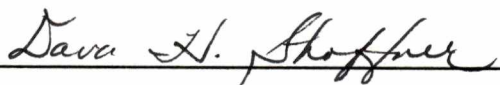


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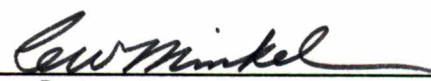
I am submitting herewith a thesis written by Angela F. Wood entitled "An Investigation of Factors Affecting Reciprocity between Nurses and Premature Infants during Bottle Feeding." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Nursing.


Patricia Droppleman, Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:


Vice Provost
and Dean of The Graduate School

AN INVESTIGATION OF FACTORS AFFECTING RECIPROCITY
BETWEEN NURSES AND PREMATURE INFANTS
DURING BOTTLE FEEDING

A Thesis
Present for the
Master of Science in Nursing
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Angela F. Wood

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ABSTRACT

Every year thousands of infants remain in intermediate care nurseries for several months due to their premature birth. During this time, the majority of their needs are met by nurses instead of their parents. If, because of burnout, a heavy patient assignment, lack of knowledge, or other factors these nurses do not perceive and respond appropriately to behavioral cues sent by the infant, serious consequences may result. During the early months of life, infants communicate with their caretakers through various behaviors. When the infants' behavioral cues are not responded to in a timely, appropriate manner, they may develop a sense of mistrust resulting in infants who are irritable, difficult to feed, and who stop attempting communication with their caretakers.

The purpose of this study was to determine factors related to nurses' ability to perceive and act on cues given by premature infants. Factors considered as possibly affecting reciprocity were the number of infants the nurse was caring for, nurses' educational level, nurses' feeding experience, and nurses' parental status. The study design was descriptive correlational. Data was collected in an intermediate care nursery at a large urban general hospital. The sample consisted of all registered nurses, licensed practical nurses, and newborn technicians currently employed in the intermediate care nursery. After informed consent was obtained from each nurse, she was observed during two feedings sessions. The Modified Assessment of Infant-Maternal Emphathy was used to measure nurse-infant reciprocity.

The only factor found in this study to affect the perception and response of nurses to premature infants during bottle feeding was the number of infants assigned to the nurse. As the number of infants to be cared for increased, perception and response to behavioral cues decreased.

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CHAPTER 1

INTRODUCTION

Every year 200,000-250,000 newborn infants in the United States are admitted to intensive care nurseries. The majority of these infants are born prematurely, and have significant medical problems. Common problems of the premature infant include respiratory distress syndrome, sepsis, hyperbilirubinemia, anemia, and apnea of prematurity. The usual length of hospitalization for a premature infant is at least 15-20 days, but occasionally the stay is much longer (Budetti & Barrand, 1981).

In the last 10 years, personnel who staff intensive care nurseries have recognized the importance of early contact between infants and their parents and have instituted open visitation policies. However, due to problems with transportation, distance from the hospital, maternal illness, and responsibilities of the parents for care of other small children, most premature infants spend only a limited amount of time with their parents during their hospitalization. After an infant's condition stabilizes, the infant is usually transferred to an intermediate care nursery where the same problems with family visitation exist. Even when parents do visit, they often are hesitant to handle and interact with premature infants because of their small size, appearance, medical condition, and the presence of various life support equipment.

Because of limited parent-infant contact, the majority of an infant's care is administered by nurses who staff intensive and intermediate care nurseries. If, because of burn-out, a heavy patient

assignment, lack of knowledge, or other factors, the nurse caring for the infant does not perceive and respond appropriately to behavioral cues sent by the infant, a delay in the infant's development of trust may result (Spietz, 1978).

During the early months of life, infants communicate with their caretakers through various behaviors such as gazing, turning toward or away from the caretaker, quieting, movement of extremities, and verbalization. When these behaviors are perceived and appropriate responses elicited from caretakers, infants develop a sense of trust that can enhance development of attention span, motor control, and social interaction (Brazelton, Koslowski, & Main, 1974).

As infant trust develops, the infant begins to associate personal actions with the positive reaction received from the environment. The behaviors that the infant is able to elicit from the caretaker result in the infant having a feeling of control over the environment that is evident in the infant's ease of consolability.

Ease of consolability is an important factor in development of the mother's attachment to her infant (Korner, 1974). Only when a mother feels that her behaviors have resulted in her infant being consoled and satisfied is she encouraged to continue appropriate, nurturing behavior.

The infant whose needs are not met may develop a sense of mistrust resulting in, "long range effects on the development of attitudes and behaviors, particularly in interpersonal relationships" (Rice, 1985). These effects may include feeding difficulties (Burns, Sander, Stechler & Julia, 1972), failure-to-thrive syndrome (Pollitt & Wirtz, 1981), learned helplessness, disruption of parent-child interaction (Goldberg,

1979), and possibly violent and aggressive behavior later in life (Rice, 1985).

Statement of the Problem

During the early weeks of life, the major interactions between infant and caretaker occur during feeding. This investigation assessed factors that were hypothesized to affect reciprocity between the caretaker and the hospitalized neonate during bottle feeding as measured by the Modified Assessment of Infant-Maternal Empathy (AI-ME) (Appendix 1). Reciprocity was defined as the ability of both the infant and caretaker to read each others cues and respond with appropriate behaviors (Thoman, 1980).

Theoretical Framework

An investigation of reciprocity between nurses and neonates lends itself to the use of theory from both nursing and child development. The nursing model selected was the systems model of adaptation developed by Sister Callista Roy. The model postulated by E. H. Erikson was the child development framework utilized in this inquiry.

Roy's Model of Adaptation

Many nursing models are based on four major concepts: person, environment, health, and nursing. In Roy's model, person is viewed as an adaptive system. This system has two mechanisms, regulator and cognator, which "act through four adaptive modes to produce adaptive responses to the changing world within and around" (Andrews & Roy,

1986). Environment, the second concept, is described as "all conditions, circumstances, and influences surrounding and affecting the development and behavior of the person" (Andrews & Roy, 1986). The concept of health, as defined by Roy, is "a state and a process of being and becoming an integrated and whole person" (Andrews & Roy, 1986). The fourth concept, nursing, is viewed by Roy as "science and the application of knowledge from that science to the practice of nursing" (Andrews & Roy, 1986).

Roy's model is based on the assumption that a person is constantly adapting to the stimuli provided by the environment. These stimuli can be divided into the following categories: focal stimuli- those immediately confronting the person; contextual stimuli- all other stimuli present in the environment that contribute to the effect of the focal stimuli; and residual stimuli- factors that may affect the person but cannot be documented (Roy & Roberts, 1981). As stimuli are presented to patients, they attempt to cope using the regulator and cognator mechanisms in relation to the four adaptive modes (Roy & Roberts, 1981).

The four adaptive modes are "the effectors of adaptation " (Roy & Roberts, 1981). They consist of the physiologic mode which deals with the body's basic needs, the self-concept mode that involves the composite of beliefs and feelings, the role function mode which is the performance of duties, and the interdependence mode that involves significant others and support systems. When individuals are able to use these modes to adapt to their environment, they maintain a state of wellness. However, when these modes of adaptation are inadequate, the

person responds to stimuli from the environment with ineffective responses, resulting in compromised health.

In using Roy's model to plan and deliver patient care, the nurse begins with assessment. Data are collected in regard to the four modes of adaptation and from the data collected, a nursing diagnosis is formulated (Roy & Roberts, 1981). After the assessment is made, goals are determined. These goals are mutually adopted, when possible, with the patient or their family, and aim toward "maintaining the adaptive behavior or changing the ineffective behavior" (Roy & Roberts, 1981).

After the goal is agreed upon, nursing interventions are planned and carried out. These interventions "manipulate the stimuli so that they fall within the patient's zone of positive coping" (Roy & Roberts, 1981). The stimuli to which interventions are directed are those with the greatest probability for producing desirable results "in terms of the identified goals" (Andrews & Roy, 1986).

Evaluation is the final step in the application of Roy's model to patient care. Evaluation measures patient behavior in relation to determined goals. Interventions are considered to have been effective only if patient behaviors conform to goals. When interventions are deemed ineffective, the nurse should reassess the stimuli and plan alternative interventions (Andrews & Roy, 1986).

Application of Roy's Model

For the purposes of this study, the focus was on the cognator subsystem and specifically the psychosocial modes of interdependence and self concept. The stimuli considered was the neonate's behavioral cues,

factors in the work environment of the nurse caretakers such as their work load, and characteristics of the nurses such as their age, experience in feeding, and education. Adaptation was viewed as the reciprocity that occurs as a result of the nurses' perception of, and response to, neonatal behavioral cues. Nurses caring for premature infants in intensive care nurseries assist infants as they adapt to the extrauterine environment for which they are not prepared.

Erikson's Model of Development

The developmental model described by Erikson proposed as the ultimate goal of one's life the achievement of ego identity. To achieve this goal, Erikson (1985) describes progression through a series of eight crisis during the life cycle. Each crisis involves a major developmental task comprised of a positive ego quality along with its opposite, negative quality. The stages proposed by Erikson (1985) are basic trust vs. basic mistrust (occurring during infancy); autonomy vs. shame and doubt (occurring between the first and second years); initiative vs. guilt (occurring between the third and fourth years); industry vs. inferiority (occurring during the school years); identity vs. role confusion (occurring during adolescence); intimacy vs. isolation (occurring during early adulthood); generativity vs. stagnation (occurring during middle adulthood) and integrity vs. despair (occurring during late adulthood).

The ego qualities that comprise each stage "emerge from critical periods of development- [and are the] criteria by which the individual demonstrates that his ego, at a given stage, is strong enough to

integrate the timetable of the organism with the structure of social institutions" (Erikson, 1985). While Erikson offers possible age ranges for passage through each stage, he emphasizes that each person will progress through the stages at their own pace and that the rate of progression will have a "modifying influence on all later stages" (Erikson, 1985). As each task is satisfactorily resolved, progress toward the next stage is enhanced. However, if the stage is not favorably completed, development of a favorable outcome in the following stages may be delayed or prevented (Erikson, 1985).

