MATERNAL RESPONSES TO NEONATAL CRYING

by

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Abstract

Maternal Responses to Neonatal Crying

This descriptive study investigated mothers' perceptions of and responses to neonatal crying behavior for the purpose of providing more relevant and effective nursing care to mothers with young infants. With the guidance of an interactive framework, quantitative and qualitative data were collected at three different time periods in the first postpartum month from 19 primiparous women who delivered healthy fullterm infants.

Findings indicated that on the third postpartum day neonatal crying behavior was not an anticipated caregiving concern for any of the mothers. By the fourth postpartum week, however, 9 of the 19 mothers rated crying as a concern and had recorded significantly more crying behavior than the 10 mothers for whom crying was of little or no concern.

Data revealed that the infants whose crying was of less concern were more content, consistently consolable, gave clearer cues regarding distress and comfort and had more easily definable and more compatible behavioral patterns than the infants whose crying was a concern.

Mothers with little or no concern about their infant's crying differed from those with concerns in that they expected more crying behavior, perceived crying more positively, and were more prompt in their response to signs of distress. There were also statistically significant differences in that mothers with little or no concerns about crying were less concerned about spoiling their infant and experienced neonatal
crying as a less negative influence on their feelings of maternal confidence.

As a total group, the mothers' interpretations and responses to neonatal crying behavior were empiric and reflective of little academic or experiential preparation for understanding and managing neonatal crying. Mothers' expectations and health professionals' responses support a societal belief that mothering is intuitive, instinctive and to be learned "on the job."

Findings indicate that the perinatal nurse needs to anticipate neonatal crying as a caregiving concern of mothers with young infants and must know and utilize current theory associated with infant crying and maternal-infant interaction. The nurse must participate in the generation and subsequent promotion of innovative nursing interventions to decrease mothers' concerns about and increase their management of neonatal crying behavior.

Margaret A. Campbell, Chairperson
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>List of Tables</td>
<td>vi</td>
</tr>
<tr>
<td>List of Figures</td>
<td>viii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>ix</td>
</tr>
<tr>
<td><strong>CHAPTER ONE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>Background to the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>4</td>
</tr>
<tr>
<td>Purpose</td>
<td>4</td>
</tr>
<tr>
<td>Specific Objectives</td>
<td>4</td>
</tr>
<tr>
<td>Definitions</td>
<td>5</td>
</tr>
<tr>
<td>Assumptions</td>
<td>7</td>
</tr>
<tr>
<td>Limitations</td>
<td>7</td>
</tr>
<tr>
<td>Summary</td>
<td>7</td>
</tr>
<tr>
<td><strong>CHAPTER TWO</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Literature Review</strong></td>
<td></td>
</tr>
<tr>
<td>Neonatal Crying in Perspective</td>
<td>8</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>11</td>
</tr>
<tr>
<td>Reasons for Neonatal Crying</td>
<td>17</td>
</tr>
<tr>
<td>Responses to Neonatal Crying</td>
<td>22</td>
</tr>
<tr>
<td>Neonatal Factors Associated With Maternal Responses to Neonatal Crying</td>
<td>29</td>
</tr>
<tr>
<td>Maternal Factors Associated with Maternal Responses to Neonatal Crying</td>
<td>39</td>
</tr>
<tr>
<td>Environmental Factors Associated with Maternal Responses to Neonatal Crying</td>
<td>49</td>
</tr>
<tr>
<td>The Effect of Neonatal Crying on Maternal Confidence</td>
<td>55</td>
</tr>
<tr>
<td>Summary</td>
<td>61</td>
</tr>
<tr>
<td><strong>CHAPTER THREE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td></td>
</tr>
<tr>
<td>Subjects and Setting</td>
<td>63</td>
</tr>
<tr>
<td>Criteria for Selection</td>
<td>63</td>
</tr>
<tr>
<td>Selection of Participants</td>
<td>64</td>
</tr>
<tr>
<td>Data Collection</td>
<td>65</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>73</td>
</tr>
<tr>
<td>Ethical Considerations and Protection of Human Rights</td>
<td>74</td>
</tr>
<tr>
<td>Summary</td>
<td>75</td>
</tr>
</tbody>
</table>
**Table of Contents, Cont'd**

**CHAPTER FOUR**
Analysis and Discussion of Findings

<table>
<thead>
<tr>
<th>Study Participants</th>
<th>77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal Crying as a Caretaking Concern</td>
<td>78</td>
</tr>
<tr>
<td>Reasons for Neonatal Crying</td>
<td>81</td>
</tr>
<tr>
<td>Responses to Neonatal Crying</td>
<td>88</td>
</tr>
<tr>
<td>Factors Influencing Mothers' Responses to Neonatal Crying</td>
<td>103</td>
</tr>
<tr>
<td>The Effect of Neonatal Crying on Maternal Confidence</td>
<td>131</td>
</tr>
<tr>
<td>Summary</td>
<td>138</td>
</tr>
</tbody>
</table>

**CHAPTER FIVE**
Summary, Conclusions, and Implications for Nursing

| Summary | 140 |
| Conclusions | 144 |
| Implications for Nursing | 145 |

List of References: 152

List of Appendices:

<p>| A | Background Data Sheet | 171 |
| B | Interview Schedule #1 | 174 |
| C | Interview Schedule #2 | 180 |
| D | Mother-Infant Study Questionnaire | 182 |
| E | The Neonatal Perception Inventory | 196 |
| F | Nursing Child Assessment Sleep/Activity Record | 199 |
| G | Mother-Infant Study: Maternal Feelings Record | 200 |
| H | Mother-Infant Study Information Letter | 201 |
| I | Consent Form | 202 |
| J | Letter to Physician | 203 |
| K | Correspondence Associated with Permission to Use The Neonatal Perception Inventory | 204 |
| L | Correspondence Associated with Permission to Use The Nursing Child Assessment Sleep/Activity Record | 206 |
| M | Minutes of Crying in 24 Hours and Ratings of Neonatal Crying As A Concern | 208 |</p>
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Composition of Sample According to Age, Education, Ethnic Background, and Years in Canada</td>
<td>79</td>
</tr>
<tr>
<td>2</td>
<td>Mean Ratings of Neonatal Crying As A Concern, and Mean Minutes and Range of Actual Crying in 24 Hours</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>Reasons for Neonatal Crying</td>
<td>82</td>
</tr>
<tr>
<td>4</td>
<td>Reasons for Neonatal Crying Associated with Pain and Discomfort</td>
<td>83</td>
</tr>
<tr>
<td>5</td>
<td>Soothing Responses to Neonatal Crying</td>
<td>89</td>
</tr>
<tr>
<td>6</td>
<td>Soothing Responses Involving Movement or Position Change</td>
<td>89</td>
</tr>
<tr>
<td>7</td>
<td>Soothing Responses Involving the Promotion of Sucking</td>
<td>91</td>
</tr>
<tr>
<td>8</td>
<td>Soothing Responses Involving Motor Restraint</td>
<td>92</td>
</tr>
<tr>
<td>9</td>
<td>Mothers' Emotional Responses to Neonatal Crying</td>
<td>96</td>
</tr>
<tr>
<td>10</td>
<td>Mothers' Mean Ratings of Prenatal Preparation Experiences for Neonatal Care</td>
<td>111</td>
</tr>
<tr>
<td>11</td>
<td>Mothers' Postpartum Perceptions of Their Infant's Behavior as Compared With That of An Average Infant</td>
<td>114</td>
</tr>
<tr>
<td>12</td>
<td>Mothers' Postpartum Perceptions of Their Infant's Crying as Compared With The Crying of An Average Infant</td>
<td>115</td>
</tr>
<tr>
<td>13</td>
<td>Means and Ranges of Anticipated and Actual Amounts of Crying in 24 Hours and Ratings of Infant Crying as a Concern</td>
<td>116</td>
</tr>
<tr>
<td>14</td>
<td>Mothers' Best Sources of Information</td>
<td>129</td>
</tr>
<tr>
<td>15</td>
<td>Mean Ratings of Crying as a Concern and of The Degree to Which Crying Made Mothers Feel Less Confident</td>
<td>132</td>
</tr>
</tbody>
</table>
## List of Tables, Cont'd

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Factors That Increased the Negative Effects of Crying on Mothers' Feelings of Confidence</td>
<td>135</td>
</tr>
<tr>
<td>17</td>
<td>Factors That Decreased the Negative Effects of Crying on Mothers' Feelings of Confidence</td>
<td>136</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>The Barnard Model</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>The Child Health Assessment Interaction Model</td>
<td>15</td>
</tr>
</tbody>
</table>
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CHAPTER ONE

Introduction

Background to the Problem

Neonatal crying is a primary concern of mothers with new babies (Adams, 1963; Brown, 1967; Fillmore & Taylor, 1976; Harris, 1979). In the first few weeks after birth, the mother's interactions with her baby centre primarily around the tasks of feeding, comforting, and soothing (Korner, 1974; Moss & Robson, 1968). Optimal caretaking requires immediate and effective responses to signs of distress (Clarke-Stewart, 1973; Dunn, 1977; Korner, 1974). A mother's effectiveness in consoling the baby can influence her feelings of confidence in the maternal role (Adams, 1963; Frodi, Lamb, Leavitt, & Donovan, 1978; Korner, 1974). Mothers with babies who cry a great deal and whose patterns of behavior are unpredictable have difficulties with their caregiving (Kitzinger, 1978; Smart & Smart, 1978). Should crying become excessive and the infant unconsolable, the mother can reach her threshold of tolerance and a breakdown of caregiving begins (Barnard, 1978; Bell, 1974; Holaday, 1981). The sensitivity of the mother to her neonate's signal of distress, her ability to console him, and the nature of her interaction with him have demonstrated effects on his adaptation to extrauterine life and on his growth and development (Barnard, 1978; Bell & Ainsworth, 1972; Brazelton, Koslowski & Main, 1974; Moss & Robson, 1968; Tronick, Ricks & Cohn, 1982; Yarrow, Rubenstein, Pederson, & Jankowski, 1972). Like the
mother, the infant makes a unique contribution to the interaction he initiates with his cry. The clarity of his cues and his responsiveness to his mother's caregiving provide her with the necessary ingredients to promote her nurturing efforts (Barnard, 1979; Clarke-Stewart, 1973; Moss, 1967). Thus, crying significantly influences the mother, the baby, and their interactive process.

The understanding and management of infant crying, like any aspect of the maternal role, is learned. It does not come with the delivery of the baby. Mothering is a learned behavior involving the combination of knowledge, skills, and experience (Breen, 1975; Clark, 1966; Cronenwett, 1976; Jordan, Choi & Adomanis, 1976; Rubin, 1961; Shaw, 1974). Learning to parent is recognized as a complex process, and having a baby has been described as one of life's most challenging events (Brazelton, 1981). In our society, the numbers of large families have declined and traditional resources of the extended family have diminished. As a result, new mothers have little or no experience with infant care and find themselves without the family experience and support (Brazelton, 1978; Le Masters, 1965; Meier & Mead, 1978). Assuming that mothers have little knowledge about and experience with neonatal crying, this study identifies the perceptions and responses of participant mothers to neonatal crying in the early weeks after birth.

Research has revealed the competency of the infant in initiating and nurturing the interaction with his caregiver (Bell, 1974; Brazelton et al., 1974; Clark & Affonso, 1976; Kaplan, 1978; Korner, 1974; Lewis &

In helping mothers to understand and manage neonatal crying, it is necessary for nurses to understand mothers' perception of the behavior and to appreciate the impact of this behavior on mothers' adjustments to the maternal role. The literature provides abundant theory about the mother-infant interaction and addresses the significance of the mother's response to her infant. It also provides support for the importance of neonatal crying as a communicative behavior. It does not presently, however, provide sufficient knowledge about maternal understanding of and responses to crying as a caretaking concern. The intention of this study is to contribute to this knowledge base.

This descriptive study was guided by a framework developed by Barnard (1978), which depicts the dynamic nature of the interaction between the mother, the infant, and their environment. This interactive framework is used to examine neonatal crying as an initiator of
mother-infant interaction. It facilitates the examination of the components of the interaction and the identification of factors that influence the mother's interpretation and response to her infant's crying. Learning about maternal responses to the crying neonate should provide direction for anticipatory or therapeutic nursing interventions associated with neonatal crying as a maternal caretaking concern.

**Problem Statement**

The literature indicates that neonatal crying is of significant concern to new mothers and of considerable importance in helping mothers and infants adapt to each other and to their environment. It also indicates that the management of neonatal crying affects infant growth and development and mothers' feelings of confidence in the maternal role. Since there is a minimum of literature on neonatal crying from the mother's perspective, and since mothers are the focus of perinatal teaching and nursing care, it is necessary to examine mothers' interpretations and responses to neonatal crying in order to provide relevant and effective nursing care.

**Purpose**

The purpose of this research is to investigate how mothers interpret and respond to neonatal crying during the first postpartum month.

**Specific Objectives**

This study is intended

1. to identify reasons the mothers give for the crying behavior of their neonate;
2. to identify maternal responses to neonatal crying, as reported by the mothers;

3. to identify factors that influence the mother's response to her neonate's crying behavior;

4. to assess the effect of neonatal crying on maternal confidence.

Definitions

**Infant**: a baby of normal gestation from birth to 28 days of age, with no apparent neonatal complications

**Neonatal Complications**: problems of the newborn or situations identified and recorded in the neonatal hospital record as follows:

1. small or large for gestational age (less than 2500 grams or more than 4500 grams);

2. premature or postmature, defined as less than 38-weeks gestation or more than 42-weeks gestation;

3. an Apgar of less than 7 in the 5-minute assessment;

4. birth trauma as evidenced by nerve palsies, fractures, or cephalhematomas;

5. prenatal asphyxia as evidenced in the labor record by the presence of late decelerations in the fetal heart pattern or of postnatal asphyxia as evidenced by the recording of related signs and symptoms in the neonatal hospital record;

6. RH or ABO sensitization as evidenced in the neonatal laboratory reports;
7. infections as evidenced by a temperature of more than 38 degrees Centigrade for more than 48 hours;
8. continuous separation of the mother and infant for more than 24 hours.

