychology, 20, 1, 166-179.
- Palkovitz, R. (1984). Parental attitudes and fathers' interactions with their five-month old infants. Developmental Psychology, 20, 1054-1060.
- Parke, R., & O'Leary, S. (1976). Father-mother-infant interaction in the newborn period: Some findings, some observations, and some unresolved issues. In Reigel, K., & Meacham, J. (Eds.). The developing individual in a changing world. Vol. II. Social and environmental issues. The Hague: Mouton.
- Parke, R. D., & Sawin, D. B. (1980). The family in early infancy: Social interactional and attitudinal analyses. In Pedersen, F. A. (Ed.). The father-infant relationship. Observational studies in the family setting. New York: Praeger.
- Parke, R. D. & Tinsley, B. R. (1981). The father's role in infancy: Determinants of involvement in caregiving and play. In Lamb, M. E. (Ed.). The role of the father in child development. New York: Wiley & Sons.
- Parke, R. D., & Tinsley, R. J. (1987). Family interaction in infancy. In J. D. Osofsky (Ed.), Handbook of infant development. New York: Wiley & Sons.
- Pupura, D. (1975). Dendrite differentiation in human cerebral cortex: Normal and aberrant developmental patterns. Advanced Neurology, 12, 91.
- Ragozin, A. S., Basham, R. B., Crnic, D. A., Greenberg, M. T., & Robinson, N. M. (1982). Effects of maternal age on parenting role. Developmental Psychology, 18, 4, 627-634.
- Rebelsky, R., & Hanks, C. (1971). Fathers' verbal interaction with infants in the first three months of life. Child Development, 42, 63-68.
- Reiber, V. D. (1976). Is the nurturing role natural to fathers? The American Journal of Maternal Child Nursing, 1, 366-371.

- Rutter, E. R., & Durkin, K. (1987). Turn-taking in mother-infant interaction: An examination of vocalizations and gaze. Developmental Psychology, 23, 1, 54-61.
- Schlesinger, B. (1988). The single teenage Canadian mother in the 1980's. Conciliation Courts Review, 24, 1, 91-102.
- Schellenbach, C. J., Whitman, T. L., & Borokowski, J. G. (1992). Toward an integrative model of adolescent parenting. Human Development, 35, 81-99.
- Seigel, E. (1982). A critical examination of studies of parent-infant bonding. In Klaus, M. H., & Robertson, M. O. (Eds.). Birth, interaction and attachment. Skillman, NJ: Johnson & Johnson.
- Shields, M. J. & Sparling, J. W. (1993). Fathers' play and touch behaviors with their three-month-old infants. Physical & Occupational Therapy in Pediatrics, 13, 1, 39-59.
- Stern, D. N. (1974). Mother and infant at play: The dyadic interaction involving facial, vocal, and gaze behaviors. In Lewis, M. & Rosenblum L. A. (Eds.). The effect of the infant on its caregiver. New York: John Wiley & Sons.
- Thoman, E. B., Leiderman, P. H., & Olson, J. P. (1972). Neonate-mother interaction during breast-feeding. Developmental Psychology, 6, 110-118.
- Thoman, E. B., Acebo, C., Dreyer, C. A., Becker, P. T., & Freese, M. P. (1979). Individuality in the interactive process. In E. B. Thoman (Ed.), Origins of the infant's social responsiveness. New York: Lawrence Erlbaum.
- Thomas, A., & Chess, S. (1977). Temperament and development. New York: Brunner/Mazel
- Trevarthen, C. (1977). Descriptive analysis of infant communicative behavior. In Schaffer, H. R. (Ed.). Studies in mother-infant interaction. New York: Academic Press.
- Voydanoff, P., & Donnelly, B. W. (1990). Adolescent sexuality and pregnancy. Newbury Park, CA: Sage.

Yogman, M. W. (1982). Development of the father-infant relationship. In Fitzgerald, H. E., Lester, B.M., & Yogman, M. W. (Eds.). Theory and research in behavioral pediatrics. Vol. 1. New York: Plenum.

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