Development of trust, the central task of infancy, implies that "one has learned to rely on the sameness and continuity of the other providers . . ." (Erikson, 1985). As infant needs for food and comfort are consistently met by caretakers, the development of trust predominates over mistrust and the beginnings of the ego are established. Exhibition of behaviors such as ease of feeding, deep sleep, and relaxation of bowels are a demonstration of social trust.

Since the development of "enduring patterns for the solution of the nuclear conflict of basic trust versus basic mistrust" is the first task of the ego, it is also the first task "for maternal care" (Erikson, 1985). Mothers contribute to their child's development of trust through a combination of "sensitive care of the baby's individual needs and a firm sense of personal trustworthiness within the trusted framework of their culture's life style" (Erikson, 1985).

The development of a sense of autonomy rather than shame and doubt is the focus of the second developmental stage. During this stage the "right to have a choice, and to eliminate stubbornly" must emerge if a

positive outcome is to be achieved (Erikson, 1985). As the environment encourages the child to "stand on his own feet," autonomy dominates over doubt and shame and allows for a "sense of self-control without loss of self-esteem" (Erikson, 1985). This results in an enduring pattern of goodwill and pride (Erikson, 1985).

In Erikson's third stage, "initiative adds to autonomy the quality of undertaking, planning and 'attacking' a task for the sake of being active and on the move" (Erikson, 1985). In dealing positively with this life crisis, the preschooler must develop a sense of moral responsibility without becoming overcontrolled by his/her own new conscience.

According to Erikson, the school age child has as a main task, the development of industry. During this stage children move out of the family, and begin to function in the world of peers. In most societies, this stage involves structured learning in school, that will ultimately prepare the child to be a worker and provider. The potential negative outcome of this stage involves development of a sense of personal inadequacy and inferiority.

As children enter puberty, they face a period of rapid emotional and physical change. The goal during adolescence is development of an ego identity. The ego identity, as described by Erikson (1985) is "the accrued confidence that the inner sameness and continuity prepared in the past are matched by the sameness and continuity of one's meaning for others, as evidenced in the tangible promise of a 'career'." If the ego identity described by Erikson fails to develop, then the adolescent develops role confusion which can result in doubt as to one's sexual

identity, delinquent and psychotic episodes, over-identification with a group or clique, or adolescent love.

As the adolescent moves into the period of young adulthood, there is a move toward readiness for intimacy. This involves the "capacity to commit ones self to concrete affiliations and partnerships and to develop the ethical strength to abide by such commitments, even though they call for significant sacrifices and compromises" (Erikson, 1985). Failure to achieve intimacy results in isolation and destroys "those forces and people whose essence seems dangerous to one's own . . . territory" (Erikson, 1985).

The seventh stage described by Erikson is the development of generativity, the "concern in establishing and guiding the next generation" (Erikson, 1985). Retardation of this stage, resulting from "excessive self-love, . . . [or] a too strenuously self-made personality . . . can cause stagnation and personal impoverishment" (Erikson, 1985).

Attainment of ego integrity is the last stage described by Erikson. This "final consolidation" is evidenced by a loss of the fear of dying. However, without achievement of ego integrity, the person enters a stage Erikson describes as despair. Despair expresses the feeling that the time is now short, too short for the attempt to start another life and to try out alternate roads to integrity" (Erikson, 1985). With despair, death is present as a constant fear.

Application of Theoretical Framework to the Research

When neonates, due to illness or prematurity, are admitted to intensive care nurseries, they are separated from their mothers and their basic caretaking needs are administered by nurses. As the condition of infants stabilize, they are transferred to an intermediate care nursery where bottle feedings are initiated. The majority of these feedings, because of limited visitation by parents, are administered by the nursing staff. If, for some reason, caretakers are not able to recognize and respond to cues infants provide in order to express their needs, infants will have problems in relation to adaptation to their environments. This may result in a dominance of mistrust over trust and impede further progress through the subsequent developmental stages described by Erikson.

The Research Question

Are there factors that inhibit or enhance nurses' abilities to perceive and act on behavioral cues exhibited by premature infants in intermediate care nurseries?

Subsidiary Questions:

1. Will the number of premature infants assigned to nurses affect their perception of, and response to, cues exhibited by premature infants during bottle feeding?
2. Will nurses' educational levels affect their ability to perceive and react to cues exhibited by premature infants during bottle feeding?

3. Will nurses' experience in feeding premature infants affect their ability to perceive and respond to cues exhibited by premature infants during bottle feeding?

4. Will being a parent affect a nurses' perception and response to cues exhibited by premature infants during bottle feeding?

Nominal Definitions

For the purposes of this study the following terms were used:

1. Adaptation - A process that occurs within living systems in their interaction with their environment for the purpose of survival, growth, and reproduction (Torres, 1986).

2. Attachment - A unique relationship between two people that is specific and endures through time (Klaus & Kennell, 1985).

3. Behavioral cues - Neonatal actions such as crying, gazing, or turning away, exhibited to convey a need to the caretaker.

4. Burnout - The process of change in which the professional's attitude and behavior are altered in negative ways in response to job strain.

5. Intermediate care nursery - A unit inside an inpatient care facility that is equipped and staffed to care for sick newborns that do not require ventilatory support.

6. Trust - The belief that if needs are expressed, they will be met by the caretaker.

7. Mistrust - The belief that even if needs are expressed, they will not be met.

8. Premature infant - Any infant born before the 38th gestational week, calculated from the mother's last normal menstrual period.

9. Respiratory distress syndrome - An acute condition, sometimes known as hyaline membrane disease, that results from a surfactant deficiency in the lung of the premature infant.

10. Sepsis - A pathologic state resulting from a proliferation of bacteria in the blood stream.

11. Hyperbilirubinemia - An excessive amount of bilirubin in the blood.

12. Anemia - A condition resulting from a deficiency of circulating red blood cells.

13. Apnea of prematurity - A temporary cessation of breathing frequently seen in premature infants.

Assumptions

1. Infants send behavioral cues to their caretakers during bottle feeding.

2. Nurses are capable of recognizing behavioral cues and responding to them in appropriate ways.

3. The AI-ME is a reliable measure of nurses' reciprocity with premature infants with a postconceptual age of 34 weeks.

4. Since the nurse working in an intermediate care nursery functions in the mother role during most of the infant's extended hospital stay, the AI-ME is a valid measure of nurse-infant empathy.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter will include a review of the literature pertinent to a study of nurse-infant reciprocity. Reciprocity will be defined, and the positive influences of reciprocity on interaction as well as the negative consequences of a lack of reciprocity will be discussed. Following this discussion, is a summary of theories relating to: (a) ability of infants and caretakers to develop reciprocity through adaptation of behaviors; (b) the types of interaction that occur between neonates and their caretakers; (c) ways that reciprocity is established and maintained. The chapter concludes with a review of factors that have been shown empirically to affect the degree of reciprocity in the interactions of infant-caretaker pairs.

Reciprocity

Thoman (1980) describes reciprocity as "A rhythm of interaction in which each [caretaker and infant] can lead, follow, or anticipate the actions of the other and thereby exhibit simultaneous communicative behaviors." The rhythm of interaction described here involves modulation of the caretaker's attention to the infant's need for attention and nonattention (Brazelton, Koslowski & Main, 1974). This regulation of attention probably starts in the first few days of life as the actions of the infant affect the behaviors of the mother and, likewise, the actions of the mother affect the behaviors of the infant (Osofsky, 1976). A reciprocal interaction between infant and caregiver

can be described as "flexible, sensitive, and sympathetic" where "each has the ability to affect the other and where each adapts his/her behavior to that of the other" (Spietz, 1978a). As the infant and caregiver interact, they emit, receive, and respond to the cues that express their perceived needs. When the needs are satisfactorily met, there is "enjoyment between the partners in the interaction" (Anderson, 1981) which reinforces the desire of both partners to continue adaptation of their behavior.

Positive and Negative Effects of Reciprocity

Erikson (1985) postulates that the developmental task of learning to trust forms the foundation for all other developmental stages. Other phrases that describe this are "learning confidence" or "learning to love" (Erikson, 1985). Activities such as rapidly responding to distress, secure and tender holding, en face interaction that is paced according to the infant's cues, and exhibition of sensitivity in initiating and terminating feedings convey to infants that their environment is safe and dependable (Spietz, 1978a). Through reciprocity, infants learn to control their environments. As an infant learns to acquire satisfaction of their needs, "He frees himself to attend to his external world . . . and learns the rudiments of ego function" (Brazelton et al., 1974). Early reciprocal interactions have been shown to enhance normal development of new behaviors (Goldberg, 1979). In 1974, Barnard and Douglas reported a positive correlation between maternal reciprocity and increased scores on the Bayley Developmental

Scale, and Brazelton and associates (1974) were able to show that reciprocity increased the development of the infant's attention span.

Much of the early reciprocity between infant and caretaker develops during feeding time, and the interactional patterns that are established during feeding in the first weeks of life remain evident throughout the first year of life (Penticuff, 1980). When these interactional patterns are positive and reciprocal, the development of maternal attachment increases (Korner, 1974), as does the mother's confidence in her own ability to care for her child (Blake, Stewart, & Turcan, 1974). Brody (1976), states that "feeding [behaviors] serve as a model to [the mother's] overall behavior toward a given infant."