**Mother:** a primipara with no obstetrical complications

**Obstetrical Complications:** maternal or fetal problems or situation identified in the mother's perinatal record

1. **Antepartum:** diabetes, cardiac disease, infections, thyroid dysfunction, RH-sensitization, eclampsia, placenta abruptio, severe hydramnios, drug or alcohol addiction;
2. **Intrapartum:** dystocia, prolapsed cord, severe meconium staining, need for high forceps, a cesarean section or the need for a general anesthetic;
3. **Postpartum:** postpartum hemorrhage where the mother's hemoglobin drops more than 2 grams% from the prenatal value, infection, severe depression or postpartum psychosis.

**Crying Behavior:** a behavioral state of the neonate characterized by State Six of the Sleep-Wake Cycle (Blackburn, 1978). This state is defined as intense crying for at least 15 seconds and characterized by an audible cry, facial grimaces, color changes, and/or increased body movement. It is viewed as a communication signal in response to unpleasant internal or external stimuli.

**Maternal Confidence:** a mother's belief in herself about her ability to care for her baby
Assumptions

1. Mothers are willing and able to articulate their thoughts, feelings, and responses associated with their infant's crying.
2. The information given by the mothers about themselves and their infants is reliable and valid.
3. The neonatal period is an adaptive period for both mother and baby.
4. Crying elicits a maternal response.

Limitations

1. Except for the Sleep/Activity Records, the data collected were retrospective, and the reliability is influenced by the abilities of the mothers to recall thoughts and feelings over a four-week period.
2. Findings are not generalizable as they are confined to a small sample of convenience with its particular social and cultural characteristics.

Summary

This chapter has introduced the study, provided the background, and placed it in a nursing context. It has identified the problem and the purpose and has introduced the interactive framework chosen to guide this study.
CHAPTER TWO

Literature Review

In the past two decades, a great deal of research in the fields of mother-infant interaction and growth and development has provided evidence that neonatal crying is of considerable importance. The large amount of literature associated with but not specific to neonatal crying is such that only an extensive review could summarize the relevant findings associated with neonatal crying and maternal responses to that crying. Guiding this review were four specific research questions (see Specific Objectives in Chapter 1). The literature was reviewed to see if maternal concerns about neonatal crying had been examined and whether information is available to help health care professionals to decrease maternal concerns about crying behavior and increase effective management of neonatal crying. The literature also provided guidance and support for the use of an interactive framework to facilitate data collection and analysis. The review begins with a discussion on the present view of crying behavior of infants and a discussion of the framework for the study.

Neonatal Crying In Perspective

The present understanding of neonatal crying has evolved over the past two decades with advances in knowledge about infant behavior, growth, and development. The early portrait of the infant as a dependent
bundle of reflexes has altered to our present view of him as a highly responsive, predictable individual who is innately motivated to manage and master his environment (Brazelton, 1981; Lewis & Goldberg, 1973; Stone, Smith, & Murphy, 1973; Yarrow, 1979). The infant's cry has been identified as one of the most crucial variables in early mother-infant interaction (Bell, 1974; Korner, 1974; Lester, 1982). The cry evokes interaction with the mother, and the amount and type of crying will determine the stimuli he receives (Moss & Robson, 1968). Infant crying is now viewed as an expression of the infant's uniqueness, evidence of his responsiveness to internal and external stimuli, and a demonstration of his ability and desire to communicate with his environment in such a way as to foster protection, nurturance, and growth.

Lester (1982) reviewed and summarized studies related to infant crying. He conceptualized a model of crying for the purpose of explaining findings to date and for providing direction for further research. His view of the infant's cry as a biosocial phenomenon led him to discuss the research associated with infant crying from two general perspectives: "... as an indicator of neurophysiological functioning and as a determinant of infant-caregiver interaction." (p.1). In relation to the first perspective, Lester describes the cry as a complex neurophysiological response that reflects the integrity of the nervous system. He also summarized evidence to demonstrate the use of the infant's cry as an indicator of medical risk.
In the initial newborn assessment, the newborn's cry continues to be used as an indicator of normal reflex irritability (Apgar, 1966). It is also a significant neonatal response evaluated in the neurological assessment of infants (Prechtl & Beintema, 1964; Parmelee, 1963). Researchers, such as Zeskind and Lester (1978), found that the cries of infants with a number of obstetrical complications were more aversive, more distressing, and more arousing than the pain cries of infants with fewer complications. Golub and Corwin (1982) identified "abnormal cry features" as variations in pitch and frequency, and distinguished between normal infants and those with low birthweight, hyperbilirubinemia, respiratory problems, and two infants who later died of sudden infant death syndrome. A study by Holaday (1981) found differences in the cries of chronically ill infants in comparison with those of normal infants. She found that the chronically ill infants cried more frequently but for shorter duration than well infants. Their cries were described as being poorly organized, difficult to interpret, and irritating.

In relation to the second perspective, Lester (1982) discusses the infant's cry as a social phenomenon that initiates and directs the caregiver's response. Research supporting the influence of the infant's cry on his caregiver and on his subsequent growth and development is reviewed. Lester highlights some major studies that focus on the social implications of the infant's cry. He refers to the work of Ainsworth (1964) and Bowlby (1969), which explains the infant's cry as a means of increasing and maintaining the proximity of the caregiver. He also cites
the works of Korner and Grobstein (1975), Korner (1974), Bernal (1972) and Brazelton (1962), which illustrate the infant's cry as a facilitator of social interaction. Lester cites a number of studies that demonstrate that the type of cry and how it is perceived are determining factors in relation to the caregiving responses (Frodi et al., 1978; Zeskind & Lester, 1978). The findings of these studies are discussed in more detail later in this review.

**Theoretical Framework**

Korner (1979) reflects on the progress of infancy research over the past two decades and finds that mother-infant interaction has become one of the most widely investigated areas. She states that, ideally, the focus of such research is on the process of the interaction rather than its component parts. The traditional social model, which viewed the influence of the environment on the infant, has gradually given way to a bidirectional model which reflects the influences of the environment and the infant on each other and the interaction between them. The value of this new model is supported by Osofsky and Conners (1979) who state that: "Mothers and infants interact through a complex process of mutual adaptation or synchrony rather than a simple unidirectional relationship." (p.539).

Some of the research findings that have guided the development of this interactional view and support the appropriateness of the interaction model in the study of mother-infant behavior are summarized as follows:
1. the increased knowledge of and appreciation for the infant's abilities, his sensitivity to change, and his influence on and responsiveness to his environment (Brazelton, 1981; Gesell & Ames, 1973; Kagan, 1979; Korner, 1974; Osofsky & Conners, 1979; Stone et al., 1973);

2. the powerful influence of the infant on his mother (Bell, 1974; Brazelton et al., 1974; Corter, 1974; Gerwitz & Boyd, 1977; Rheingold, 1969; Stern, 1977; Tronick et al., 1982);

3. a demonstrated relationship between the quality of parent-infant interaction and infant growth and development (Ainsworth, 1964; Bell & Ainsworth, 1972; Bromwich, 1981; Eyres, Barnard & Gray, 1979);

4. a renewed interest in the influences of early experiences on the infant's future development. This includes not only newborn and neonatal experiences but prenatal experiences as well (Bradley & Caldwell, 1976; Caldwell, 1971; Douglas, 1979; Jordan et al., 1976; Kop & Parmelee, 1979);

5. the increasing acceptance of the interaction of biological and experiential variables and their influence on the infant's perception and management of his environment (Barnard, 1979; Kagan, 1979; Kop & Parmelee, 1979; Willemsen, 1979; Yarrow, 1979);

6. the shift from studying individual behavior and component parts of interactions and more interest and commitment to the process of the interaction (Barnard, 1979; Bromwich, 1981; Clarke-Stewart, 1973; Kop & Parmelee, 1979; Lewis & Painter, 1974; Newson, 1977; Yarrow, 1979).
Advancement in theory development has resulted in a more complex view of the mother-infant relationship and infant growth and development. Korner (1979) emphasizes the need for flexibility in approaches to infancy research and declares that each research question has its own "optimal level of precision" with regards to the data required for answering it. (p.773) Yarrow (1979) summarizes the situation by stating: "As our knowledge of infant development increases, our awareness of the complexity of development becomes more deeply entrenched." (p.913).

Given the support in the literature for the interactional view, the appropriateness of an interactive framework for the present study becomes clear. This study uses the framework from The Nursing Child Health Care Assessment Project (Barnard & Douglas, 1974) and Barnard's interactive process model (1978) to study neonatal crying and maternal responses to such crying.

In The Nursing Child Assessment Study, the parent and infant were viewed as an interactive system and were depicted in the interactive process model developed by Barnard. Both the mother and the infant bring their individual characteristics to the system. An adaptive process follows as the individual characteristics of each modify and are modified by the other. Barnard observed that the parent and the infant have tasks to perform in their interactive system. The infant's tasks are to produce clear cues and to respond to the caregiver. The parent's tasks are to respond to the infant's cues, alleviate distress, and produce growth-fostering opportunities. An illustration of this is depicted in Figure 1. The responses and reactions to responses are indicated by the
arrows. Breaks in the arrows indicate potential interferences that prevent the members of the interactive system from fulfilling their tasks (Barnard, 1978).

In the present study, the infant's crying behavior was seen as a cue, and the focus of interest is the mother's interpretation of the cue and her response to it. Neonatal, maternal, and environmental factors associated with the mother's response to her infant's crying were examined in light of the literature and with the guidance of The Child Health Assessment Interaction Model (Barnard, 1978).

Figure 2 is a visual representation of the interaction model. The components, depicted as circles, represent the mother, the infant, and the environment, each with its own characteristics and potential
influences. The area where the circles overlap depicts the interaction between the infant, the mother, and their environment. The smallest circle represents the "child" and what he brings to the interaction. The medium-sized circle represents the "mother" and what she brings to the interaction. The largest circle represents the environment.

Figure 2. The Child Health Assessment Interaction Model.
In the present study, the neonatal factors considered were: the infant's age; gestational period; perinatal history; his state and state-related behavior such as arousal level, irritability, auditory and visual responses, habituation, cuddliness, consolability, and readability; his patterns of eating, waking, and crying; his predictability; and his adaptability and responsiveness to caretaking.

The maternal factors of particular relevance to this study are: age; health and perinatal history; educational level; experience with and preparation for infant care; social stresses; perception of physical and emotional supports; expectations and perceptions of her infant; and her sensitivity and responsiveness to infant caregiving.

The environmental factors of relevance include such influences as the father and his effect on the mother-infant interaction; significant others who directly or indirectly influence the mother-infant interaction; and the socioeconomic factors that enhance or limit the physical resources available to the mother and her infant.

In summary, the review thus far has presented a current perspective on neonatal crying as a biosocial phenomenon and has provided a rationale for an interactive process model for the study of neonatal crying and maternal responses. A discussion of the literature associated with the reasons mothers give for their infant's crying behavior, their responses, and the factors associated with these responses, and the effects of neonatal crying on mothers' confidence in the maternal role now follows.
Reasons for Neonatal Crying

The reasons infants cry are documented by: Bernal, 1972; Brazelton, 1962; Dunn/Bernal and Richards, 1977; Rheingold, 1969; and Wolff, 1969, 1973a. The reasons identified in the literature are physical and social in nature and common to most infants. The individual cry of the infant, however, is found to be unique. Wolff (1969) emphasizes the uniqueness of the infant's cry and the importance of the circumstances that surround his crying behavior. He claims that the infant's cry is as unique as the infant's fingerprints. Mothers also verified this uniqueness by their ability to identify their own infant by his cry shortly after birth (Formby, 1967; Greenberg, Rosenberg, & Lind, 1973). Reasons for neonatal crying as presented in the literature are now discussed.

Hunger

In a longitudinal study in Cambridge, England, 77 mother-infant pairs were followed from birth to five years to assess the continuity of individual differences in children and interaction patterns between mother and child (Dunn/Bernal & Richards, 1977). At the beginning of the Cambridge study, Bernal (1972) reported her observations of maternal responses to neonatal crying in the first 10 days of life. Mothers who were breast feeding identified hunger as being, by far, the most common cause of infant crying. Bernal points out that feeding involved a number of soothing responses other than a full stomach and nourishment that could account for termination of the cries. These included sucking, swallowing, and being held, each or all of which could have been the reason for termination. In a study that attempted to separate the effects of a full stomach from those of sucking and swallowing, Wolff
(1969) found that hunger was consistently the major cause of the infant's crying.

Wolff (1969) was one of the first researchers to conduct an in-depth study of infant crying. He began this study in 1958 as a participant observer in the homes of 18 newborn infants whom he followed for their first six months. In the study, Wolff describes causes of infant crying, distinguishes between different crying patterns, explores specific effects on the mother, and compares the effectiveness of various interventions on cessation of the infant's crying. He also describes a basic pattern of crying that was usually heard when the infant was hungry. It consisted of a stable rhythmical sequence, which included a cry, rest, inspiration, and rest cycle. Crying before feeding was rhythmical, had a braying quality, and was accompanied by tandem kicking. Crying after feeding was arrhythmical, shrill, and not accompanied by kicking.

Anger

In Wolff's study (1969), a second type of cry was observed and identified by parents as an angry cry. Wolff describes this cry as a variation of the basic cry in that the time sequence is the same but that excess air forced through the vocal cords when the baby was angry created a turbulent or braying sound. Mothers in Bernal's study (1972) identified boredom, temper, naughtiness, and crankiness as reasons for an angry cry, particularly as the baby grew older.
Pain

Wolff (1969) observed and describes a third type of infant cry in response to a routine heel prick for a blood sample. He refers to this cry as a pain cry. It begins with an inspiratory whistle immediately followed by a long expiratory cry. Its sudden onset and arrhythmical sequence differentiates it from the basic cry.

Bernal (1972) found that mothers identified gas as the most common reason for crying after a feeding. Mothers found that the more the infant cried, the more air he swallowed, and thus the more gas he accumulated.