The negative consequences of decreased caretaker-infant interaction have been under investigation for several years. Spitz (1945) observed institutionalized infants who were separated from their mothers for differing amounts of time. He found that during the first three months, children displayed increasingly abnormal development including withdrawal, weight loss, self-imposed isolation, screaming, and insomnia. When the children were restored to their mothers after a separation of less than three months, a normal relationship was easily reestablished in most instances. However, in children who were separated from their mothers for longer periods of time, with no other meaningful relationships established during the separation, irreversible changes occurred. Evidences of these changes included delayed development in walking, talking, eating, and toilet training. Spitz attributed these delays to the absence of a meaningful relationship in the child's life.

Bowlby (1951) observed similar behavioral changes in a study of children removed from London during World War II. Infants reared without meaningful, loving relationships were found to be "affectionless," with little interest in establishment of future relationships.

Because caretakers "evaluate their own effectiveness in terms of the infant's behaviors" (Goldberg, 1979), failure to develop a reciprocal caretaker-infant relationship early in life could have many negative, long-term consequences (Field, 1980; Johnson & Grubbs, 1975; Rice, 1985). One of the most frequently cited negative consequences that may be linked to decreased reciprocity is child abuse and neglect. Penticuff (1980), states that infants who have required hospitalization in the neonatal period are "three to nine times more likely to suffer maltreatment . . . than are healthy, full-term infants." Infants who are sick and/or premature consistently interact with a lesser degree of reciprocity due to the infant's decreased ability to send adequate numbers of readable cues (Crnic, Ragozin, Greenberg, Robinson & Basham, 1983). Klaus and Kennell (1982) cite several studies that show an increased incidence of child abuse in children who were born prematurely. One prospective study cited by Klaus and Kennell involved 255 infants who were discharged from a regional neonatal center. Among these infants, there was a 3.9% incidence of maltreatment compared to an incidence of 0.5% for all infants. Klaus and Kennell suggest that this may be, in part, a result of separation from parents during early infancy.

It is possible that this cycle of decreased cues-decreased reciprocity-abuse and neglect may be linked to a problem Goldberg (1979) calls "learned helplessness." This occurs when infants are repeatedly placed in an unpleasant situation over which they have no control. The learned helplessness "prevents effective behavior in subsequent situations where control is possible" (Goldberg, 1979). If infants' cues for relief of pain or hunger are not acknowledged, with time they stop sending cues since they have no reason to believe that they will result in a positive response. Rice (1985) postulates that this feeling of hopelessness is "etched on the memory traces of [the infant's] neural system and has the potential to emerge if the infant survives" resulting in "mental illness, violent and aggressive behavior . . . [and] disastrous effects in thought processes, behavior, and physical and emotional damage."

The physical damage referred to by Rice may be manifested in the clinical syndrome of failure to thrive. The behaviors of the caretaker appear to be related to the development of this syndrome which is defined as "growth failure below the third percentile on a standard growth chart for which no organic cause can be found" (Harrison, 1979). Mothers of preterm and low-birthweight infants have been noted to present an overwhelming amount of stimulation to their infants during feeding. Behaviors such as frequently taking the bottle from the infant's mouth, continuously rotating or moving the nipple, and grooming the infant's body during feeding actions, which disturb the infant's eating patterns, were among those behaviors consistently noted during feedings. This decreased reciprocity during feeding has been positively

correlated with a slower than average weight gain (Crow, Fawcett & Wright, 1980; Pollitt & Wirtz, 1981).

The degree of reciprocity present during periods when tactile stimulation is initiated also seems to correlate with infant outcomes (Gottfried, Wallace-Lande, Sherman-Brown, King & Coen, 1981). Classic animal studies (Harlow, Harlow & Hansen, 1963) have shown that decreased reciprocity can affect growth, adaptive responses to stress, and future parenting abilities. Rice (1985) states that if initial handling of infants is "rough and impersonal," there may be a significant delay in development of trust and sense of body worth.

Adaptation

The three basic aspects of the infant-caregiver adaptive process are an interplay between the "active affinities" of the infant and caretaker, a "reciprocal relationship . . . between the organism and the environment," and a relation of "external aspects of adaptation to internal aspects of organization" (Spietz, 1978b). The initial period of adaptation occurs during the first two and a half months of life as the caretaker learns to mesh the activities of daily care with "the cues the baby gives of his state, necessary for him to live and thrive" (Sander, 1962). Achievement of this initial adaptation is manifested by development of "rhythms of feeding, elimination, sleep, and wakefulness" (Sander, 1962). Well developed sense organs make the term neonate "skilled and competent" at interacting with, and adapting to the environment (Thoman, 1980). Even though visual capabilities of the term neonate are not completely developed, the term neonate is able to dis-

criminate visual patterns, attune to movement, and establish eye contact with caretakers.

Auditory function in the term neonate is also well developed and enables the neonate to discriminate initial consonants and vocal inflections (Goldberg, 1979). These capabilities, along with other characteristics of the term newborn such as consolability, self-quieting, cuteness, and cuddliness (Penticuff 1980; Robson & Moss, 1970) enable term neonates to express their needs, and to convey their satisfaction to the caretaker (Field, 1980).

When compared to term infants, premature infants have a decreased ability to interact with and adapt to the extrauterine environment. Premature infants, because they are born "prior to extensive organization of the central nervous system," have difficulty controlling sleep, arousal, alerting, attention, fussing, feeding and activity (Gorski, 1987). Commonly seen examples of these difficulties include inability to make eye contact or respond to visual cues, weak cries, and an exaggerated startle response (Field, 1980). These difficulties result in the premature having a limited ability to exhibit readable behavioral cues or respond to stimulation in expected patterns (Field, 1980).

Physical characteristics of premature infants also contribute to their decreased ability to engage in reciprocal interactions with caretakers. Premature infants are often viewed as sickly and/or ugly by their parents because they are usually small with little body fat, have body hair and wrinkled skin, and are frequently attached to tubes and machines. Because the premature infant's appearance is not what the

parents had expected or imagined, it can result in withdrawal, refusal to look at the premature baby, and decreased interaction between premature infant and the parents (Moses and Buckner, 1985).

Caretakers also have characteristics that assist them in participating in the infant-caretaker adaptive process. The majority of mothers are very attuned to cues given by the term infant, and consistently "respond to them affectively" (Brazelton et al., 1974). One example of this is the bottle-jiggling sequence frequently seen during feeding. When the infant stops sucking on the bottle, the caretaker frequently jiggles the bottle. When the jiggling stops, the infant renews his sucking efforts. As the mother adapts to the infant, the duration of the pause-jiggling-renewed sucking cycle becomes shorter (Kaye & Wells, 1980). Kaye (1982) speculates that this jiggling pattern may be the first infant-caretaker dialogue.

Another example of caretaker adaptation involves the verbal communication between infant and caretaker. Brazelton and associates (1974) found that neonates alert to and attend to female voices in preference to male voices because of their higher pitch. In most cases, as the caretaker verbalizes to the infant, the pitch of the voice is raised, the speech is slowed and frequently repeated, and the articulation and inflection are exaggerated (Goldberg, 1979). Even though infants' limited verbal ability prevents them from responding in the same modality (verbal) to this stimulation, infants do respond by "looking toward the caretaker, often immediately upon her verbal signals" (Field, 1980). Responses of infants to caretakers reward the

caretaker's efforts toward interaction, and provide incentive for further interaction.

As the caretaker and infant adapt to each other's behaviors and responses, a synchrony develops that gives the caretaker a sense of satisfaction, and the infant a feeling of control over his/her environment (Thoman, 1980). The neonate's feeling of control plays an important role in the development of the infant's sense of trust that their needs will be met by the environment (Crockenberg, 1981).

Interaction capabilities of caretakers with premature infants are usually somewhat limited. Moses and Buckner (1985) point out that caretakers frequently misinterpret the behavioral cues of premature infants. For example, the exaggerated startle response of the premature infant may be interpreted by the parent as the baby not wanting to be touched. Failure of the baby to turn toward the parent may be interpreted by the parent as the baby not liking them or wanting them to go away. These misconceptions on the part of the caretaker can result in decreased interaction and reciprocity.

Another factor that contributes to problems with reciprocal interaction between premature infants and their caretakers is the number of people involved in the care of a premature infant. Normal term infants usually have only two or three caretakers with whom they must develop synchrony. Premature infants, however, must interact with multiple caretakers. This can result in confusion, increasing distress with feeding, irritability, and decreased visual attention (deChateau, 1977).

Field (1977) found that mothers and their full-term infants each interact about 70% of the time during play. This differed significantly from interaction between mothers and premature infants where mothers interacted up to 90% of the time and the premature infant was only looking 30% of the time. Field also found that when the mother of the premature infant decreased her interaction and attempted to imitate the baby's movements, the premature infant's gaze time increased. It is possible that the mother of the premature infant, in attempting to elicit a normal newborn response from a premature infant, actually decreases the responses from the infant (Klaus and Kennell, 1982).

Types of Interaction

The earliest interactions between infant and caretaker are "affective in nature" (Thoman, 1980). That is, most of the information transmitted between the infant and caretaker occurs as a result of holding, moving, talking, and looking (Thoman, 1980). The way an infant is positioned during holding greatly effects the degree of interaction that can occur, with the en face position (mother and baby's faces in the same plane) allowing for the greatest amount of social interaction. When "face-to-face" and "eye-to-eye" contact is increased, the opportunity for "a more rhythmical ebb and flow between the pair" is enhanced (Spietz, 1978a) as is the caretaker's responsiveness to the infants (Robson & Moss, 1970).

During the first weeks of life most of the interaction, and thus development of trust, between infant and caretaker occurs during feeding (Korner, 1974). Successful feeding depends on the caretaker responding

to cues given by the child about timing, amount, preference, pacing and eating capability" (Satter, 1986). Negligent or abusive parents and parents whose children exhibit failure to thrive were found to seldom talk to, look at, or touch their infants during feeding. They also consistently demonstrate "little animation or mutual responsiveness" during feeding (Penticuff, 1980; Snyder & Spietz, 1977). Overall, these parents approach the feeding of their infants as a task-oriented rather than social-oriented time.