Temperature

Temperature has been found to influence infant crying. Wolff (1969) noted that infants cried more and slept less in cooler temperatures (78 degrees F versus 88-90 degrees F). He stated that since infants sleep more deeply in warm temperatures, cooler temperatures may increase their waking periods and subsequent response to stimuli. He also noted that the cooling effect of wet and/or dirty diapers was a source of crying. He did observe, however, that despite temperature control the infants in his study cried if they were undressed.

Colic

An interesting finding of Bernal (1972) was that more than half of the infants at two months of age had regular crying and fussing episodes in the evenings. These episodes ranged from intermittent fussing to severe distress for which the infants could not be consoled.
Unconsolable evening fussing termed "colic" was investigated by Illingsworth (1955). He found that except for these evening episodes the infant was healthy and happy. In his study, 21 of 100 healthy infants were affected. He investigated the causes identified by previous colleagues and found no evidence of overfeeding, underfeeding, allergy, constipation, diarrhea, gas, or too little or too much handling. He discounted the notion of "spoiling" as a contributing factor, as evening episodes started prior to hospital discharge. He also commented on parental tension as a factor that was more a result of the infant's crying than a cause. He did refer to the immaturity of the neural control of the gastrointestinal system, which could cause trapping of gas in the loops of the bowel, as a likely but unproven cause. Research in the field of gastroenterology has increased knowledge of pathological conditions of the gastrointestinal tracts of infants that are associated with crying, but no recent research has defined the cause of normal infant colic.

Environmental Tension

Brazelton (1962) also investigated unexplained periods of crying among normal and happy infants. He studied a population of 80 mothers of newborns, 28 of which were primiparas. Each mother kept a 24-hour diary of her infant's crying behavior for 12 weeks. During the crying periods, mothers were encouraged to eliminate obvious reasons, such as hunger and gas, by feeding and burping adequately. Mothers were to provide for non-nutritive sucking time, play, socialization, and were to
change their infant's positions frequently. The mothers were encouraged to comfort their infants during episodes of crying and fussiness at least every 30 minutes. Brazelton's findings enabled him to divide his sample population into two groups: heavy fussers and light fussers. He noted that light fussers did more non-nutritive sucking, particularly after six weeks. The crying of the heavy fussers was consistent with that of colicky infants. Brazelton concluded that the infant is acutely sensitive to tension in his environment, and that he expresses his response to the tension at specific intervals throughout the day. Brazelton also concluded that a certain amount of crying could be anticipated from normal healthy infants.

Social Reasons

Social reasons for infant crying are often expressed in mothers' comments about infants crying for attention (Dunn, 1977). Rheingold (1969) discusses the purpose of the infant's cry in the socialization of the mother to her caregiving role. She reviews research that demonstrates the infant's sensitivity and responsiveness to the human face, his desire for social contact, and his ability to attain and sustain it with the power of the cry or with his cessation of crying. The infant's desire for attention is thus a legitimate reason for his crying behavior. He requires human attention for survival and for opportunities to learn about his environment.

In summary, research that posits reasons for neonatal crying indicates that such crying is meaningful and purposeful and can be
differentiated in relation to the infant's needs. The cry initiates contact with the mother; communicates physical, emotional, and social needs; and guides the mother's responses. The cessation of crying provides feedback for the mother regarding the effectiveness of her response and facilitates the feelings of maternal rewards associated with the caregiving experience. Lester (1982) has suggested that: "...the interaction between the cry, how it is perceived, and how that perception translates into caretaking behavior will determine the infant's capacity to reach his biological limits." (p. 31).

Responses to Neonatal Crying

The literature review identifies two primary responses to neonatal crying: responses instrumental in the termination of infant crying, and those physiological and emotional responses expressing an effect on the receiver of the cries.

In the study by Dunn/Bernal and Richards (1977), findings indicate that sources of neonatal comfort characteristically tend to provide a background of rhythmic stimulation and reduce the amount of sensation the baby receives from his own movement. In general, the literature review revealed that most maternal/caregiver responses instrumental in the termination of neonatal crying involved four major interventions: the promotion of sucking, the use of movement and position change, the provision of motor restraint, and the use of sound.
The Promotion of Sucking

Sucking is a major example of rhythmic stimulation. It is associated with feeding, which is one of the most common soothing interventions (Bell & Ainsworth, 1972; Brazelton, 1962; Dunn/Bernal & Richards, 1977). Non-nutritive sucking is often initiated by infants themselves as they suck on their fingers, fist, or arm, not only in response to hunger but as a self-consoling technique. The offering of pacifiers also has been found to be an effective soothing intervention (Bell & Ainsworth, 1972; Dunn/Bernal & Richards, 1977; Jones, 1983; Spock, 1977; Wolff, 1969).

Movement and Position Change

Movement and position change occur in a number of soothing interventions such as: picking up, walking, rocking, turning over, and the use of cradles, buggy rides, swings, and car rides. Korner and Thoman (1972) reviewed studies that investigated the effectiveness of soothing interventions. They demonstrated that it was the vestibular proprioceptor component in the interaction that was the most potent ingredient for soothing the crying infant. They compared the effectiveness of six interventions and found that picking up the infant and holding him to the shoulder was the most effective. The combination of the contact with the infant, the upright position, and the vestibular proprioceptive stimulation accomplished by lifting the infant to the shoulder, helped stop the crying and facilitated the infant's alertness and scanning of his environment.
Bell and Ainsworth (1972) reported that picking up and holding the infant was the most common maternal response to the infant's crying in the first year. Of the 26 mother-infant pairs in this study, 80% of the crying episodes were terminated by this intervention. Wolff (1969) found that rocking was the most effective soothing response. Pederson and TerVrugt (1973) pursued rocking as a soothing technique and found that vertical rocking was more effective than horizontal rocking and that a faster pace (60 cycles per minute) was more effective than a slower pace. The use of cradles, buggy rides, car rides, and bike rides also would provide the soothing influence of motion that many mothers find helpful (Jones, 1983; Smart & Smart, 1978; Spock, 1977). Changes of position also involve motion and have a soothing effect on the crying infant (Jones, 1983). Brackbill (1973) found that a change in position terminated crying behavior. They also found that infants placed in the prone position slept more and moved less than those placed in the supine position.

**Provision of Motor Restraint**

The soothing effects of motor restraint have been demonstrated in the use of swaddling as an ancient maternal response common to many cultures (Romanko & Brost, 1982). Wolff (1969) found that babies crying from nakedness quietened if they were swaddled or if cloth contact was applied to the front of their chest or abdomen. He also noticed that infants preferred blanketing or toweling to rubber or plastic. Brackbill's study (1971) of 24 newborns revealed that, of a number of interventions, swaddling was the most effective response in terminating
the crying behavior in these infants. She reviewed research on swaddling and found that, although swaddling provided warmth and skin contact, motor restraint of arms and legs was the main effect responsible for quietening the infant. A recent article by Romanko and Brost (1982), which reviews history, cultural examples, and experimental studies associated with swaddling, also supports the effectiveness of motor restraint for the comforting of crying infants.

**The Use of Sound**

Brackbill (1971) demonstrated that a constant stimulus increased the infant's quiet sleep and reduced his crying time, his heart rate, breathing, and movement. The study also revealed that arousal was highest under intermittent stimulation and lowest under continuous sound. Brackbill also found that the influence of ambient light, an increase in temperature, low continuous sound, and swaddling had cumulative effects if used in combination with one another.

Wolff (1969) also had found that sound had a quietening effect on crying infants. In the first week of life, the sound of a bell or rattle would temporarily stop the infant's cry. By the second week of age, the sound of the human voice became more effective in terminating his cry.

Condon and Sander (1974) found that infants could make fine-pitch discriminations. Low-pitch sounds would soothe a crying baby and stimulate motor activity in alert infants. High frequencies promoted signs of distress. These authors made reference to the effectiveness of lullabies as a soothing intervention for crying babies and reasoned that
it was the low pitch and rhythmic sound that quietened them and promoted sleep.

Jones (1983) refers to sucking, sound, motion, and restraint interventions as shut-down signals that quieten a crying or fussy infant. She acknowledges the perplexing and exhaustive feelings of mothers with crying babies and summarizes strategies for the management of infant crying.

**Promptness of Response**

A major finding by Bell and Ainsworth (1972) was that the frequency and duration of crying were inversely related to the promptness of maternal response. The authors discovered that it was the mother's responsiveness to her infant's crying and not the immediate effectiveness of her interventions that positively influenced the frequency and duration of infant crying in the first year of life. Similar findings related to the promptness of responses were recorded in a study of infants 11 to 14 months and 17 months of age (Clarke-Stewart, 1973).

The results of the Bell and Ainsworth (1972) study indicate that prompt responses to the infant's crying not only reduced his crying behavior in his first year of life but also increased his non-crying communication signals. The promptness of maternal response thus relates to the infant's development of communication modes other than crying and to his subsequent feelings of efficacy in an environment where he has an impact.

**Variables Related to Response**

The study by Bernal (1972) demonstrated that the mothers'
interpretation of infant cries were influenced by such variables as: the
time of the infant's last feed, the infant's peacefulness prior to the
crying, how well the infant had previously fed, the predictability of his
sleep and wake patterns, and how easy he was to soothe. These results
indicate the importance of the context of the crying behavior in
establishing its meaning.

Maternal, Physiological, and Emotional Response to Neonatal Crying

Frodi et al. (1978) investigated the responses of 48 mother-father
pairs to a videotaped presentation of infants' crying and smiling
stimuli. Findings indicate that smiling and crying elicit different
physiological responses. For example, the crying infant elicited a
substantial increase in diastolic blood pressure whereas the smiling
infant did not effect a blood pressure change.

One of the few studies that directly discussed mothers' feeling
responses to infant crying was conducted by Harris (1979). She
interviewed 35 primiparous women who delivered normal, fullterm infants,
within a few days after birth and at the end of 1 month. She found that
approximately two-thirds of these mothers reported high frequencies of
neonatal crying and identified this crying as a major concern. The
feelings evoked by the infants' crying as reported by the mothers are
listed as follows in order of frequency: frustrated, bothered, nervous,
sorry, upset, helpless, wonder what's wrong, irritable, guilty about
feelings, heartbroken, hostile, violent, mildly angry, exasperated, under
confident, hurt at first but now indifferent, uptight at first but now
resigned, afraid, worried, anxious, concerned, don't know what to do, unloving, unattached, terrible, like killing her, needed, resentful, confused, fed up, and tearful. Many of the mothers felt that the infant's crying was a reflection of their care. Some expressed fears in relation to spoiling their infant and questioned the promptness and frequency of their responses. Five mothers stated they had approached their doctors in despair and had received antispasmodics for their infant. Four of them discontinued the medication, and all of them admitted ambivalence about using it.

In summary, the literature associated with responses to infant crying can be divided into two categories. One category focuses on responses that are instrumental in the termination of neonatal crying. Of particular interest is that promptness, not effectiveness, of the response is a key variable in relation to the total frequency and duration of crying in the infant's first year of life. The second category identified in the literature associated with infant crying is that which deals with the physiological and emotional responses experienced by the mother or caregiver. This body of research is relatively small in comparison with that of the first category. It is, however, of particular interest in the examination of the effects of neonatal crying on maternal confidence, to be discussed later. In both categories, the literature review has clearly indicated that responses to infant crying are associated with numerous neonatal, maternal, and
Neonatal Factors Associated With Maternal Responses to Neonatal Crying

The sound of the newborn cry initiates interaction with his caregivers and his environment. He brings his unique characteristics, his initiative, and his responsiveness to the interaction and contributes to the nurturance of himself and those around him. This section of the literature review discusses factors associated with the infant that influence his mother's response to his cry.

Infant's Age and Maturity

In an observational study of 30 first-born infants in their first 3 months of life and their mothers, Moss (1967) found that the infant's maturation contributed to observable changes in maternal behavior from 3 weeks to 3 months. At 3 months, the infants cried less and were awake more. They were described as more interesting and responsive because they spent more time smiling, vocalizing, and looking at the faces of their mothers. This behavior paralleled an increase in maternal responsiveness. Although close physical contact showed a significant decline as the time progressed, there was a pronounced increase in the infant's attending behavior. Moss also acknowledged the influence of time on the attachment process, on the mother's familiarity with her infant's needs, and on the increasing confidence of her responses.
Wolff (1973a) also found that an increase in the infant's age led to an increase in the time the infant spent in a state of alert inactivity. Wolff noted that the stimuli which initiated and terminated the crying in infants changed as the weeks progressed. For example, by the fifth week of age, the infant who previously cried with the sound or appearance of a human face, stopped and attended to the voice or face and remained quiet as long as he saw or heard the person.

**Infant's Sex**

In the study by Moss (1967), changes in infant and maternal behavior were noted over a 3-month period in relation to the infant's sex. Three observations were made at weekly intervals in the first month, and 3 more observations were made when the infant was approximately 3 months old. Moss found that the sex differences were noticeable more in the 3-week observation period than in the remainder of the 3-month period for both the neonatal and maternal variables. Male infants slept less, cried more, and were less easily consoled than females. Mothers subsequently held male infants more than female infants at both 3-week and 3-month observation periods. There was, however, a 30% decrease in time being held for both male and female infants at 3 months. Moss also found that female infants mouthed significantly more than boys.

A review of several studies by Honzig and McKee (1962) revealed that girls sought comfort through oral means more than boys. From 1 year of age, girls were more frequent and persistent thumbsuckers. This could explain the finding of Moss and Robson (1968) that pacifiers are more frequently offered to girls.
Neonatal Health

Golub and Corwin (1982) reported that groups of infants with multiple or severe problems in the neonatal period could be distinguished from normal infants based on the number of "abnormal" cry features. Lester (1982) reviews a number of studies that relate these abnormal cry features to infants with chromosomal aberrations, hyperbilirubinemia, infections, asphyxia, and sudden infant death. His review provided evidence that perinatal health risk factors "affect the character of the vocal signal, most often seen as increases in the frequency and variability components of the cry." (p. 14).

Holaday's study (1981) of 388 crying bouts of six chronically ill infants and their mothers' responses indicated that there were differences between the crying patterns of sick and well infants. The maternal responses seemed to be directly related to the characteristics of the cry rather than individual characteristics of the infants such as sex, ordinal position, or their degree of illness.

Appearance

An infant's appearance has been identified as an influential variable that under normal circumstances attracts the mother and others to the infant's side. His helplessness and his responsiveness fascinate his caretakers (Rheingold, 1969).

Klaus and Kennell (1976) describe a sensitive period immediately following delivery when the mother and her infant become acquainted. The newborn's quiet alert state, his ability to gaze back at his mother, and his responsiveness to her verbal and tactile stimulation encourage
further exploration and identification of individual and family characteristics (Clark, Affonso & Harris, 1979).

The reality of the infant's appearance and behavior often differs from the mother's expectation. If the infant is malformed, flaccid, or unresponsive, the mother may turn away or ask for him to be taken away. Klaus and Kennell (1976) report that, according to a number of investigators, the more visible the defects, the more immediate the concerns of parents and the slower the bonding process.

State and State-Related Behavior

State is defined as "a mode or condition of being" (Webster, 1971, p. 2228). Clark et al. (1979) discuss the infant's state as "... it pertains to various levels of perceptual arousal in the neonate's behavior, reflecting both his need and availability for contact with the external environment." (p. 616). Wolff (1973b) found that the infant's response is profoundly affected by his state, which is now recognized as a key determinant of his behavioral patterns. The work related to infant states, by Wolff (1969), and Prechtl and Beintema (1964), is summarized and discussed by Blackburn (1978). She describes six states: deep sleep, light sleep, drowsy, quiet alert, active alert, and crying. She systematically compares these states in relation to eye and facial movements, breathing patterns, level of response and implications for caregiving. She discusses factors such as fatigue, hunger, or position that relate to the state and provide direction for caregiving. She also notes that just as different behavior is associated with each state,
also there are characteristic physiological changes in heart rate, blood flow, muscle tone, and EEG patterns. She explains that as infants move from one state to another, there are often characteristics of both states for a brief period. Usually infants move smoothly from one state to the next, but infants who do not, convey conflicting and confusing signals to the caregiver. For example, an infant who cries loudly and demonstrates hunger behavior but falls asleep as soon as his mother attempts to feed him, confuses his mother regarding his need for food.

Understanding infant states as described by Blackburn (1978) assists caregivers in understanding an infant's cues and needs. In each state, the infant will respond in a unique but organized and predictable manner. The infant controls the influence of his environment in his use of state. In the face of too many stimuli, he will either cry to rid himself of stimuli and/or bring help, or he will block out stimulation by lowering himself to a sleeping state.

The state of specific interest to this study, and one that often challenges the caregiver, is crying. Blackburn describes crying as follows:

This state is characterized by intense crying for at least 15 seconds. During this state, infants cry, grimace, change color and have increased motor activity. (1978, p.26)

She describes crying as a communication signal that occurs in response to unpleasant internal or external stimuli and indicates the infant's limits
have been reached.

Blackburn explains how infants respond to stimuli according to their state-related behavior. An understanding of this behavior should guide mothers' responses to their infants' expressions of distress and comfort. Blackburn's description of relevant state-related behavior is presented in The Nursing Child Assessment Training Manual (1978, pp. 28-33) and is summarized below.

**Alertness or (Alerting Behavior).** This behavior involves a widening or brightening of the eyes, usually in response to a visual or auditory stimulus. In response to the stimulus, the infant will stop whatever he is doing and attempt to locate the source of the stimulus. The infant is attentive and responsive to his caregiver and his environment. The infant's arousal level as expressed in his wakefulness and restlessness evokes interaction with his mother. Thus, infants who are awake more usually elicit more attention.

Escalona (1968) studied a group of infants who were 4-12 weeks old and was able to clearly differentiate between the active and inactive infant in their response to stimuli. He found that active infants were more irritable and required more soothing. These infants responded more intensely to people and were more excited and distressed by hunger. Inactive infants demonstrated more oral behavior and could be soothed with social activities. The results of this study demonstrate the influence of activity level on the infant's distress response and his consolability. A mother's responses for avoiding distress or for providing comfort would thus be influenced by her infant's activity level.
Irritability. Irritability refers to how easily the infant responds to external or internal stimuli by crying or fussing. Irritable infants are upset by loud noises, handling by caregiver, temperature changes, and removal of blankets or clothes. These infants need more consoling and quiet environments. "Differential irritability as expressed by infant crying is one of the most crucial variables in the earliest mother-infant interactions." (Korner, 1979, p. 724). The cry predictably initiates an interaction between mother and baby.

Visual and Auditory Responses. The visual and auditory competencies of the infant facilitate his responsiveness to visual and auditory stimuli. Mothers can utilize these competencies to gain the infant's attention, promote social interaction, and soothe him during a fussy or crying episode. Both the visual and the auditory responses elicit caretaking and nurturing responses from the mother and provide her with pleasurable feedback from her infant (Korner, 1974; Moss & Robson, 1968).

Habituation. This behavior demonstrates the infant's ability to decrease his response to repeated stimuli so that he is not constantly reacting to everything. This ability has been described by Stone et al. (1973) as an indication of learning. The ability to habituate makes it possible for infants to doze and sleep in an environment with normal and familiar sounds.

Cuddliness. Cuddliness describes the degree to which an infant will nestle into the contours of the caregiver's body. This is an individual response that varies with different infants. Some relax and nestle into
the caregiver's body, and some demonstrate grasping or clinging behavior. Other newborns stiffen and resist being held close. Some do not resist but do not participate either. This behavior is primarily evident when the infant is awake. Mothers often are disappointed if their infant does not like to cuddle as this behavior is associated with positive and affectionate feelings for mother.

Schaffer and Emerson (1964) conducted a study on patterns of response to physical contact in early human development. They noticed there were marked, stable differences over 18 months in how much infants sought closeness and physical contact with their mothers. The non-cuddlers were much more active, restless, and intolerant of any restraints like clothes or being tucked into bed (Schaffer, 1977, p. 57).

Consolability. Another state-related behavior is that of consolability. This behavior demonstrates the infant's ability to lower his state or to allow it to be lowered. Korner and Thoman (1972) found that infants differed significantly in how soothable they were and in how long they would remain soothed after the soothing intervention. Newborns often initiate their own consoling measures such as sucking on their fingers or fist, changing position, or using auditory and visual behavior. Mothers should be alert to the abilities of their neonates to console themselves as it affects their immediate responses to the infant's cries or indication of distress.

Readability. Readability behavior refers to the infant's ability to present cues through his motor behavior, visual behavior, and his behavioral
patterns during all states. Infants differ in their ability to give clear cues. They also differ in the consistency of their waking, sleeping, and eating cycles (Smart & Smart, 1978; Willemsen, 1979). The more predictable their behavior, the more likely the mother can anticipate the infant's needs and can interact in a reciprocal way. Infants who are overly excitable and unpredictable emit confusing cues, making care more difficult (Brazelton, 1981). Learning to observe and understand the unique neonatal patterns helps mothers respond to their infants as individuals. Willemsen (1979) refers to this readability as signalling. The degree to which signals reflect needs directly affects the mother's ability to respond appropriately.

**Behavioral Style.** The patterning of the infant's states has an important effect on the infant's mother and the entire family. Smart and Smart (1978) describe the differences in behavioral style between the "easy" and the "difficult" child. From their review of relevant literature, they describe the "easy" child as one who demonstrates high rhythmicity, a positive approach to new situations, adaptability to change, a positive mood, and a mild to moderate threshold of responsiveness. This infant has a predictable eating and sleeping schedule and fits in with the family. The "difficult" child has irregular biological functions, a negative mood, withdraws from new situations, is slow to adapt, and has intensive reactions to stimuli. The type of infant who cries and fusses is difficult for a mother, threatens her self-confidence, and upsets other family members (Smart & Smart, 1978).
Thomas and Chess (1977) interviewed 114 parents regarding their infant's behavior. Nine qualities emerged from the behavioral list. They are: activity level, rhythmicity, distractability, approach/withdrawal response, adaptability, attention span and persistence and intensity of reaction, threshold of responsiveness, quality of mood, and friendliness. Some of these are described as state-related behavior (Blackburn, 1978). Together these behaviors are useful for describing the infant's individual characteristics or his temperament (Carey, 1972).

Brazelton (1981) points out that temperament provides "an observable, quantifiable matrix for accepting, utilizing and discharging stimuli..." (p. 4). This matrix becomes a predictable way for the infant to respond and for his mother to anticipate. An infant whose state characteristics are not readily changed by the mother's efforts presents a special challenge in caregiving.

In the first weeks together, the mother acts as shield or a regulator of the infant's sensory and motor responses. Her success is largely determined by how well she synchronizes her actions with the needs of her infant, particularly around the feeding situation (Korner, 1979). Korner concludes that the infant's irritability, soothability, predictability, and alertness are the infant characteristics found to be the most influential during the early weeks of the mother-infant interaction.

This section of the literature review has revealed that there are
many neonatal factors that influence the mother's responses to her neonate's crying behavior. However, a mother is not solely influenced by neonatal characteristics, for she brings many variables to the mother-infant interaction that also can influence her responses to her infant's crying.

Maternal Factors Associated with Maternal Responses to Neonatal Crying

There is a great deal of literature and research investigating the multitude of factors associated with the interaction between the infant, his mother, and their environment. Maternal factors influencing a mother's response to her neonate's crying behavior, however, have not been specifically defined or explored. Therefore, factors thought to be most relevant will be selected and reviewed from the body of literature associated with the maternal component of the mother-infant interaction.

Maternal Health

Maternal health is considered as a relevant variable in a woman's adaptation to the childbearing process. Illness during any part of that process is seen to affect a woman's self-esteem and to drain energy and resources that would otherwise be mobilized for assuming the infant caretaking responsibilities (Jensen, Bensen & Bobak, 1981; Mercer, 1981).

Maternal Education

The level of maternal education has been identified as influencing
neonatal development. The results of The Nursing Child Assessment Project (Eyres et al., 1979) reveal that maternal education is the best single predictor of a child's later development. The mother's education has been found to relate not only to the mother-infant interaction but also to the mother's expectations of her infant (Yarrow et al., 1972). In determining the infant's developmental outcome, usually the mother's educational level is found to interact with such variables as age, social class, prenatal care and personal and economic resources in such a way as to influence her interpretation and responses to neonatal crying.

**Infant Care Experience and Preparation**

Studies demonstrate the positive influence of infant and child care experience on the mother's adjustment to her caretaking role (Curry, 1983; Shereshefsky & Yarrow, 1973). In our culture, mothers' knowledge of and experience with infants are generally inadequate for the responsibilities of caretaking (Brazelton, 1978; Clark, 1966; Cronenwett, 1976; Huntington, 1979; Le Masters, 1965). Learning to parent has become recognized as a complex process and a significant health care problem. The findings of a report for the Department of Health and Human Services, "Better Health for Our Children: A National Strategy" (1981), addressed the importance of fostering the mother-infant interaction, acknowledged the difficulty of providing the required teaching and support with increasingly shorter hospital stays, and supported the growth of education groups for new families.
A number of studies identified neonatal crying as a caretaking concern for which new parents felt inadequately prepared (Adams, 1963; Clarke-Stewart, 1973; Cronenwett, 1976; Fillmore & Taylor, 1976; Harris, 1979). Studies have demonstrated the value of teaching parents about their infant's behavior and capabilities (Anderson, 1981; Davidson & Leonard, 1981). Parents not only appreciated the opportunity to learn about their infants, but Anderson (1981) found that maternal responsiveness was markedly enhanced. In developing a measure for maternal competence, Peters and Hoekelman (1973) found that education and parity predicted 50% of the variance in maternal competence scores.

Maternal Social Stress

Social stress has been identified as an influencing factor in a mother's adjustment to the maternal role and as a factor generally increasing risk for physical and emotional illness. Using The Schedule of Recent Events (Holmes & Rahe, 1967) to quantify life events requiring individual adaptation and adjustments, results of The Nursing Child Assessment Project (1976-1979) revealed the importance of social stress in the identification of parents and infants at risk. The effects of stress and change were found to be buffered by psychosocial assets. Eyres et al. (1979) identified such assets as satisfaction with marriage, husband's contribution to the child's care, mutuality in decision making, positive feelings about mothering and adequate help in the home as important, postnatal buffers.

Mothers' responses to their infant's crying may relate directly or indirectly to their level of social stress. If mothers have
occupational, financial, or marital concerns, they may be less sensitive to their infant's signals of distress and less prompt or available to respond (Barnard, 1979).

Maternal Perception of Support

Curry (1983) examined variables associated with adaptation to motherhood. In her study of 20 "normal" primiparas who delivered healthy, fullterm babies, 5 of them (25%) described their adjustment as "difficult". One of the variables that clearly differentiated between the "easy" and the "difficult" adaptors was that of postpartum care and support. Although all 20 mothers were cared for by the same staff, the 5 "difficult" adaptors perceived their nursing care in a negative way. Curry stated that it was unclear whether the difficult adaptation experience colored these mothers' perception of their care or whether the care contributed to their difficulty in adaptation. Those identified as "difficult" adaptors also perceived their husbands to be busier and less helpful than did the "easy" adaptors.

The early postpartum period has been defined as a sensitive period for both mother and infant adaptation. Without sufficient support and care, the mother does not have the resources necessary to nurture her child (Clark et al., 1979; Rubin, 1961, 1967). A basic finding of The Nursing Child Assessment Project (1979) demonstrated the significant influence of the mother's support system on the family milieu. This, in turn, was a critical factor associated with the child's growth and development. Mothers with infants who cry a great deal and are difficult
to console require the support and guidance of both professionals and significant others (Harris, 1979; Jones, 1983; Smart & Smart, 1978).