The Process of Reciprocity

Interactions between mothers and infants have three distinct segments: initiation, maintenance, and termination. The extent to which each part of the interaction is reciprocal depends on both the infant's ability to send cues, and the adult's ability to perceive and respond appropriately to the cues. Readability refers to "the clarity of the infant's signaling- that is, how easily the adult can observe the infant and conclude that he or she is tired, hungry, eager to play, etc." (Goldberg, 1979). Readability involving caretaker-infant pairs is a joint function and must be present if interactions are to begin, continue, and end in a reciprocal fashion (Goldberg, 1979).

An infant's survival depends on interventions provided by the caretaker, be it a mother or other person. When infants have needs, they must initiate interactions if these needs are to be met in a timely manner. During the first weeks of life, characteristics of the baby such as "size, helplessness, fussing, and crying" (Robson & Moss, 1970) are behavioral cues that initiate care. In reciprocal interactions,

caretakers perceive the behavioral cue and respond by entering into an interaction (Blank, 1986). Brazelton and associates (1974) point out that in the case of an overly placid infant, the number of initiating behaviors and resulting interactions may be greatly decreased.

Once interactions are initiated, if needs are to be met interactions must be maintained. The primary factor affecting maintenance of interactions is the ability of the caretaker to "develop a sensitivity to [the] infant's capacity for attention, and, need for withdrawal--partial or complete--after a period of attention" (Brazelton et al., 1974). Pauses during infant-caretaker interaction, especially during feeding, accommodate the infant's limited attention span and provide for a beginning development of dialogue (Brazelton et al., 1974; Kaye, 1982). Mothers who recognize infant cues indicating need for a pause in interaction achieve the most positive, rhythmic interactions (Brazelton et al., 1974).

The last segment of the interactive process, termination, is also signaled to the caretaker by the infant. Cues that may alert caretakers that infants are ready to stop interacting include yawning, decreased gazing, head aversion, squirming, fussing, or crying (Field, 1980). Just as with the other parts of the interactive process, termination is dependent on both a cue from the infant and an appropriate response from the caretaker if both participants in the interaction are to be positive response.

Factors Affecting the Occurrence of Reciprocity

While reciprocity is a desirable component of all infant-caretaker interactions, many factors can influence the degree of synchrony that actually occurs when an interaction takes place. Thoman (1980) points out that factors affecting the caretaker and infant are equally important in determining the occurrence of reciprocity during interactions. This review will begin by examining factors affecting the caretaker.

A number of variables have been found to affect the degree to which the caretaker participates in reciprocal behavior with the infant (Anderson, 1981). Low socioeconomic status and low educational level have been shown to correlate with a low level of infant-maternal reciprocity (Kaye, 1982).

Maternal attitudes and expectations also correlate with reciprocity. Mothers who have a low level of realistic expectations for their infant consistently show a low level of reciprocity (Anderson, 1981; Marton, Minsde & Ogilvie, 1981). Caretakers with rigid attitudes about how infants should act and be treated also display lower than average reciprocity with their infants (Blake et al., 1974) and have a high potential for abuse (Bolton, 1983). When inflexible, rigid caretakers attempt to parent infants that do not meet their expectations, the resulting interactions can go beyond the caretaker's limit of tolerance and result in physical or emotional abuse (Bolton, 1983).

Thoman (1980) found that multiparous mothers are more sensitive to their infant's cues and respond more quickly to their infants distress than do primigravidas. No studies were found that examined the effect of parity on interactions of nurses and infants. General theory of altruistic behavior is based on the idea that "One is more aware of and responsive to the needs of others when one's own needs are met" (Crockenberg, 1981). Therefore, as a mother's level of stress increases, her sensitivity to infant cues may decrease (Barnard & Douglas, 1974; Penticuff, 1980). Stressors that have been shown to affect maternal reciprocity include "occupational or financial problems, emotional problems, fatigue, and marital stresses" (Barnard, 1978; Blake et al., 1974). Jacobson (1978) states that factors such as unclear nursing roles, doctor-nurse conflicts and individual competitiveness, infant death or relapse, and understaffing in intensive care nurseries usually result in a high level of stress among staff nurses. However, Shoffner (1988) found no correlation between nurses' stress and their ability to communicate positively with hospitalized children. These findings, based on data collected on a general pediatric unit, may or may not be relevant to the reciprocal interactions of nurses and neonates in an intensive or intermediate care nursery.

Factors affecting the neonate's contribution to reciprocity are numerous. Gestational age seems to be a highly significant variable. Several researchers demonstrated that the signals sent by premature infants have a lower readability than those sent by term infants (Alfasi, Schwartz, Brake, Fifer, Fleischman & Hofer, 1985; DiVitto & Goldberg, 1979; Field, 1980; Minde, Perrotta & Marton, 1985; Penticuff,

1980). Preterm infants are less likely to be active, to move in a smooth fashion toward the mother, to seem satisfied after a feeding, or to respond to mother's social cues or handling. They also exhibit more gaze aversion and gaze alterations (Alfasi et al., 1985). The behaviors commonly displayed by premature infants frequently cause the caretaker to respond with less than optimal reciprocity. Decreased proximal and ventral contact (DiVitto & Goldberg, 1979), poor pacing of feedings (Field, 1980), less smiling and less non-instrumental touch (Minde et al., 1985) were all consistently noted patterns in premature infant-caretaker interactions.

Separation of the preterm infant from the mother in the intensive care nursery plays a vital role in disruption of mother-infant reciprocity (DiVitto & Goldberg, 1979; Gottfried et al., 1981; Penticuff, 1980). Delayed maternal-infant attachment and the effects on nurses providing the majority of the motherlike care, both contribute to decrease in infant-caregiver reciprocity. Despite the relaxation in visitation policies in most intensive care nurseries, virtually all handling of infants is done by the staff of the intensive care nursery, and staff seldom provide the infant with social interaction (Barnard, 1978; Gottfried et al., 1981; Lawson, Daum & Turdewitq, 1977). Gottfried, Hodgman and Brown (1984) found that the average frequency of daily contacts with preterm infants ranged from 40 to 70. A minimal percentage of contacts were with family, and "virtually all contacts involved medical-nursing care with some form of handling" (Gottfried et al., 1984). Most contacts had a duration of two to five minutes and occurred about every 18 to 30 minutes. On the average, infants received

a total of 2.5 to 3.5 hours of contact each 24-hour period, with no variation in days and nights.

Gottfried and colleagues (1984) found that most infants in intensive care nurseries received very little social contact, and when they did receive social contact, it was in connection with routine care. Rarely ever did interaction occur just for social reasons. Activities that have been shown to have developmental significance such as "social touching, rocking, or talking . . . occurred in less than one third of the contacts [between premature infants and staff]" (Gottfried et al., 1984). While hospitalized, the infant is exposed to a continual barrage of intrusive and painful procedures which are rarely followed by soothing or nurturing interventions. "In more than half the instances when newborns cried during contacts, care givers did not attempt to soothe them" (Gottfried et al., 1984). Even when soothing was attempted, it was usually limited to speech. When speech did not soothe the infant, social touch was not added to the soothing intervention.

The social intervention that does occur is generally not contingent on infant cues, and a delay in time between onset of crying and adult intervention is likely to be greater than eight minutes (Karraker, 1986). Commonly infants are "handled and not talked to, or . . . are positioned so that they cannot see their caretaker" (Gottfried et al., 1984). Over half of the social interaction that Brown observed occurred when the infant's eyes were closed, and no attempt had been made to bring the infant to the quiet alert state. This results in an infant with little motivation to express his distress or needs (DiVitto & Goldberg, 1979).

In summary, the literature indicates that infants and caretakers do have the ability to communicate with each other, and that much of this communication occurs during feeding. As the infant-caretaker pair communicate, they are able to adapt their behaviors to achieve maximal mutual satisfaction for both. The satisfaction that results from the reciprocal interaction provides motivation for both partners to continue in a synchronous relationship. If the interaction between the infant and caretaker is to be reciprocal, cues from the infant concerning need for attention and nonattention must be attended to by the caretaker. The hospital environment and interactions that occur between nurse and premature infant during hospitalization may influence the ability of the infant to exhibit clear, readable behavioral cues (Blackburn, 1983).

When reciprocity is present in the interaction between infant and caretaker, there is enhancement of the infant's behavioral organization. This organization is "crucial in allowing the infant to respond appropriately to his or her environment and in providing his or her parents with clearer, more consistent cues (Blackburn & Barnard, 1984). However, when reciprocity is not present in the relationship, negative consequences may result. These may take the form of delayed development of infant trust, learned helplessness, failure to thrive syndrome, child neglect and/or abuse and development of violent or aggressive behavior.

Maternal as well as neonatal factors can affect the degree of reciprocity that is present in relationships. Factors that can have a negative affect on the mother's reciprocity include low socioeconomic levels, low levels of realistic expectations of infants, rigid attitudes about how infants should act and be treated, and stress. Being a first

time mother can also affect reciprocity. Factors that may affect the infant's ability to interact reciprocally include prematurity, delayed contact with mother, and extended hospitalization because of inability of mother to respond to infant behavioral signals.

Emphasis on psychosocial aspects of neonatal care is a relatively new area in nursing research. There are few studies that address the effects of staff on premature infants, or factors that contribute to the overall low social interaction seen in intensive care nurseries. Exploration of factors that affect the degree of reciprocity present in nurse-infant interaction could possibly lead to interventions that would decrease not only morbidity and mortality of infants during hospitalization, but also after discharge from the hospital.

CHAPTER 3

METHODOLOGY

This chapter consists of a description of the methodology of the study. The research design, sample, setting, instrument, data collection method, and data analysis method are described.