Mothers' Perceptions and Expectations of Their Infant

Review of the literature on interpersonal perception by Synder and Eyres (1979) reveals that parents' perceptions of their children may influence neonatal development. Findings of a longitudinal study of 120 first-born infants by Broussard and Hartner (1979b) indicated that there was a statistically significant correlation between the mothers' early perceptions of their infant and the emotional status of the infants 4-1/2 years later. Perceptual data also were collected via the use of the Neonatal Perception Inventory (see Appendix E) in The Nursing Child Assessment Project (Barnard & Douglas, 1974). Results showed a relationship between changes in the mothers' perception of their infant over the first month with the infant's temperament and the mothers' psychosocial assets. For example, mothers whose overall perception of their infant changed from positive in the early postpartum days to negative at 1 month, had an infant with a temperament they described as "difficult" and were rated low regarding their psychosocial assets.

Parents' expectations of their infant's capabilities have been found to influence the quality of environment that they provide for their children's development (Snyder, Eyres, & Barnard, 1979). They believe that "A mother who expects early performance from her baby would be more likely to provide early stimulation and experiences." (p. 356). In their
study of 193 primiparas in their last trimester of pregnancy, the findings suggest that mothers do not have accurate knowledge of infant abilities. Those mothers with the least accurate expectations were those with the lowest level of education, income, and psychosocial assets. Snyder et al. (1979) subsequently conclude that parents require opportunities to learn about their infant's capabilities in order to encourage optimal development but that these opportunities are rarely part of regular prenatal classes. Anderson (1981) studied 30 mother-infant pairs and found maternal responsiveness was significantly enhanced when they were familiarized with their infant's capabilities and individual characteristics. The mothers' knowledge about and expectations associated with neonatal crying are of particular interest in understanding their responses to fussy and crying behavior.

Maternal Sensitivity to the Infant

The mother's sensitivity and responsiveness to her individual infant's needs have been defined as crucial components of a mutually effective and enjoyable mother-infant relationship (Brazelton et al., 1974; Kaplan, 1978; Newson, 1977; Osofsky & Conners, 1979; Schaffer, 1977). The quality of early interactions has had observable effects on the infant's overall competency and his ability to adapt to changing environmental stimuli (Bell & Ainsworth, 1972; Brazelton et al., 1974; Brazelton, 1981; Bromwich, 1974; Osofsky & Conners, 1979; Tronick et al., 1982; Yarrow et al., 1972).

In a discussion of mothering as stimulation, Schaffer (1977)
emphasizes the importance of mother's ability to personalize the infant's stimuli ensuring her appropriateness for the infant's state, his ability to attend to the stimuli, and his willingness to reciprocate. Brazelton et al. (1974) in their ethnographical descriptive study of five mother-infant pairs from 2 to 20-weeks old, also concluded that one of the most important components of the mother's interaction with her baby was her sensitivity to the infant's capacity for attention and his need to withdraw.

Kaplan (1978) emphasizes the interrelatedness and reciprocal nature of the mother-infant interaction. She states that the mother's awareness of and reaction to the individual differences determine the effects of the interaction. Sander (1962) drew attention to the importance of these early interactions and suggested the regulation of rhythms such as waking and sleeping, feeding, and elimination lead to a basic core of interactional trends that influence later functioning.

Brazelton et al. (1974) state that a mother can respond to her infant's rhythms in one of three ways: by adjusting her own rhythm to his, following his cues for attention; by not responding; and by altering her own rhythm with the purpose of changing his. If the mother is sensitive to her infant's cues and if the infant is responsive to his mother's efforts to meet his needs, a mutual adaptation will develop (Barnard, 1978). The value of increasing the mother's awareness of the infant's cycle and her influence on this cycle was demonstrated in one of the Nursing Child Assessment Project follow-up studies, where Snyder and Speitz (1979) focused upon families in which child abuse was an
identified problem. Mothers kept diaries of their infant's sleep/activity cycles and became increasingly aware of their infant's patterns. Findings indicated that this awareness assisted mothers in the preparation for and management of their infant's distressing fussy periods.

Upon examining the mother-infant relationship, Newson (1977) views the mother's task as one of organizing her own activity in synchronous exchange with her baby's actions. Newson explains that mothers are continuously learning how to communicate with their infant and how to capitalize on what the infant brings to the interaction. Newson states: "Being able to read the infant so as to anticipate from past experience may be more important than having knowledge about babies in general." (p. 59).

If a mother is sensitive to her infant's behavioral cycles (including the fussy episodes) and to the infant's cues that precede crying, it must be possible for her to anticipate and subsequently prevent specific sources of distress that lead to the infant's cry. Interestingly, this review has not revealed any literature that discusses the development or value of such maternal sensitivity in the management of crying behavior.

The affective component of early mother-infant interaction experiences generates a mood that acts as an initial adaptive response. Tronick et al. (1982) discuss their own and others' research findings that demonstrate "... it is an emotional mood that modifies and stylizes the infant's interactive behavior." (p. 97). They conclude that
An infant with a clear sense of his or her effectance will be persistent in the face of obstacles to goal achievements, will muster and deploy means, and will generally show a positive mood. An infant who feels ineffective or helpless will be easily stressed, negative and withdrawn. (p. 97) Thus, a lack of maternal responsivity or sensitivity gives the infant a negative approach to subsequent stimuli and a feeling of helplessness in his ability to affect his environment. An infant whose cries are ignored or result in negative maternal responses will not feel secure in his ability to get comfort or attention. If a negative mood prevails when his mother does respond, he may avoid signalling for her and approach new stimuli in a helpless or defensive way.

In The Nursing Child Assessment Project (1976-1979), the mother's typical mode of response to her child was an interesting variable. Findings indicated that her responses, whether loving and supportive or hostile and restrictive, had an influence on the child's later intellectual functioning, and were related to the mother's education and psychosocial assets.

An example of the influence of a caretaking approach is demonstrated in the mother's promptness of response to her infant's crying. Her attitude towards "spoiling" her infant has been documented as a common and a statistically significant influence on her response to his crying behavior (Bernal, 1972; Wilson, Witzke, & Violin, 1981). In a study of 531 parents in a rural midwestern state, Wilson et al. (1981) found that
79% of the fathers and 66% of the mothers believed that it was possible to spoil their infant. Two-thirds of these parents believed that spoiling their child led to negative outcomes. The study also reveals that parents who were younger, less experienced, and had less education tended to have more negative and rigid views about spoiling. In the Cambridge study, Dunn/Bernal and Richards (1977) found that the issue of spoiling the child "dominated" the mothers' responses to crying. There was also a clear difference between first-time mothers and mothers of second babies. First-time mothers tended to adhere more closely to advised feeding schedules and their babies cried a great deal more than the infants of second-time mothers. Similarly, the study by Bell and Ainsworth (1972) reveals that some mothers were deliberately unresponsive to their infant's crying for fear that they would make their baby dependent, demanding, and spoiled. The data from the study confirmed that prompt maternal responsiveness to an infant's signals of distress decreased the frequency of crying in the infant's first year of life. This responsiveness also fostered the development of other modes of communication, promoted the infant's development of confidence in influencing his environment, and consequently facilitated the development of increasing competence and self-reliance.

Such factors as maternal health, education, child care experience and preparation, social stress, buffers to that stress, perception of support, expectations and perception of the infant, sensitivity, and
responsiveness to caregiving have been identified as influencing the maternal caretaking behavior and subsequent infant nurturance. It is believed that these factors specifically influence the mother's response to her infant's crying behavior and its effects on her feelings of maternal confidence. The following section will discuss the influence of environmental factors on maternal adaptation and subsequent management of neonatal crying.

Environmental Factors Associated With Maternal Responses to Neonatal Crying

In this study, the environment represents the context or setting for the interaction between the mother and the infant. It includes the father, his influence and contribution to the infant's care, and the influence of significant others. The nature and proximity of resources as well as the physical characteristics and conveniences of the home are also included.

To recall the purpose of this study and the interactive framework, the intent of this section of the review is to examine literature specifically associated with the influence of environmental factors on the mother's response to her infant's crying. As no studies addressing this topic directly were found, it is necessary to include literature that deals with environmental influences in infant caregiving in other and more general ways.

The study of environmental influences on infant growth and
development was initiated by Bowlby (1951). He explored the effects of the institutionalized environment on infants and children and emphasized the importance of the mother figure. Since that time, particularly in the 1970s, researchers have given increasing attention to the exploration of environmental constituents and their interaction with infant characteristics to promote growth and development (Barnard, 1979; Bromwich, 1981; Clarke-Stewart, 1973; Eyres et al., 1979; Gray, 1979; Kop & Parmelee, 1979; Lewis & Rosenblum, 1974; Sameroff, 1975; Sameroff & Chandler, 1975; Yarrow et al., 1972).

The work of Yarrow et al. (1972) led to their conceptualization of environmental stimuli as animate and inanimate. The animate environment refers to the activities of the caretaker (or significant others) that include the physical contact and the interventions employed to modify and direct the infant's interaction with his inanimate environment. The inanimate environment refers to the characteristics of his physical world and the variety, responsiveness, and complexity of the stimuli available for the infant's exploration and manipulation. Yarrow considers the environmental stimulation to be mainly animate as it involves all the experience encountered by the infant as originating and evolving from his caretaker (Barnard & Douglas, 1974).

Yarrow et al. (1972) identify the importance of the environmental stimulation and view it on a continuum where too much or too little have detrimental effects on the infant. They explain that an optimal level of
stimulation exists for each infant at each particular moment and situation. The quality of stimulation can also be considered in terms of variety, responsiveness, and complexity. In relation to maternal responses to crying, the infant may be viewed as presenting a unique situation in which optimal stimulation would not only relieve the infant's distress but promote his learning and growth as well.

Yarrow et al. (1975) explains that stimuli are not direct influences on mother-infant interactions. They are indirect influences in that they are perceived and utilized by the unique individuals in the interaction. This is why mothers cannot pick up a book to find which environmental stimuli will soothe their infant or which will increase the distress. A stimulus that will soothe one infant will increase the distress for another. A stimulus that is effective at one moment is not at another or no longer effective as of a particular age. Understanding how environmental stimuli are perceived and used by the infant involves defining the environment in relation to "... the individualized vulnerabilities and sensitivities of the young child." (Yarrow, 1979, p. 909).

Clarke-Stewart (1973) recognized the importance of environmental stimuli and the infant's individual differences in his definition of optimal maternal care as: "... not only warm, loving and non-rejecting but stimulating and enriching visually, verbally and with appropriate materials and immediately and contingently responsive to both the child's signs of distress and to his social behaviors." (p. 41).
Sociocultural influences such as beliefs about the nature of the infant and his behavior and about the caretaking role are discussed by Kagan (1979). He states that the qualities valued by the community and the experiences identified to enhance these qualities strongly influence the mother's approach to caregiving. Examples of these influences that relate to mothers' responses to their infant's crying include the following: a trend towards viewing the infant as an individual and a decreasing adherence to rigid routines such as feeding and sleeping that have been identified as sources of infant distress; an increasing appreciation for the competency of the infant and a subsequent response to the infant's cries as meaningful signals versus demands for attention; and an increasing appreciation for the "rightness" of feeling responses versus cognitive responses. In an article on helping parents to cope with infant crying, Duckett (1983) emphasizes the value of assessing the roots of the parents' attitudes towards infant crying. She reminds the nurse that a mother's response to her infant's cries are in accordance with her beliefs and values associated with the infant behavior and her role as mother.

The significant others and their beliefs about, knowledge of, and experience with infant crying are another source of influence for the mother. The husband, in particular, and the congruence of his beliefs about infant crying and the alleviation of distress with those of the mother play a key role in the mother's response to her infant's cry. The importance of the father's role in a mother's adaptation to the maternal
role was a finding of Shereshefsky et al. (1973). Parent mutuality that involves the characteristics, attitudes, and perceptions of the father and mother was identified as a key variable in the assessment of mother-infant interaction in The Nursing Child Assessment Project (Barnard, 1979).

The mother's resources, their nature and availability, and her perception of these resources as useful and supportive also influence the mother's responses to her infant. For example, an increase in the mother's contact with her infant in a rooming-in situation in the first days following the infant's birth provided mothers with infant caretaking experiences in a supportive and informative environment (Greenberg et al. 1973). The mothers felt more confident and competent in their caregiving and demonstrated a more sensitive response to their infant's crying than did those mothers without the rooming-in opportunity. Two other studies, which provided parents with opportunities to learn about their infants and parenting, had similar findings that support the value of learning opportunities for parents with new babies (Anderson, 1981; Davidson & Leonard, 1981).

The literature reveals that new families are products of a society that provides little opportunity for learning about infants and parenting (Breen, 1975; Brazelton, 1978; Cronenwett, 1976; LeMasters, 1965; Meier & Mead, 1978). Without adequate resources for support and current information, parents perpetuate an understanding of and an approach to caregiving that may result in less than optimal care of their child.
Mothers who identify neonatal crying as a concern require access to research-based advice and the support and interpretation of related research findings by knowledgeable and caring professionals (Duckett, 1983).

Support and help for the mother in her immediate environment frequently have been defined as key variables in her adaptation to the responsibilities of neonatal caretaking (Curry, 1983; Cronenwett, 1976; Mercer, 1981). Her ability to respond to her infant's cry and alleviate his distress requires time and energy. Significant others and emotional, marital, and financial stresses can drain her resources, leaving little time and energy for responding to her infant (Barnard, 1979). This may also affect her promptness of response to the cries, now known to be of vital importance (Bell & Ainsworth, 1972).

Such factors as noise (Brackbill, 1971) and temperature and humidity (Wolff, 1969) are examples of physical environmental influences that increase or decrease the infant's crying and can usually be controlled by the caretaker. The provision of auditory and visual stimuli and opportunities for social interaction are other examples of environmental stimuli that can be manipulated by the mother to stop the infant's crying and increase the infant's alertness. As well as a source of comfort, the environmental factors also can be the cause of distress, depending on the infant's unique situation at the time.

The critical importance of the environment to a child's growth and development was verified by The Nursing Child Assessment Project (Eyres
et al., 1979). Characteristics of the family and specific patterns of interaction had more predictive value regarding a child's future functioning than did a child's physical status, temperament, or specific skills in his first two years of life (Eyres et al., 1979). Factors associated with the environment that made a difference to the child's developmental outcome were listed as follows:

(1) The overall family milieu, including perhaps most importantly the degree of support available to the mother, (2) the inanimate enrichment of the environment, including availability of toys and materials and opportunity for variety of stimulation, and (3) the mother's typical mode of responding to the child, whether supportive or loving, or hostile and restrictive. (p.180)

These findings emphasize the importance of family support and education programs in assisting new parents with their caregiving responsibilities. A knowledge and understanding of environmental stimuli and their impact on the creation or alleviation of distress should assist parents in the understanding and management of neonatal crying.

The Effect of Neonatal Crying on Maternal Confidence

The literature associated with neonatal crying illustrates the remarkable physiological and social significance of this common, though variable behavior (Bowlby, 1969; Brazelton, 1981; Korner, 1974; Lester, 1982; Rheingold, 1969; Wolff, 1969). The literature that focuses on maternal adjustment to the caretaking role portrays neonatal crying as
a source of caretaking concern and a threat to the growth of maternal confidence (Adams, 1963; Barron, 1973; Carlson, 1976; Harris, 1979; Shereshefsky et al., 1973; Kaplan, 1978; Korner, 1974; Wilson, 1978). The circumstances under which neonatal crying will become a concern and/or influence maternal feelings of confidence require investigation. The literature does, however, reveal a number of studies that refer to or are relevant in the study of the effects of neonatal crying on maternal confidence.

Brazelton (1962) was one of the first researchers to conclude that a certain amount of crying was to be expected from normal healthy infants. He also was one of the first to acknowledge the impact of a crying infant on new parents' feelings of confidence. For many new parents, infant crying was viewed as a failure in mothering. Rheingold (1969) discussed the power of the infant's cry. The cry summons mother's attention and the cessation of the cry instructs mother regarding the appropriateness of her intervention. Since the cry is perceived as aversive, its cessation is rewarding for mothers. However, inability to terminate the cry after repeated interventions could perplex them and lead to anxiety and depression (Kitzinger, 1978). Korner expressed the influence of neonatal crying on new mothers.

The mother's capability in soothing her infant is one of the cardinal challenges she faces in the infant's earliest weeks of life and success or failure cannot help but leave an impact on her feelings of effectiveness and competence as a mother. (p.21)
White (1976) describes level of confidence as an element of self-concept. He describes self-concept as what a person feels capable of doing. He also explains how confidence develops in spheres where success has been experienced. The review did not reveal a definition of maternal confidence. This study, however, defines maternal confidence as a mother's belief in herself about her ability to care for her baby.

The relationship between neonatal crying and mothers' perceptions of confidence in their caretaking roles is not clear; but this relationship has emerged as an important influence on the mother-infant interaction.

Factors Affecting Maternal Confidence

A review of the literature reveals a number of factors that affect maternal confidence as it relates to neonatal crying.

Self-Confidence and Personality Characteristics. Self-confidence and personality characteristics of the mother have been found to influence adaptation to the maternal role. A study by Shereshefsky et al. (1973) examined the psychological aspects of a first pregnancy and the early postnatal period. They had a sample population of 57 healthy primigravidas and examined variables such as life history, personality, current life situation, pregnancy experience, infant characteristics, and maternal adaptation. Nurturance and, to a lesser degree, ego-strength were identified as personality characteristics that correlated with maternal adaptation. Nurturance was defined as the ability to give and respond to the needs of others. Ego-strength, described as an overall maturity and emotional adaptation, included such qualities as trust and
acceptance of self. Both these characteristics seemed relevant to mothers' abilities to respond effectively to neonatal crying. Shereshefsky et al. (1973) also found that mothers responded with varying degrees of flexibility and readiness to adapt to the changes incurred as a result of the new infant. All mothers expressed an unanticipated "persistent pervasive fatigue" (p.173), disorganization, and feelings of inadequacy related to meeting the demands of the infant and the husband.

In a factor analytic study of the mother-infant dyad, Stern, Caldwell, Hersher, Lipton and Richmond (1973) extracted nine factors from a matrix of intercorrelations between maternal personality characteristics, maternal behavioral characteristics, and infant personality and behavioral characteristics. Data were collected from 30 mothers and their infants during interviews at intervals over a 2-year period. Findings indicate a causal sequence of relationships between characteristics of the mother, the modes of maternal behavior she adopts, and the responses and development of the infant. Except for emotional involvement with their infants, the raters noted that it was the mothering qualities, rather than any distinctive personality characteristics, that were important.

Barnard and Douglas (1974) summarized a combination of characteristics related to the mothers' responses to their infant. They included: the mothers' vigor, responsiveness, positiveness regarding life and events, focus of control in the environment, and perceptions of and enthusiasm for their infant.
Perception of the Birth Experience. Maternal self-concept reflects the mother's lifetime of experiences as they affect her feelings of capability. Previous successes provide strength for new experiences (Barnett & Baruch, 1978; Baroni, 1983; Rubin, 1961). Jordan et al. (1976) discuss perception of the birth experience, the early postpartum period, and the initial contact with the infant as influencing the mother's feeling of attachment and her growth of maternal confidence. In a review of the literature on maternal adaptation in the postpartum period, Mercer (1981) identifies perception of the birth experience as a factor influencing a mother's self-esteem and her early interaction with her infant. She explains that following the event, mothers evaluate their performance in relation to their expectations and attempt to integrate this experience. This is a vulnerable time, and mothers tend to be hypercritical of their performance. If the mother is helped to emerge from this experience with a sense of mastery, she can progress in her interaction with her infant and with her caretaking activities (Clark et al., 1979; Rubin, 1961). A long and difficult labor may negatively influence a mother's feelings regarding childbearing and her infant. This experience is often more common for primiparas than multiparas (Brackbill, 1979). Should the mother have a negative perception of her birth experience and have an infant who is difficult to console, her responses to neonatal crying may be influenced by this variable.

Knowledge and Experience in Child Care. Knowledge of and experience in child care have been identified as key variables in the successful
adaptation to the maternal role (Peters & Hoekelman, 1973; Shereshefsky et al., 1973). These variables relate to the mother's socioeconomic status and her level of education, which have been identified as predictors of infant developmental outcome (Eyres et al., 1979).

Wilson (1978) emphasizes parenting as a process that is uniquely complex and important. In his promotion of parenting programs, he identifies the essentials of parenting as: experience of being nurtured, interpersonal skills, external supports, understanding of child behavior and crafts for providing care. Shaw (1974), sharing Wilson's concern for programs to prepare parents for their role, claims that role competency develops when the person has the knowledge and resources to carry out the role.

Neonatal Characteristics. Individual characteristics of the infant greatly influence the mother's feeling of confidence. Korner (1974) stated that an infant's well being is a source of esteem for his mother. Shereshefsky et al. (1973) found that neonatal adjustment and functioning correlated significantly with maternal confidence. The infant's temperament and his responsiveness to his mother's interventions influence her responses and her confidence in meeting his needs. Brazelton (1962) and Prechtl (1963) described extreme cases where infants with unconsolable crying and hypo- or hypertonicity and an unresponsiveness to maternal intervention led to mothers' depression or rejection of their infants.
Social and Cultural Influences. The mothering role and maternal confidence are culturally and socially defined (Clark et al., 1979; Barnett & Baruch, 1978). The components of the mother's immediate and larger environment guide her formulation of expectations for herself as a mother and for her infant. Breen (1975) argues that the maternal role in our society is too prescriptive and narrow and leads mothers toward an ideal image that reality breaks down. Our society has led mothers to believe that their role is a natural and intuitive one and until recently has provided little guidance or resources for the preparation and nurturance of new families (Anthony & Benedek, 1970; Carlson, 1976; Curry, 1983). Some of the literature suggests a relationship between a mother's perception of her infant's cry, her ability to relieve her infant's distress, and feelings of self-confidence. This study will investigate the influence of neonatal crying on mothers' perceptions of maternal confidence.

Summary

A review of the literature and research associated with neonatal crying reveals findings that verify the significance of neonatal crying and maternal responses to this crying. Factors that influence crying behavior, mothers' responses, and their ability to console their infant are found in the literature associated with mother-infant interaction.

Such factors require specific research attention from the mother's perspective to identify relevant and effective nursing interventions when neonatal crying is a maternal concern. Exploration of the relationship
between neonatal crying and maternal responses is required to understand
the interactive nature of this caregiving concern.

With the benefits of an interactive framework and an appropriate
descriptive design, this study attempts to identify the reasons mothers
give for the crying of their neonate, the responses mothers employ, the
factors they see as influencing their responses, and their perceptions of
the effect neonatal crying has on their feelings of confidence.
CHAPTER THREE

Methodology

This descriptive study was designed to identify pertinent information related to mothers' responses to the crying of their infant during the first four postpartum weeks. With the help of the defined interactive framework and the literature review, quantitative and qualitative data were collected in a variety of ways. This chapter identifies the subjects and the criteria for their selection. It also describes the selection procedure, data collection instruments, the procedure for data collection, and the pilot test. Ethical considerations and protection of human rights are discussed.

Subjects and Setting

The subjects were a convenience sample of primiparous women with no obstetrical complications who delivered healthy, full-term infants at a local community hospital. The setting is a 32-bed "family-centred" postpartum unit, which encourages mothers to keep their infant at the bedside and facilitates the father's participation in the care of mother and infant.

Criteria for Selection

The criteria for selecting the participants were as follows:

1. primiparas between the ages of 19 and 36 with no antepartum, intrapartum, or postpartum complications as outlined in the definition of obstetrical complications in Chapter One;

2. mothers of full-term infants with no neonatal complications as outlined in the definition of neonatal complications in Chapter One;
Selection of Participants

The criteria for selection of participants and the rationale for these criteria were discussed with the Head Nurse of the postpartum unit where the study was conducted.

Each day, until 20 subjects were recruited, the Head Nurse distributed an information letter (see Appendix G for the Mother-Infant Study Information Letter) to those mothers who met the selection criteria. The Head Nurse or the patients' nurse informed the investigator of those mothers interested in participating in the study. The investigator then approached these mothers to explain and discuss the study in detail. Mothers who agreed to participate signed a consent (see Appendix H for the Consent Form).

The study sample consisted of 19 participants. Thirty mothers who met the selection criteria were approached. Five refused, and five indicated interest but were unable to participate in the total data collection procedure for various reasons. Written consents were obtained from 20 mothers. One mother dropped out of the study after the first week due to unusual family circumstances. This left a total of 19 in the study sample.

In this study, the focus was the mother for several reasons. She is usually the person most intimately involved with the infant and is usually the infant's major source of comfort. She is the person identified in the literature as expressing concern about neonatal crying.
This choice is not meant to underestimate the father's role but to narrow the focus in keeping with the time and resource parameters of this study. In the framework chosen for this study, the father's contribution is considered through the mother's perception of his influence on her responses to their infant's crying behavior.

Infants in this study are referred to as males with no intent to be sexist but to enhance the readability of the study.

Data Collection

Data pertinent to the research question were gathered from the three sources as directed by The Child Health Assessment Model: the mother, the infant, and the environment. Data were elicited and recorded in a variety of ways by using a variety of instruments. These instruments are discussed in detail and a summary of the data collection procedure follows.

Data Collection Instruments

1. **Background Data Sheet** (see Appendix A). This tool was used to summarize data from the mother's perinatal record that were pertinent to the study. The literature guided the selection of these data.

2. **The Neonatal Perception Inventory** (see Appendix E). This instrument guided the collection of information regarding the mother's perception of her infant's crying at 3 days postpartum (Part I) and 4 weeks postpartum (Part II). Although the predictive validity of the inventory has been questioned as to whether negative outcomes in the neonatal period are a valid measure of children at risk regarding
psychosocial development (Eyres et al., 1979; Freese & Thoman, 1978; Palisin, 1981), the tool is not being used for this purpose in this study. The inventory (Parts I and II) was administered and scored according to the guidelines prepared by Broussard (see Appendix L for correspondence regarding the Neonatal Perception Inventory).

3. Interview Schedules (see Appendices B & C). The interview has been identified as one of the most powerful methods for obtaining survey information (Gordon, 1975; Polit & Hungler, 1978). In this study, two schedules were prepared by the investigator for the collection of specified data at two different time periods.

The first interview schedule was prepared to guide the interviewer's collection of pertinent data that could not be found in the mothers' perinatal records. These data included the factors that are thought to influence mothers' responses to infant crying. These data included maternal expectations related to neonatal crying and maternal preparation for the management of this behavior. They provided a basis for comparison at the 4-week interview and data that would support or negate factors identified as influential in other research.

This interview schedule provided an orderly and consistent data collection format that allowed for subsequent quantification of the data. The last two questions on the interview were open-ended to encourage free and in-depth responses. The first question regarding relevant concerns at the time of the interview provided an opportunity for the mother to present any pertinent data that had not been requested
previously. The last question facilitated the expression of thoughts and feelings associated with neonatal crying in general that might influence the mother's interpretation and response to her own infant's crying.

The second interview schedule also was prepared by the investigator. The questions guided in-depth responses from mothers about their experiences with the crying behavior of their neonate. The questions guided the collection of relevant data and facilitated spontaneous and free responses from the mothers. When the mothers' answers were short, they were encouraged to elaborate.

4. The Sleep/Activity Record (see Appendix F). This data collection tool was developed by Barnard for The Nursing Child Assessment Project (1976-1979). It is recognized as a useful tool for the recording of most neonatal behavior. It was chosen to provide an indication of the amount of neonatal crying and the presence or absence of a pattern of neonatal crying.