Research Design

This is a descriptive correlational study. The relevant variables include the number of infants the nurse is required to feed, the nurse's educational level, the nurse's years of experience feeding premature infants, and whether or not the nurse is a parent. The dependent variable in this study is the nurse's score on the modified Assessment of Infant-Maternal Empathy.

Subjects

Subjects included in this study were a convenience sample consisting of 12 Registered Nurses and 15 Licensed Practical Nurses working in the intermediate care nursery. Three nurses employed in the intermediate care nursery were not part of the sample. as they were not feeding infants during the time data were collected. Nurses working day shifts and nurses working night shifts were included in the sample.

Setting

The study was completed in a large, urban inpatient medical facility located in the Southeast which houses a 25-bed intensive care

nursery and an adjoining 18-bed intermediate care nursery. Patients in the intensive care nursery are critically ill preterm and term infants requiring specialized medical and nursing care for acute conditions such as respiratory distress syndrome, sepsis, hyperbilirubinemia and apnea. After patients in the intensive care nursery are stable and recovering, they are transferred to the intermediate care nursery. Patients cared for in the intermediate care nursery are usually premature, and require medical and nursing intervention related to problems such as labile thermoregulation, nutritional deficits, impaired oxygenation, lack of resistance to infection, and delayed psychosocial development. Nurses working in the intermediate care nursery are usually assigned two to four patients. For each patient assigned, the nurse must complete a daily bath, bed change, and measurement of weight. In addition, every three hours the nurse must complete a physical assessment including assessment of physiological parameters of heart and respiratory rates, temperature, and blood pressure. Diaper change and skin care and feeding are other routine activities that are administered on a three hour schedule. The average amount of time required to complete these activities is 30 minutes. Additional activities such as interaction with parents, cleaning and restocking of the area, and charting are also nursing responsibilities.

Instrument

The instrument chosen for use in the study was the Assessment of Infant-Maternal Empathy Scale (AI-ME) (Appendix 1) developed by G. Price (1975), and modified by L. Harrison (1982). The purpose of the scale is

to measure the degree of maternal-infant empathy expressed during feeding interactions during the first three to four months of life. The modified scale consists of 16 items. Seven of the items assess behaviors of the feeder, four items assess interaction between the feeder and the infant, and five items assess behaviors of the infant. Each of the 16 items has a potential score of one to five points with increasing scores indicating increasing empathy between caretaker and infant. Therefore, the range of possible scores is 16 to 80, with 80 being a perfect score. The entire feeding is observed, and one cumulative score is given for each feeding.

While use of the scale with nurses has not been validated, its use in assessing interaction between mothers and premature infants (gestational age 28-35 weeks) has been demonstrated by Harrison (1982). Many of the behaviors assessed by the AI-ME such as changes in state, self-comforting, establishment of eye contact and coordination of posture have been observed in preterm infants (Brazelton, 1984).

Procedure

Before data collection began, the researcher and a neonatal nurse practitioner reviewed the AI-ME scale, discussed its contents, and practiced its use in the newborn nursery until an interrater reliability of 95% was achieved. The specificity of the items on the AI-ME contributed to the relative ease of reliability achievement.

All nurses working in the intermediate care nursery were approached by the researcher and given a copy of the consent form with cover-letter (see Appendix 2 and 3). After the nurse had read the letter and consent

form, the researcher answered specific questions related to all aspects of the study and once the nurses agreed to participate in the study they were asked to sign a consent form and complete demographic forms (Appendix 4). All of the nurses approached agreed to participate in the study. Subjects retained cover-letters and the researcher retained the consent forms. Nurses with specific questions pertaining to what the researcher would be observing were told that the research was "looking at feeding behaviors." Questions pertaining to the purpose of the study and the behaviors that the researcher would be observing were referred to a debriefing session conducted after all data were collected. Subjects were informed that if, after debriefing, they desired to have their data removed from the study, their request would be honored.

Before data collection began, nurses were asked to complete short demographic questionnaires. These questionnaires were identified by number from a master list containing all subject names and numbers. The numbers were used to identify the data sheets. The master list and data sheets were stored in separate, locked file drawers.

After all subjects were obtained, data collection began. All data were collected by the researcher at either the 6:00 a.m., 9:00 a.m., 6:00 p.m. or 9:00 p.m. feedings. During data collection, the researcher sat approximately four feet from the subject to observe the nurse-infant interaction. The researcher did not talk with the nurse during the feeding. The AI-ME score was calculated by the researcher within 30 minutes of termination of the feeding.

Interrater reliability checks were made on the 1st, 10th, 21st, and 35th scored feeding sessions. A certified neonatal nurse practitioner

and the researcher separately scored the feedings. Percent reliability was determined by dividing the number of agreements by the number of possible agreements times 100 (Burns and Grove, 1987). Scores on individual items which were within one point of one another were considered agreements. The mean reliability for the feedings checked was 93%.

Each nurse was observed during two entire feeding sessions (about 20 minutes). One observation was at a time when the nurse was assigned three patients to feed, and the other was at a time when the nurse was assigned either two or four patients to feed. Nurses were assigned to either the two-patient or four-patient group by convenience. Fifteen nurses were included in the two-patient group. However, due to nursing assignments during the time allotted for data collection, only seven nurses were included in the four patient group. No manipulation of the nurse's assignments was done by the researcher. Data collected when the nurse was feeding either two or four infants were used to address the first subsidiary question. Data collected when the nurse was feeding three infants were used to address question one, two, three and four.

Data were collected only when the nurse was feeding an infant with an adjusted gestational age greater than 34 weeks who had been born prematurely (before 36 weeks gestation). Gestational age was determined by the Unified System for Gestational Age Evaluation and/or date of the mother's last menstrual period. Adjusted gestational age was calculated by adding gestational age in weeks to the number of weeks since the infant's birth.

After all data were collected, debriefing sessions were scheduled on all shifts to inform nurses of the purpose and content of the study. Questions were answered and an opportunity was given for nurses to withdraw their data from the study. No nurse chose to withdraw from the study.

Data Analysis

The advisability of using statistical analysis with this data is questionable due to the small sample size, and caution should be exercised in interpretation of the results.

Question 1: Data concerning question one were analyzed by comparing the AI-ME scores of nurses responsible for feeding two infants to the AI-ME scores of nurses responsible for feeding three infants, and by comparing the AI-ME scores of nurses responsible for feeding three infants to the AI-ME scores for nurses responsible for feeding four infants. A t -test for nonindependent samples was then applied to the score differences to test for significance. The number of infants to be fed was considered to be a significant factor in reciprocity if the difference was significant at the 0.05 level.

Question 2: Data concerning question two were analyzed by comparing the AI-ME scores of Registered Nurses to those of Licensed Practical Nurses. A t -test for independent samples was then applied to the score differences to test for significance. Education was considered to be a significant factor in reciprocity if the difference was significant at the 0.05 level.

Question 3: Data concerning question three were analyzed by comparing the AI-ME scores of nurses with differing amounts of experience. Nurses' AI-ME scores were grouped into three categories: less than one year, one to three years, and greater than three years. A simple one-way analysis of variance was then applied to the scores to test for significance. Experience was considered to be a significant factor in reciprocity if the difference was significant at the 0.05 level.

Question 4: Data concerning question four were analyzed by comparing the AI-ME scores of nurses who had differing numbers of children or no children. Nurses' AI-ME scores were grouped into three categories: nurses who had no children, nurses who had one child, and nurses who had two or more children. A simple analysis of variance was then applied to the scores to test for significance. Number of children was considered to be a factor in reciprocity if the difference was significant at the 0.05 level.

Data extremes were also analyzed by study of demographic factors common to the AI-ME scores in the upper 25% and lower 25%. Factors were considered to be significant if they appeared in 80% of either group.

CHAPTER 4

RESULTS

This chapter presents the results of the study. Demographic characteristics of the sample will be described, followed by an analysis and discussion of the data collected. The main research question and the subsidiary questions will be addressed using the data pertaining to that question.

Demographics of the Sample

The sociodemographic characteristics of the subjects are presented in Table 1. A total of 27 nurses were observed by the investigator as they fed premature infants in the intermediate care nursery. All were female and Caucasian. Their ages ranged from 20 to 53 years (mean age = 32.96, standard deviation = 8.9). Licensed Practical Nurses (n = 15) and Registered Nurses (n = 12) were observed, and their experience in feeding premature infants ranged from less than one year to greater than 10 years. Of the nurses observed, 10 had no children while seven had one child and 10 nurses had two or more children. The shift worked by nurses observed was fairly evenly divided (51% worked days, 48% worked nights) among the sample. The shifts are twelve hours in length, from 7:00 a.m. to 7:00 p.m. Only 11% of the sample was employed on a part-time basis, this percentage is representative of a typical intermediate care nursery work force.

Table 1

Percentage Distribution of Sociodemographic Variables for
Nurses Observed During Feeding

Variable	N	%
Nurse gender		
Male	0	0.00
Female	27	100.00
Age		
20-29	12	44.45
30-53	15	55.55
Educational level		
Registered nurse	12	44.45
Licensed practical nurse	15	55.55
Number of children		
0	10	37.04
1	7	25.92
2 or more	10	37.04
Years of experience		
Less than 1	6	22.22
1-3	7	25.92
> 3	14	51.86

Effect of Patient Assignment on Reciprocity

The first subsidiary question addressed whether the number of infants assigned to nurses would affect their perception of, and response to, cues exhibited by premature infants during bottle feeding.

To study this question 15 nurses were observed during two feedings, once when their assignment consisted of two infants, the other time when it consisted of three infants (Table 2). When assigned two infants, nurses' mean AI-ME scores were 55, with scores ranging from 43 to 64 with a standard deviation of 7.2. Those same nurses had a mean AI-ME score of 47, with scores ranging from 40 to 65 and a standard deviation of 14.6 when caring for a total of 3 infants.

To test the statistical significance of this difference (mean difference = 5.4), the t -test for nonindependent samples was applied. With 14 degrees of freedom, at the 0.01 level of significance, $t = 3.75$ which was greater than the score required (2.9) to show a significant difference in the degree of reciprocity present.

To further analyze question one, AI-ME scores obtained when nurses were caring for three infants were compared to scores obtained when those same nurses cared for four infants (Table 3). During the time that data were collected, the number of infants able to bottle feed was somewhat lower than usual. Because of this, few nurses were assigned to feed four infants and data on only seven nurses could be obtained. Mean scores for nurses caring for three infants was 51.5 with a range of 41-66 and standard deviation 9.0. Mean AI-ME score for nurses caring for

Table 2

AI-ME Scores when Feeding Two and Three Infants

Number of Nurses	Number of Infants Assigned	Score		
		Range	$\bar{X}$	SD
15	2	43-64	55	7.2
15	3	40-65	47	14.6

Table 3

AI-ME Scores when Feeding Three and Four Infants

Number of Nurses	Number of Infants Assigned	Score		
		Range	$\bar{X}$	SD
7	3	41-66	51.5	9.0
7	4	36-54	44.4	6.6

four infants was 44.4 with a range of 36 to 54 and standard deviation of 6.6.

The t -test for nonindependent samples was applied to this data to test for a significant difference (mean difference = 7.14). With 6 degrees of freedom, at the 0.01 level of significance, $t = 4.25$ which was greater than the score required (3.707) to show significance. Therefore, number of infants assigned to the nurses did negatively affect reciprocity during feeding.

Effect of Educational Level on Reciprocity

Subsidiary question two was addressed by comparing the mean AI-ME scores of Registered Nurses to those of Licensed Practical Nurses (Table 4). AI-ME scores obtained when the nurse was assigned three infants were used for this comparison. Mean AI-ME score for Registered Nurses ($n = 12$) was 51.6 with a range of 40 to 65 and standard deviation 8.2. Mean score for Licensed Practical Nurses ($n = 15$) was 48.8 with a range of 40 to 60 and standard deviation of 6.3. The t -test for independent samples was applied to the data with 25 degrees of freedom at the 0.05 level of significance. After calculation, $t = 1.014$ which was less than the required 1.708 to indicate statistical significance. Therefore, educational level did not affect reciprocity during feeding.

Table 4

AI-ME Scores by Education Level

Number of Nurses	Education Level	Score		
		Range	$\bar{X}$	SD
12	R.N.	40-65	51.6	8.2
15	L.P.N.	40-60	48.8	6.3

Effect of Feeding Experience on Reciprocity

Experience in feeding premature infants is the variable addressed in subsidiary question three (Table 5). The AI-ME scores obtained when nurses ($n = 27$) were caring for three infants were divided into three groups: those with less than one year of experience ($n = 6$, mean = 53.33, range = 47 to 60, standard deviation = 4.4); those with one to three years experience ($n = 7$, mean = 47.1, range = 41-57, standard deviation = 5.45); and those with greater than four years experience ($n = 14$, mean = 50.0, range = 40-65, standard deviation = 8.5). A simple analysis of variance was applied to this data to test for a significant difference in reciprocity exhibited by nurses with differing levels of experience. With degrees of freedom 2 and 24, $F = 1.213$ which was less than the 2.54 required for significance at the 0.05 level. Therefore, experience in feeding preterm infants did not affect reciprocity during feeding.

Effects of Parenting On Reciprocity

The last subsidiary question addressed the effect of the nurse's parental status on reciprocity between premature infants and nurses during feeding (Table 6). AI-ME scores obtained when nurses ($n = 27$) were assigned to care for three infants were used in analysis of this question. Nurses were categorized into three groups according to number of children: no children ($n = 10$,

Table 5

AI-ME Scores by Experience in Years

Number of Nurses	Years of Experience	Score		
		Range	$\bar{X}$	SD
6	< 1	47-60	53.3	4.40
7	1-3	41-57	47.1	5.45
14	> 3	40-65	50.0	8.50

Table 6

AI-ME Scores by Number of Children

Number of Nurses	Number of Children	Score		
		Range	$\bar{X}$	SD
10	0	41-57	49.2	5.7
7	1	45-65	54.0	7.02
10	> 1	40-66	42.1	13.73

range 41-57, mean = 49.2, standard deviation 5.7); one child (n = 7, range = 45-65, mean = 54, standard deviation 7.02); and more than one child (n = 10, range 40-66, mean = 42.1, standard deviation = 13.73).

A simple analysis of variance was used to test for statistical significance in the differences in the three groups. With degrees of freedom 2 and 24, $F = 1.54$ which was less than the 2.54 required at the 0.05 level to indicate significance. Therefore, parental status did not affect reciprocity during bottle feeding.

Examination of Extremes

An examination of extreme scores on the AI-ME was completed by listing the demographic factors of nurses scoring in the upper 25% and lower 25% and analyzing the factors for emerging patterns. The upper group consisted of seven scores ranging from 55-66, and the lower group consisted of seven scores ranging from 40-44. Demographic factors considered included shift when the observation was completed, full or part-time status, parenting experience, feeding experience, education level and age. None of the factors considered appeared consistently (Table 7) with the exception of shift, i.e., shift during which observation occurred. All but one of the low scores was obtained while observing a nurse feeding an infant on the day shift.

Incidental Observations

This section will include incidental observations made by the researcher during the data collection. While the original research

Table 7

Sociodemographic Variables for Nurses with Extreme Scores on AI-ME
(Lowest 25% and Highest 25%)

Variable	Low Score	High Score
Shift worked		
Days	6	3
Nights	1	4
Work status		
Full-time	5	6
Part-time	2	1
Parent		
Yes	4	5
No	3	2
Experience		
< 1 year	0	2
1-3 years	4	1
> 3 years	3	4

proposal did not include observing for these data, their appearance may be of some significance.

During most of the data collection, the intermediate care nursery environment was replete with light and noise; both overhead lights and a radio played around the clock. Blankets were placed over cribs to shield infants from light during sleep, but no attempt was made to shield infants from overhead lights during feeding. No provisions were made to decrease auditory stimuli during sleep or feeding.

Nurse contact with infants during feeding was fairly consistent. Only one feeding was observed where the infant was not removed from the incubator. Most infants were held 10-12 inches from the nurse. Few observations were made when the infant was fed while being held in the en face position; infants were usually positioned so that their faces were directed out to the room, away from the nurse. Positioning of infants in this manner made it very difficult for the premature infants, who have poor head control, to establish eye contact with the caretaker.

In many cases, the nipple was pushed into the infants mouth and jiggled to arouse the infant from sleep. Few nurses attempted to move the infant from a sleep state to quiet-alert state before beginning the feeding.

A few nurses were noted to constantly turn the nipple in the infant's mouth during the feeding. This appeared to interfere with the infant's ability to suck on the nipple. However, the constant movement of the bottle caused formula to leak out of the nipple so that it could be swallowed by the infant. Contingency verbalization, responding verbally to infant verbalizations, was fairly uncommon. In those nurses

who did provide a verbal response to infant verbalizations, there was a notable increase in further infant verbalization. However, when the nurse did not respond to sounds made by the infant, rarely did the infant continue verbalization.

Primary nursing, consistently caring and planning for one certain patient, seemed to have a positive effect on nurse-infant interaction. Nurses caring for their primary patients were noted to exhibit increased contingency verbalizations, gentle touch, and sensitivity to behavioral cues.

One other frequent observation made during the data collection involved a negative attitude toward feeding expressed by some nurses to the investigator. Statements such as "Feeding is not one of my best skills" and "Feeding is not my favorite part of this job" were common among nurses with low scores, but were not noted when observing nurses who scored at or above the mean (nurses did not know their score at the time these comments were made). Implications of these observations will be discussed in Chapter 5.

Summary

In answering the research question (Are there factors that inhibit or enhance nurses' abilities to perceive and act on behavioral cues exhibited by premature infants in intermediate care nurseries?), the statistical tests of significance used to analyze the data indicated that of the variables included in this study (number of infants being cared for, educational level, experience in feeding preterm infants, and parenting), the only one that affects scores on the AI-ME scale during

feeding is the number of infants assigned to the nurse. Implications of this finding will be explored in the final chapter.

Limitations

Limitations of this study include lack of tested reliability and validity of the AI-ME scoring tool when used with nurses instead of mothers; lack of control of nurses feeding their primary patients; small sample group; because of time limitations, not being able to compare the scores of the same nurses feeding two, three, and four infants; and the use of a convenience sample instead of a random sample. Because of these limitations, findings of this study should be generalized to other settings with caution.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Chapter 5 consists of a discussion of the research findings in relation to the subsidiary questions. This discussion will be followed by a description of the possible clinical and research implications of these findings.

Effect of Patient Assignment on Reciprocity

The findings regarding question one, whether or not the number of patients assigned to a nurse affected the degree of reciprocity present during the feeding, indicate that in the sample studied, the number of infants being cared for did significantly affect the degree of interaction between premature infant and nurse. Nurses consistently displayed a higher degree of reciprocity during feeding when their assignment was two infants instead of three, or three instead of four. Therefore, as the nurse's work load increased, the amount of nurse/infant reciprocity decreased. Possible reasons for this finding could include the amount of time each nurse had available for each feeding, a possible increase in stress level and fatigue with increasing work load, and a possible increase in task-oriented attitudes with an increase in the number of tasks one nurse is expected to complete.

If reciprocity is to occur, the caretaker must attend to the behavioral cues displayed by the infant (Sander, 1962; Brazelton et al., 1974). If the nurse is preoccupied with thoughts of other tasks that must be completed or other infants that must be cared for, there may be

a decrease in attention to the infant being fed with resultant decreased reciprocity.