In addition to neonatal crying, the mother was asked to record waking and feeding periods. The purpose for this recording was twofold: to avoid a concentrated focus on crying behavior, and to examine the relationship of feeding and waking periods and patterning with that of crying behavior. The reliability of the record was based upon the mothers' accuracy of recording and their conscientious completion of the records on a 24-hour basis for the requested 5 days. No attempt was made to verify the accuracy of these recordings. The amount of crying recorded was examined in relation to the mothers' responses on the
Neonatal Perception Inventory and on the questionnaire items associated with their perceptions of their infant's crying. The recordings also were used by the investigator to encourage the mothers to elaborate on their responses in the second interview to questions about their experience with the crying of their infant.

5. **Maternal Feelings Record** (see Appendix G for the Mother-Infant Study, Maternal Feelings Record). Data regarding the mothers' feelings about their levels of energy, anxiety, happiness, and confidence were considered important in determining the effect of the infant's crying on his mother. As their feelings changed throughout the day and from day to day as indicated in the pilot study, mothers kept a record of the selected feelings in the morning and in the evening on the same days they kept the infant's Sleep/Activity Record. A booklet requesting fixed responses to their feeling levels was prepared by the investigator. A space for additional comments at the bottom of the daily records encouraged the mothers to note pertinent events or to elaborate on their feeling responses should the fixed alternatives be too restrictive and not representative of their predominant feelings. As with the Sleep/Activity Record, no attempt was made to check the reliability of the mothers' responses on these records. Reliability was based upon the accuracy and completion of the record as requested.

The daily recordings of the neonatal behavior and of maternal feelings provided concrete data that facilitated discussion, in the second interview, about the mothers' responses to the crying of their infant.
6. The Mother-Infant Study Questionnaire (see Appendix D for the Mother-Infant Study Questionnaire). As there were no existing instruments to collect data specific to this study, a questionnaire was developed by the investigator. The purpose of this questionnaire was to gather data for description of the study population and for identification of variables associated with mothers' responses to their infant's crying.

A panel of 21 colleagues in the fields of nursing education and clinical practice, who are experienced in questionnaire construction, reviewed the questionnaire items. A few items were deleted, and a number were clarified. A decision regarding the best time for administration of the questionnaire was reached. In addition, a pilot test of the questionnaire was given. Both the panel of experts and the pilot test served to test the reliability of findings and to demonstrate the validity of the content.

Reliability refers to "the accuracy (consistency and stability) of measurement by a test." (Isaac & Michael, 1977, p. 87; Kerlinger, 1973) Although there was no intent to measure any particular variable or outcome, it was important that the questions elicited consistent responses and that the influence of time on the responses was consistent for each respondent. In the pilot test, 11 mothers completed the questionnaire twice within a 7-10 day period. It was found that these mothers changed many of their responses within the 10-day interval. Discussions with them revealed that 1 week made a significant difference in the mothers' feelings and responses and in the behavior of the
infants. For example, feeding was more of a concern than crying in the first week, whereas crying was a greater concern the following week. Maternal feelings of confidence, anxiety, and energy changed throughout the day and daily. Responses to other questions, however, remained stable. These were related to sources of help, infant temperament, and knowledge about and preparation for neonatal care. In discussing these findings with the panel and referring to the literature, results were consistent with what is known and experienced. Although a test-retest reliability statistic could not be calculated, the fact that the responses that changed could have been expected to change, and those that did not should have remained stable, places confidence in the reliability of the findings generated.

Validity "... indicates the degree to which the test is capable of achieving certain aims." (Isaac & Michael, 1977, p. 83; Kerlinger, 1973). The questionnaire was designed to gather data on parental lifestyle change, preparation for and knowledge of neonatal care, infant temperament, perception of spoiling, and perception of neonatal crying behavior. The degree to which this content directed itself to the study objectives was of considerable importance. Therefore, selection of the content was achieved following a thorough literature review and with the guidance of an established theoretical framework (Eyres, 1979). Seven of the panel members, content experts in the field of maternal and child health, addressed the appropriateness of the content and offered suggestions for revisions. Responses from mothers in the pilot test revealed that the items were relevant and of interest to them.
Accordingly, the investigator is confident that the questionnaire demonstrates content validity.

The 11 mothers of young infants who participated in the pilot test of the questionnaire also tested the entire data-collection procedure. This included responding to the content of the information letter and the consent form, completing parts I and II of the Neonatal Perception Inventory, completing the Sleep/Activity Record for 5 consecutive days, and responding to the questions on the two interview schedules. Following the pilot test, a number of changes were made. An estimate of time commitment required for participation in the study was calculated and included in the information letter to prospective participants. Fixed-alternative questions related to maternal confidence were removed from the questionnaire and included as open-ended questions in the interview schedules. A question regarding mothers’ thoughts and feelings associated with neonatal crying was added to the first interview to provide a basis for comparison in the second interview. The order of the questions in the second interview was changed so as to facilitate a more sequential pattern of data collection.

To summarize, the instruments used for data collection were as follows: Neonatal Perception Inventory (Parts I and II), the Sleep/Activity Record for five days, daily Maternal Feelings Records for the same 5-day period, the Mother-Infant Study Questionnaire, and the two interview schedules. In addition, the pilot test afforded the investigator the opportunity to evaluate the entire data collection
procedure. The variety of data collection instruments and methods resulted in a rich data base addressing the four study objectives.

**Data Collection Procedure**

When written consent had been obtained from the participants, data collection proceeded as follows:

1. Data were collected from each mother's perinatal record and recorded on the Background Data Sheet by the investigator.

2. An interview was arranged on the mother's second or third postpartum day. This interview was carried out by the investigator in a private area and at the mother's convenience. During this interview, the investigator followed the Interview Schedule #1 and recorded the mothers' responses on the schedule itself, except for the last two open-ended questions that were audiotaped. The mother completed Part I of the Neonatal Perception Inventory, and the investigator demonstrated and explained the use of the Sleep/Activity Record and the Maternal Feelings Record. The mother was instructed to begin these records towards the end of the third postpartum week and to complete them for 5 consecutive days. Mothers were also shown the Mother-Infant Study Questionnaire and instructed to complete it just prior to the home visit in the fourth postpartum week. Each mother was given an envelope containing the Nursing Child Assessment Sleep/Activity Record, the Maternal Feelings Record and the Mother-Infant Study Questionnaire, instructions for their use, and the name and phone number of the investigator.
3. At the beginning of the third postpartum week, the mother was telephoned and reminded by the investigator to begin the daily Sleep/Activity Record and the Maternal Feelings Record. Instructions for their use were reviewed. Arrangements were also made for a home visit.

4. On the day prior to the interview date, the investigator telephoned to confirm the home visit and reminded the mother to complete the questionnaire.

5. During the home visit, the investigator administered Part II of the Neonatal Perception Inventory and completed Interview Schedule #2. The entire interview was audiotaped. The daily records and completed questionnaire were collected.

**Data Analysis**

The quantitative data from the perinatal record, the first interview schedule, the questionnaire, and the Neonatal Perception Inventory were summarized using measures of central tendency and frequency distribution. Cross tabulations were prepared for selected variables from each data set. Analysis was accomplished using the Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner & Benet, 1975; Hull & Nie, 1979).

The qualitative data from the open-ended questions in the first interview, the data generated from the Sleep/Activity Record, the Maternal Feelings Record, and the data from the second interview were subjected to content analysis. Content analysis is defined by Fox (1982) as "... a procedure for the categorization of verbal or behavioral data, for the purpose of classification, summarization and tabulation." (p.391).
Content analysis of the interview data was done at what Fox describes as the manifest level. This implies that the content is the data themselves and nothing is inferred or assumed about them. There is ample evidence to support this level of analysis as being reliable and valid (Fox, 1982).

The content of the 19 interviews was transcribed verbatim and data were organized into four categories as guided by the specific objectives of the study. The purpose was to select data from the interview content that identified reasons the mothers gave for the crying of their infants, responses they reported in relation to their infants' crying behavior, factors that influenced these responses, and the effects of crying on their feelings of confidence.

**Ethical Considerations and Protection of Human Rights**

This study was conducted with the approval of The University of British Columbia's Screening Committee for Research and the guidance and approval of The University's School of Nursing.

The rights of the participants in the study were safeguarded in the following ways:

1. An informed written consent was required of the participants (see Appendix H for the Mother-Infant Study Information Letter and Appendix I for the Consent Form). In these two documents, the mothers were clearly informed of their right to refuse to participate or to withdraw from the study at any time without jeopardizing the present or future care of themselves or their infants.
2. The mothers were ensured that the study would not involve any risks to themselves or to their infants. It was explained that there were no direct benefits to them for participating, although it was anticipated that some mothers might find it interesting to think about the questions asked by the investigator and to talk with a sincerely interested nurse.

3. The Information Letter (see Appendix H) explained that the interviews would be audiotaped and that the mothers could request erasure of any part of their conversation if they so wished and that it would be done so in their presence.

4. Privacy was ensured during the hospital interview. The home visits were done at the convenience of the mothers.

5. Confidentiality was ensured in that the participants' identities are known only to the investigator and all information collected was coded and reported in such a way that the individuals could not be identified. Original data in the form of notes, questionnaires, daily records, and tape recordings were kept under lock and key and will be destroyed at the completion of the study.

Summary

The methodology of this descriptive study was designed following a review of recent literature and research in the areas of neonatal crying and mother-infant interaction. This review identified the mother as the primary source of data and encouraged the use of an interactive framework that would facilitate collection of data from the mother, infant, and
their environment. The use of a variety of data collection instruments resulted in a rich data base addressing the four study objectives. A series of procedures was adopted to collect the data which were analysed according to a set of established methods. The 19 participants, who were selected by means of specific criteria, were protected from any violation of their rights. A description of the data collected from these primiparas follows in the next chapter.
CHAPTER FOUR
Analysis and Discussion of Findings

This chapter presents the study findings in four major sections as they relate to:

1. the reasons mothers give for neonatal crying,
2. mothers' responses to the crying of their infant,
3. factors that influence maternal responses to neonatal crying,
4. the effect of neonatal crying on mothers' feelings of maternal confidence.

Each section will include a discussion of the findings as they relate to the literature. The chapter will be introduced with a description of the study participants and a discussion of findings associated with crying as a caretaking concern in this study population.

Study Participants

The study population consisted of 19 primiparous women between the ages of 20 and 36 years. They all experienced normal pregnancies and delivered healthy, fullterm infants in a community hospital. The lengths of labor ranged between 4 and 21 hours with a mean length of 9.4 hours. Three labors were induced by artificial rupture of membranes, and one of these included an oxytocin drip. Sixteen of the 19 labors ended in spontaneous deliveries and 3 were assisted with outlet forceps. The mothers received nursing care in hospital from 2 to 6 days with a mean stay of 4 days. All infants were discharged with their mother.
Sixteen of the women were Canadian born; 2 had ethnic backgrounds other than Canadian. Eighteen of the 19 women had high school or post secondary education and all worked throughout their pregnancy. Table 1 summarizes the participants' ages, educational, and ethnic backgrounds.

All 19 women were married and had the support of family or friends. Eighteen of the 19 women attended prenatal classes and had the presence of a support person throughout their labor and delivery. Each mother had a family physician and access to community health services.

In summary, this is a low-risk study population of first-time mothers who had healthy childbearing experiences and healthy, fullterm infants.

**Neonatal Crying as a Caretaking Concern**

Findings indicate that neonatal crying behavior was not an anticipated caregiving concern for any of the mothers on their third postpartum day. By the fourth postpartum week, however, 9 of the 19 mothers (47%) rated crying as a concern and had recorded significantly more crying behavior during the third postpartum week than did the mothers who rated their infant's crying as of little or no concern. Mean scores for actual minutes of crying in 24 hours and the concern score ratings are displayed in Table 2.
Table 1
Composition of the Sample According to Age, Education, Ethnic Background, and Years in Canada

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Participants (N=19)</th>
<th>% of Participants In Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>10</td>
<td>52.6</td>
</tr>
<tr>
<td>26-30</td>
<td>6</td>
<td>31.6</td>
</tr>
<tr>
<td>31-35</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>36-40</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Participants (N=19)</th>
<th>% of Participants In Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some high school</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>High school</td>
<td>9</td>
<td>47.3</td>
</tr>
<tr>
<td>Post secondary</td>
<td>9</td>
<td>47.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnic Background</th>
<th>Participants (N=19)</th>
<th>% of Participants In Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian</td>
<td>17</td>
<td>89.5</td>
</tr>
<tr>
<td>East Indian (lived in Canada 9 years)</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Chinese (lived in Canada 15 years)</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>
Table 2

Mean Ratings of Neonatal Crying As A Concern and Mean Minutes and Range of Actual Crying in 24 Hours

<table>
<thead>
<tr>
<th>Group</th>
<th>Concern Rating</th>
<th>Range in Minutes</th>
<th>Minutes of Crying</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (n=10)</td>
<td>m = 1.8</td>
<td>0-60</td>
<td>m = 19.5*</td>
</tr>
<tr>
<td>2 (n=9)</td>
<td>m = 3.9</td>
<td>30-720</td>
<td>m = 221.6*</td>
</tr>
</tbody>
</table>

* Mann-Whitney U=8, p<.001, two-tailed (corrected for ties).

In the total group of 19 mothers there was a significant positive correlation between minutes of actual crying and the mothers' concern ratings ($r_s=0.6508$, $p<.005$).

When findings are discussed in relation to mothers' concerns about crying, **Group 1** will refer to the 10 mothers whose infant's crying behavior was of little or no concern and rated 1 or 2 on a 5-point scale. **Group 2** will refer to the 9 mothers whose infant's crying behavior was of greater concern and rated between 3 and 5.

The raw data displaying the minutes of anticipated crying on the third postpartum day, the actual minutes of crying in 24 hours recorded in the mothers' third postpartum week, and the ratings of neonatal crying as a concern in the fourth postpartum week are found in Appendix M.
Discussion

Findings support those of Adams (1963), Brown (1967), Fillmore and Taylor (1976), and Harris (1979), in that, during the infant's first month, mothers identify neonatal crying as a major, unanticipated concern. In the fourth postpartum week, crying ranked second to feeding as the largest area of concern. These findings support those of Adams (1963) and Fillmore and Taylor (1976). In the current study, a number of mothers who had concerns about crying also had concerns about feeding and bowel elimination. As expected, and as indicated by Harris (1979), the amount of crying correlated positively with the degree of concern (see Appendix M). There were, however, individuals who experienced the same amount of crying but rated that amount differently as a concern. This suggests that mothers' perceptions of crying, rather than the exact amount of crying, is what the concern rating reflects.