The stress that accompanies an increased work load may have caused the negative effect on reciprocity seen in this study. Stress resulting from an increased work load may result in the nurse having needs that are not met. Crockenberg (1981) points to unfulfilled needs as a detrimental factor in ability to meet the needs of others.

Fatigue, a factor linked to decreased mother-infant reciprocity (Barnard, 1978), may also be related to these findings. The physical energy expenditure required to care for four premature infants for a 12-hour shift could be expected to result in considerable fatigue, and possibly a decrease in the level of nurse-infant interaction that occurs during feeding.

Effect of Education Level on Reciprocity

In a study done by Kaye (1982), mothers' education level was found to have a direct relationship on the amount of mother-infant reciprocity displayed during feeding. However, in the present study, the research findings relating to subsidiary question two, (i.e. does education level affect the degree of nurse-infant reciprocity?), showed no significant difference in the degree of interaction displayed by Registered Nurses and Licensed Practical Nurses. One possible explanation for this finding could be a similar lack of emphasis on the importance of interaction with premature infants in nursing education and orientation programs at all educational levels.

Another possible factor related to this finding is the apprenticeship method used in orientation to the intermediate care nursery where this study was conducted. Registered Nurses working in the intermediate care nursery act as preceptors to newly hired Registered Nurses and Licensed Practical Nurses. In the role of preceptor, the Registered Nurse serves as an instructor in feeding technique, and possibly newly hired nurses may model their feeding behaviors after those of the preceptor. The result of this experience would be a similar feeding style in both Registered Nurses and Licensed Practical Nurses.

Effect of Experience on Reciprocity

In using the findings of this study to address subsidiary question three, i.e. does experience feeding premature infants affect reciprocity?, no significant differences were found among nurses who had differing amounts of experience. These findings differed from those in a study of mothers (Thoman, 1975) where experience with other children resulted in increased levels of reciprocity. The lack of a significant difference in degree of reciprocity in nurses with differing amounts of experience could indicate that continued exposure to premature infants does not increase the nurse's desire or ability to interact with the infant to whom care is being provided. The group of nurses who had one to three years experience had the lowest range of scores. This could perhaps indicate nurse burn-out.

Effects of Parenting On Reciprocity

In this sample, parenting experience did not appear to significantly affect the degree of reciprocity between nurses and premature infants during feeding. When the findings of Thoman (1975) are considered, these data again point to the possibility that the factors affecting mother-infant interaction may not all be applicable to nurse-infant interaction. It may well be that what we are seeing here is a tired nurse only interested in the task at hand, i.e. feeding the infant with little or no interest in social interaction in contrast to a parent who is using the feeding experience as a time to provide not only nutritional sustenance, but also infant stimulation, during a time of mutual parent-infant need fulfillment.

Discussion of Extreme Scores

In examining the demographic characteristics of those nurses whose scores were in the highest and lowest 25% of all AI-ME scores, the only factor that emerged in over 80% of the bottom 25% of AI-ME scores was the shift worked by the nurse being observed. Nurses working day shift appeared to exhibit a lower degree of reciprocity than did those working night shift. This finding would appear to be consistent with findings indicating decreased reciprocity with increased work-load. A greater percentage of procedures, visits from physicians and parents, and other time consuming and stressful activities occur on day shift.

Practice Implications

Roy points out that the role of the nurse is to assist the patient in adapting to stressors in the environment. The infant who is hospitalized in an intermediate care nursery, because of the many stressors in the environment, has a definite need for nursing intervention if optimal development of trust is to develop. While the limitations of this study do not permit indiscriminate application of the findings, there are three areas of possible clinical utilization. Those areas will be discussed in this portion of the paper.

The findings of this study related to work-load of the nurse may have clinical relevance. Since increasing the number of patients assigned to a nurse does appear, for some reason, to have a negative affect on interaction and so possibly development of trust, this study may indicate a need to decrease the patient load of nurses who are bottle feeding infants. However, due to staffing costs and the shortage of nurses available for employment, this may not presently be possible. In that case, possibly staggering the feeding times so that not all infants have to be fed in the same one-hour time span may be a realistic option for allowing more time for each feeding. Implementation of this change would require the cooperation of both the management and the staff of the intermediate care nursery.

Another area of possible clinical significance in this study arises from the data that addresses education level of the feeder. Since the data indicate that Licensed Practical Nurses have as high a level of interaction with infants during feeding as do Registered Nurses, it may

be that staffing costs could be decreased by delegating most of the bottle feeding to the Licensed Practical Nurses. Registered Nurses could be freed-up to implement advanced nursing interventions commensurate with higher levels of education.

Data from this study provides possible support for the use of primary nursing in the intermediate care nursery. Nurses caring for their primary patients seem to establish a high degree of reciprocity which could, over time, improve the infant's outcome.

The final area of clinical significance that will be discussed is that of overall scores observed during feeding. Harrison (1982), while employing the AI-ME found the mean score of mothers feeding premature infants in this same hospital to be 61, while the mean score of nurses when assigned three infants (a typical assignment) was 50.3. This difference of almost 10 points may indicate a need for inservice instruction for staff concerning how to recognize, interpret, and respond to behavioral cues during feeding, how to bring the infant to a quiet-alert state, the possible positive effects of increasing reciprocity, and the negative consequences of decreased reciprocity. However, differences in observer scoring might also account for the difference in scores emanating from this study as compared to the study completed by Harrison.

In either case, well planned inservices that provide nurses with information concerning how to recognize and respond to behavioral cues could possibly improve nurses' ability to assist premature infants as they adapt to the extrauterine environment.

Research Implications

The findings from this study indicate a need for further nursing research in several areas. There is a need for replication of this study in a different setting with a larger sample in order to validate the findings of this study and increase generalizability of the results.

Since not all of the factors known to affect reciprocity between mothers and infants proved to relate to nurses and infants, there is a need for validation, with nurses, of tools currently available for assessing reciprocity during feeding. There also appears to be a need for development of new tools, more suited to measurement of interaction between nurses and their patients.

The effectiveness of measures directed at improving nurse-infant interaction is also an area in need of further research. It may be that a lack of reciprocity between nurses and infants is at least partially related to a knowledge deficit concerning the long-term importance of reciprocity in the normal growth and development of the premature infant. If nurses can become aware of the importance of interaction with infants during feeding, reciprocity might take on a higher priority.

Another possible researchable area related to investigation of factors affecting reciprocity would be in relation to nurse feeding attitudes. Possible questions might include whether or not the feeding of infants is enjoyed by the nurse, how important feeding is considered to be by the nurse in comparison to other aspects of care, and how the nurse learned to feed premature infants.

Longitudinal studies of outcome in infants who have been exposed to differing levels of reciprocity during bottle feeding might also yield valuable information. This research could provide support for the concept of a possible relationship between reciprocity and trust.

Finally, findings from a study of how interaction between nurses and their primary patients as compared to interaction between nurses and patients to whom they are not given primary responsibility is needed. A study of this aspect of interaction might yield valuable information concerning optimal, long-term assignment and management of premature infants in intermediate care nurseries.

Roy reminds us that nurses are responsible for maximizing patient's role function. In this case, the role of nursing in relation to ICN infants is one parents to children. As nurses enhance the development of infant trust during hospitalization by assisting their adaptation to stressors in the environment, nursing may gain recognition for having a significant impact on overall premature infant outcomes.

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APPENDIX

APPENDIX 1

MODIFIED ASSESSMENT OF INFANT-MATERNAL EMPATHY SCALE

(Modified by Harrison, 1982 from original scale developed by Price, 1981)

Each of the following 16 items is rated from a score of one reflecting low empathy to a score of five reflecting high empathy. The ratings are made following observation of the mother feeding her infant. Items A through G reflect maternal behaviors, items H through K reflect interactive behaviors, and items L through P reflect infant behaviors.

A. Holding style

1. Infant (I) not held while engaged in feeding or caretaking.
2. Varying periods of rigid holding, so that I's head and/or body restrained from spontaneous self-directed movement.
3. Varying periods of awkward holding, so that I's body is periodically supported and unsupported, or I may lose support temporarily. Score here even if only one instance of loss of head support.
4. Continuous support that allows self-directed movement but mother (M) does not shift in response to I body shift. M holds infant in same position throughout feeding.
5. Rhythmic holding so that close body contact alternates with slight distancing to avoid restraint allowing for each partner to respond to shifts in the body position of the other. Score here if you perceive that M is very aware of I's need for control over position.

B. Caregiving Style

1. Handling rough, with sudden manipulations to I's body and jerky positioning. I may respond with distress cry.
2. Inconsistent, unpredictable, or awkward handling. M does not attend to I's cues, if any, so that I is passive recipient of care. Examples of I's cues to which M might attend are frets or facial grimaces indicating I's discomfort, restless body movements, and rooting when hungry.
3. Alternation between awkward, inconsistent handling and smooth-paced handling. I is sometimes allowed to become aware of or control what is happening to him. M sometimes attends to I's cues.
4. Gentle, smooth, predictable and consistent handling. M always attends to I's cues so that I can control or become aware of what is happening to him.

5. Gentle, smooth, predictable handling interspersed with maternal social gestures.
- C. Stimulation to Infant's Body--Score pattern which predominates interaction. Do not include stimulation to burp or feed.
 1. M stimulates with harsh patting (jarring to I's body).
 2. M stimulates I by either of the following: shifting I's position, adjusting posture, firm stroking, jiggling (without any gentle touching). Score here also if no stimulation.
 3. M stimulates I with gentle touching, alternating with firm stroking or patting. May also stimulate by shifting I's position or tickling I.
 4. M stimulates I with light, gentle stroking pattern. May also use gentle rocking or shifting of I's position.
 5. M stimulates with gentle touching (May be accompanied by gentle rocking or position change) interspersed with and accompanied by social gestures. Social gestures refer to verbalization, en face, and smiling behaviors directed towards I by M.

*Note: Gentle stroking is barely felt by infant. Firm stroking or rubbing is clearly felt by infant, but is usually not aversive. Harsh stroking or patting is jarring to I's body and is generally considered aversive to infant.

- D. Burping Style--Score pattern which predominates burping episodes.
 1. Harsh patting, jarring to I's body, predominates burping episodes.
 2. Predominantly firm rubbing, patting, or stroking.
 3. Periods of gentle stroking alternating with firm to harsh patting/stroking.
 4. Gentle stroking or patting only, or position change only.
 5. M does not try to burp infant by rubbing, patting, or position change. I may burp spontaneously.
- E. Predominant Maternal Mood/Affect
 1. Flat, angry, or annoyed expression. M spends little time looking at I. M may read or engage in activities which divert attention from I for most of feeding episode.
 2. Sad expression, appears preoccupied or distant, spends little time looking at I.
 3. Tense, anxious expression or easily distractable. M may appear worried or annoyed alternating with occasional expressions of pleasure. May look at I for short periods, but spends most of time focusing attention on others in room.
 4. Bland expression, at times disinterested or distracted. Occasionally smiles at infant and gazes at infant for at least some 5-10 second intervals.
 5. Shifting expression of pleasure or tenderness; shifts expression in response to I's behavior, prolonged visual regard, smiles at I. M's attention may be briefly distracted from I by other people in room, but M's overall focus is on baby.

- F. Maternal Verbalization (tone)--Score is based on overall, predominant pattern.
1. Speech to I strongly critical in tone. Voice may be loud and abrupt.
 2. Speech to I is reproofing in tone.
 3. Speech to I is neutral in tone, or no speech.
 4. Speech to I is affectionate in tone.
 5. Speech to I is loving and animated in tone.
- G. Maternal Verbalization (content)--Predominant pattern
1. Speech to I is strongly critical in content (e.g. M uses derogatory words or curses I).
 2. Speech to I is disapproving in content, expressing dissatisfaction with something I has done or the way I appears or acts.
 3. Speech to I is neutral in content or no speech. Neutral speech does not specifically express affection or approval towards infant.
 4. Speech to I is affectionate in content. Speech expresses approval of I in some way, e.g. "you're a big boy."
 5. Speech to I is warmly affectionate and loving in content. M uses terms of endearment or clearly expresses love towards I using phrases such as "I love you, " "You are such a beautiful baby," etc. Observer should perceive a very positive reaction to loving speech.
- H. Modulation of Distress Episodes
1. Prolonged delay, allows I to reach state of prolonged distress before intervention.
 2. Long delay, allows I to reach full blown crying state before intervening.
 3. Delay allows I to reach distress state, crying for brief period before intervening.
 4. Delays somewhat, allows fretting and/or fussing before intervening.
 5. M prevents distress episode by noticing beginning signs or subtle cues (e.g., pre-cry grimaces) and intervenes before I reacts with a clear distress episode, or I shows no distress
- I. Synchrony of Affect--Refers to extent to which M and I enter into at least one pleasurable exchange or interaction during observation period. I could express pleasure by gazing at M, smiling, vocalizing, or brightening his/her eyes. Other indications of I pleasure include body movements such as arm or leg movement which appear rhythmic and responsive to maternal behavior in some way. M could express pleasure by smiling, verbalizing, moving head or body in response to I and gazing at I with relaxed facial expression.
1. No pleasurable exchange
 2. I enters state of excitement and/or pleasure and M does not respond.

3. I enters state of excitement and/or pleasure and M abruptly interferes resulting in shift in I mood (e.g., shutdown, distress).
 4. I enters state of excitement and/or pleasure. M delays, then responds to I appropriately with verbalization, gestures, and sharing excitement.
 5. M and I enter into pleasurable exchange almost simultaneously.
*Note: If more than one episode of pleasurable exchange occurs, score the predominant form of the exchanges which occur.
- J. Regulation of Feeding Initiation--Score the method which M generally uses to stimulate I to feed during each feeding episode.
1. M inserts nipple with no preparatory signal to I; I may or may not take nipple easily, but did not participate in initiation of nipple insertion.
 2. M provides preparatory signal which fails to elicit a response from I. I does not respond and tries to ignore or actively avoid nipple, but M holds nipple against mouth so I cannot reject it.
 3. M provides preparatory signal which fails to elicit a response from I, but I is relaxed and takes nipple easily.
 4. I takes nipple on own initiative; M positions it so that I can root and take nipple at own pace.
 5. I takes nipple on own initiative following emissions of some signal, gesture, or vocalization which M interprets as indicating wish for nipple (full blown cry is not considered a signal here).
- K. Regulation of Feeding: Termination
1. M always removes nipple forcibly, e.g., may push chin away, insert finger in I's mouth, or pull nipple from I's mouth, while I actively sucking or holding on, so that there is a loud break in suction.
 2. M always removes nipple while I still exerting some pressure on it and has not let go of own accord, although I is not actively sucking: sound or resistance indicating slight break in suction may be present.
 3. M at times removes nipple while I actively sucking or exerting pressure, at other times I may disengage on own accord.
 4. I disengages from nipple on own accord, e.g., may open mouth and turn to pull away. M never removes nipple before I disengages.
 5. I may interrupt feed for brief periods, releasing hold on nipple, and resuming feed at will.
- L. Infant Posture
1. Inactive, flaccid throughout observation period.
 2. Restless, somewhat rigid, throughout most of observation period.
 3. Generally relaxed, but occasionally appears tense. Score here even if only one episode of tension noted in infant posture. Tension in I's posture is generally reflected by clinging motions in arms and legs, as if to indicate that I is feeling inadequate support. Tension may also be manifest by startles and tightening of muscles of neck, arms, and legs.

4. Relaxed, somewhat molded posture throughout feeding.
 5. Shifting posture in active attempt to interact, alternating with relaxed, molded posture. Shifts in posture in active attempts to interact would be manifest by I turning head, or moving arms and legs in response to M.
- M. Predominant Infant State
1. I predominantly drowsy throughout feed, eyes closed or half-closed: I never seems to reach alert state.
 2. Predominantly drowsy and I's eyes may be open, but they seem to stare into space rather than focus on an object: except for brief periods of orienting (less than 3 seconds). I may be actively avoiding interaction.
 3. I appears alert, focuses on animate and inanimate objects at times: at other times during feeding drowns or appears in sleep-like state.
 4. Alert throughout feed with some visual regard of animate or inanimate objects. May fall asleep at end of feed, but should be alert throughout most of feed.,
 5. Active, alert, scans in search of animate or inanimate objects. May fall asleep at end of feed as long as I has been alert throughout most of feed.
- N. Infant vocalizations
1. No infant vocalization.
 2. Brief I vocalization, only 1 syllable or sound at a time.
 3. Short burst of I vocalization, combining several sounds or syllables together.
 4. Vocalization contingent to M. I is clearly vocalizing in response to M.
 5. Contingent vocalization accompanied by pleasurable affect (e.g., smiling, eyes brightening). Score if occurs at any time.
- O. Infant Distress--Score if occurs at all during interaction.
1. Full blown screaming. I is extremely upset and distressed.
 2. Crying accompanied by arching and turning away.
 3. Crying which is not accompanied by arching and turning away.
 4. Mild intermittent fretting.
 5. No fussing, crying, or other distress signs.
- P. Infant Visual Behavior--Score the most empathetic behavior you observe.
1. I does not present eyes within M's line of vision (gaze avoidance).
 2. I may present eyes within M's line of vision, but I withdraws it quickly or shifts position so that he/she cannot hold en face (gaze aversion).
 3. I seeks visual exchanges with M when her face is in line of vision for brief periods (less than 5 seconds).
 4. I seeks visual exchanges with M as above for long periods (10 second intervals).

5. I actively seeks M for en face behavior through searching head postures and/or social gestures (e.g. smiling and vocalization).

APPENDIX 2

I, _____ agree to participate in this study, and I have received a copy of this consent form. I have been assured that my identity will not be revealed while the study is being conducted or when the study is published.

APPENDIX 3

March 1, 1988

Dear Intermediate Care Nurses,

You are invited to participate in a research study concerned with the feeding of premature infants. Your participation will involve being observed during two feeding sessions.

There are no risks related to your participation. Data collected during the observation will be confidential, and all data will be stored in a locked filing cabinet in the researcher's office. All data will be summarized for any presentations or publications that arise for the research.

Participation in this project is voluntary and your consent for participation may be withdrawn at any time prior to completion of the data analysis by contacting the researcher listed below. There is no penalty for withdrawal from the project.

If you have questions about your participation in the study, please feel free to contact me. Thank you for your consideration of this request.

Sincerely,

Angie F. Wood
544-9315

APPENDIX 4

DEMOGRAPHIC FORM

What is your age?_____

How many years of formal education do you have?_____

How many children do you have?_____

How many years have you worked in an area
where you fed premature infants?_____

VITA

Angela F. Wood was born in Knoxville, Tennessee, and was educated in local public schools in Maryville, Tennessee. She was graduated from The University of Tennessee in 1979 with a Bachelor's degree in Nursing.

She held positions of staff nurse and assistant head nurse at the University of Tennessee Medical Center at Knoxville, intensive care nursery, and is now Assistant Coordinator for Neonatal Education in the East Tennessee Region.

Angela received Certification from the American Nurses Association in 1984. She is a member of National Association of Neonatal Nurses, National Perinatal Association, and Sigma Theta Tau. Awards include Who's Who in American Nursing, 1988-1989 and a Professional Nurse Traineeship Award.