In summary, the findings support those of other researchers in that they identify neonatal crying as an unanticipated concern for some mothers of neonates. Mothers' perceptions of the crying relate, in part, to the amount the infants cry but suggest the influence of other variables. The analysis in this chapter now proceeds to mothers' interpretations and responses to neonatal crying and an examination of the factors associated with these interpretations and responses.

Reasons for Neonatal Crying

This section of the chapter presents the reasons mothers gave for the crying behavior of their neonate. Each reason is discussed from the
mother's perspective. Discussion of the reasons follows where findings are compared with those presented in the literature.

Eighteen of the 19 mothers viewed the crying as an aversive signal, as an indicator of distress, and a behavior to be stopped. One mother interpreted the cry as an indicator of normalcy and of her infant's potential activeness.

Mothers in the study identified six major reasons for crying. These reasons are summarized in Table 3.

Table 3
Reasons For Neonatal Crying

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunger</td>
<td>19</td>
</tr>
<tr>
<td>Pain and discomfort</td>
<td>19</td>
</tr>
<tr>
<td>Social isolation</td>
<td>8</td>
</tr>
<tr>
<td>Fatigue</td>
<td>5</td>
</tr>
<tr>
<td>Overstimulation</td>
<td>4</td>
</tr>
<tr>
<td>Anger and frustration</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one reason.

All mothers identified hunger as a major reason for their infant's crying. Mothers' reports about hunger cries revealed that the cries varied in loudness and intensity and that the infants varied in the
patience with which they would wait to be fed. These infants' individual differences are exemplified in the mothers' following statements: "... and when he did cry, it was an all out roar and there's no pacifying him, he just wants to eat," "... she just won't cry unless I don't pick her up for nearly 15 minutes but she'll make noises like eating noises, you know, and she'll stick her hand in her mouth."

All mothers referred to pain and discomfort as reasons for their infant's cries. They identified factors such as gas accumulation, difficulty with bowel movements, colic, temperature changes, and trauma as sources of pain and discomfort. These reasons are summarized in Table 4.

Table 4

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>9</td>
</tr>
<tr>
<td>Colic</td>
<td>5</td>
</tr>
<tr>
<td>Bowel movement</td>
<td>4</td>
</tr>
<tr>
<td>Wet diapers</td>
<td>3</td>
</tr>
<tr>
<td>Trauma</td>
<td>2</td>
</tr>
<tr>
<td>Bathing</td>
<td>2</td>
</tr>
<tr>
<td>Heat</td>
<td>1</td>
</tr>
<tr>
<td>Allergy</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one reason.
Gas was the most frequent reason given for crying due to pain and discomfort. Mothers related their infant's problems with gas to the ravenous eating behavior of their neonates and their impatient protests against mother's burping interventions.

"Colic" was identified by five mothers in this study and confirmed by their doctors as a reason for the crying behavior. Mothers were not clear as to the nature of the "colic" but associated it with regular fussing, crying, and screaming episodes that were difficult to relieve. These episodes of distress typically followed an early evening feeding. They occurred once a day, lasted from minutes to hours, were characteristically associated with the infant's difficulties with gas and bowel movements, and were followed by sleep.

Four mothers specified the infant's bowel movement as a consistent reason for crying. One particular infant passed her stool every 48-72 hours and, although not constipated, cried intensely for 1 to 2 hours prior to the bowel movements. Another mother reported unconsolable screaming after every feeding and prior to each bowel movement. The infant was initially diagnosed as "colicky" but, by 4 weeks of age, was found to be allergic to milk. The screaming episodes subsided dramatically when the mother changed the formula to a soya-based product.

Three mothers specified wet diapers as a reason for the crying of their infant. The simultaneous presence of hunger or gas, however, confused the isolation of wet diapers as the major cause of the cries from these babies.
Two mothers specified bathing as a reason for their infant's crying. One infant cried when being placed in the tub, while the other screamed in protest when he was removed. One mother attributed her infant's increased crying and irritability to the hot weather. Another identified an accidental cutting of the infant's finger with the nail scissors and the bumping of her infant's head as reasons for crying.

Social reasons for neonatal crying were identified by 8 of the 19 mothers who differentiated a cry for attention from a cry for food or physical comfort. Clarification of the need for attention revealed that mothers interpreted this cry as a "need to be close," a "need to snuggle," a "need to be picked up," "held," or "walked." One mother identified loneliness as the major reason for a cry for attention, and another stated that her infant simply wanted to see what was going on. Only one mother interpreted her infant's desire to be close as a learning opportunity and a need for stimuli. Mothers tended to view the cry without a defineable physical cause as a plea for attention and a behavior to control before the infant became "spoiled."

Overstimulation and fatigue were reasons given for neonatal crying by nine mothers. Their accounts of their infant's tolerance and desire for stimulation revealed a distinct variation in the individual responses of the mothers. Frustration and anger also were sources of crying when, for example, infants lost their soothers or experienced difficulty getting on the breast.
Discussion

Each of the reasons reported by the mothers in this study has been described and discussed in the literature. Consistent with the findings of Wolff (1969) and Bernal (1972), hunger was the major cause for crying in this study group, followed by the pain and discomfort of gas in the infants' intestines. Mothers differentiated between the hunger cry, the pain cry, and the cry of anger and frustration as described by Wolff (1969). They also identified a social cry, which they interpreted as a plea for attention or change of environment. The literature refers to all crying as social (Ainsworth, 1964; Bernal, 1972; Bowlby, 1969; Brazelton, 1962; Lester, 1982) but does not isolate the sound of a social cry as different from that of a hunger cry or a pain cry. In this study, it was not clear whether the circumstances surrounding the cry differentiated it from the other cries, but obviously it was relevant to these mothers' interpretations and responses. As reported by Bernal (1972), these mothers quickly learned the meaning of different cries.

The 26% incidence of colic among the infants in this study was a little higher than the 21% incidence reported by Illingsworth (1955) and lower than the 50% reported by Dunn/Bernal and Richards (1977). Mothers' descriptions of colic were similar to those of Wolff (1969) and Dunn/Bernal and Richards (1977), and of the "heavy fussers" described by Brazelton (1962). All five infants with colic in this study belonged to the group of mothers who rated neonatal crying as a concern. Each of the infants had difficulty with gas, and each had a strong need for non-nutritive sucking. In Brazelton's study, the "heavy fussers" did
significantly less non-nutritive sucking than did the "light fussers." These findings are not congruent with those in this study but support further examination of sucking needs in colicky infants. Illingsworth (1955) emphasized that maternal tension and anxiety were a result and not the cause of the colicky episodes. Mothers' discussions of this issue in the study indicate they agree with that conclusion. The mothers' responses did not, however, support Brazelton (1962) in his identification of tension in the environment as a cause of neonatal crying.

The inclusion of wet diapers and bathing among the reasons given for neonatal crying supports the findings of Wolff (1969), who isolated the cooling effect of wet diapers and the removal of clothes, associated with bathing, as major sources of neonatal crying.

Although the social nature and purpose of the infant's cry is widely documented in the literature (Brazelton, 1962; Korner, 1974; Lester, 1982; Rheingold, 1969), only 8 of the 19 mothers referred to a social reason for the crying behavior of their infants.

In summary, findings indicate that mothers interpret neonatal crying as a meaningful and purposeful communication signal. Mothers demonstrated the ability to differentiate between specific cries and to relate them to a cause. Data reveal that mothers had a clearer understanding of the cries associated with physical reasons than cries of a social nature. The data also reveal that the mothers lacked specific knowledge about neonatal crying that would acquaint them with its social
implications and its significance for the infant's growth, and for the
development of the mother-infant relationship. Their responses appeared
to be intuitive rather than planned. Those responses to neonatal crying
behavior are now examined.

Responses to Neonatal Crying

This section of the chapter presents responses to neonatal crying as
reported by the mothers participating in this study. The responses are
categorized and discussed according to four main sources of comfort as
guided by the literature: movement and position change, promotion of
sucking, motor restraint, and auditory and/or visual stimulation.
Analysis of the mothers' responses includes the feeling responses
associated with the impact of their infant's crying, as well as those
action responses, outlined above, that are instrumental in the
termination of the crying behavior. Findings associated with mothers'
decision-making and the immediacy of response will also be examined.
Discussion of the findings in relation to those presented in the
literature will follow.

Responses to neonatal crying reported by the 19 postpartum mothers
are summarized in Table 5 according to five categories obtained primarily
from the literature.

Responses involving movement and position change were the most
frequently reported soothing interventions. These responses, as reported
by the mothers, are summarized in Table 6.
Table 5

Soothing Responses to Neonatal Crying

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement and position change</td>
<td>19</td>
</tr>
<tr>
<td>Promotion of sucking</td>
<td>15</td>
</tr>
<tr>
<td>Motor restraint</td>
<td>12</td>
</tr>
<tr>
<td>Auditory and/or visual stimulation</td>
<td>10</td>
</tr>
<tr>
<td>Administration of medication</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one response.

Table 6

Soothing Responses Involving Movement or Position Change

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick up</td>
<td>19</td>
</tr>
<tr>
<td>Walk</td>
<td>10</td>
</tr>
<tr>
<td>Rock</td>
<td>8</td>
</tr>
<tr>
<td>Sit up</td>
<td>6</td>
</tr>
<tr>
<td>Turn prone</td>
<td>5</td>
</tr>
<tr>
<td>Take for a buggy or car ride</td>
<td>4</td>
</tr>
<tr>
<td>Change diaper</td>
<td>3</td>
</tr>
<tr>
<td>Bathe</td>
<td>2</td>
</tr>
<tr>
<td>Place in swing</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one response.
All 19 mothers found that picking up their infant and holding him to the chest or shoulder terminated the crying. The infants varied in their ability to remain soothed, and mothers varied in the addition of other movements and/or position changes to supplement their initial response. Only three infants who were picked up remained soothed when they were returned to their original position. The other 16 infants required additional stimuli such as walking, rocking, riding, or swinging to soothe them. Walking was the most common additional response. A position change from supine to prone was particularly effective for mothers with colicky infants. These infants also responded well to riding in a stroller, buggy, or car; but all of them continued to cry once that motion stopped. Two mothers, one of whom had an infant with colic, described the effectiveness of the automatic swing, which provided not only rhythmic motion but music and contact with the environment.

The promotion of sucking was the second most frequent category of responses reported by 15 of the 19 mothers. Sucking included feeding and non-nutritive sucking either at the breast or on a soother. Frequency of nutritive and non-nutritive sucking responses is summarized in Table 7.

Mothers expressed difficulty in differentiating between nutritive and non-nutritive sucking needs. Sucking cues prior to an anticipated feeding were clearly understood, but these cues following a feeding or in-between feedings left the mothers wondering if their infant was still hungry. Assessment of hunger needs tended to be related to time, and most of the mothers expected their infant to require feeding about every 3-4 hours. Breastfeeding mothers questioned the quantity and quality
Table 7

Soothing Responses Involving the Promotion of Sucking

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding</td>
<td>15</td>
</tr>
<tr>
<td>Non-nutritive Sucking Opportunities:</td>
<td></td>
</tr>
<tr>
<td>Use of a Soother</td>
<td>13</td>
</tr>
<tr>
<td>Extra Time at the Breast</td>
<td>12</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one response.

of their milk. Two bottlefeeding mothers considered the infant's need for solid food. One of these mothers expressed her confusion in the following statement: "If you give her a soother, she'd be satisfied but if you give her a bottle, she'd take that too, so you wonder if she really wants it? or needs it? or what?" Infants varied in the duration and frequency of feedings and in their need for non-nutritive sucking. The infants who did not seem to need extra sucking after a feeding often needed movement or position changes to keep them content. Some infants sucked their soothers or their fingers throughout their waking hours. Others predictably indicated a need to suck after and/or prior to a feeding. Mothers varied in their responses to and interpretation of their infant's sucking needs. Some offered the breast or bottle whenever the infant wanted to suck; others attempted to maintain a feeding
schedule and encouraged the use of a soother. Others ignored the sucking cues and tried alternative comfort measures, while some mothers had not considered non-nutritive sucking needs.

Mothers described an effective soothing technique that involved holding the infant's arms and legs tightly against his body. The literature refers to this technique as motor restraint. Mothers soothing responses involving motor restraint are displayed in Table 8.

Table 8
Soothing Responses Involving Motor Restraint

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding</td>
<td>12</td>
</tr>
<tr>
<td>Cuddling</td>
<td>7</td>
</tr>
<tr>
<td>Snuggling</td>
<td>2</td>
</tr>
<tr>
<td>Use of a snuggly carrier</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one response.

Mothers' descriptions of holding, cuddling, and snuggling involved the soothing technique of motor restraint. Two of the 19 mothers used snuggly carriers, which securely restrain the infant's limbs. The mothers thought that their infant also was comforted by the closeness to mother and by the warmth and movement of her body. The soothing
effects of these carriers are likened to those effects of the swaddling technique. Interestingly, none of the mothers expressed any knowledge of or used swaddling as a soothing intervention.

Auditory and visual stimulation were used by 10 mothers as effective soothing responses. Five of these mothers noticed that their infant would quieten immediately in response to his mother's voice. One mother described a change from fussiness and crying to a quiet alert state when the infant heard her father's voice on the telephone. Two other mothers reported their effective use of lullabies as a soothing intervention. By accident, a mother found that the hairdryer, the running tap, and the vacuum cleaner all produced sounds that caught the infant's attention, stopped the crying, and facilitated a quiet alert response. Nine mothers admitted to having the radio and/or television on continuously but had not noticed its effect on the crying behavior of their infant. Two mothers mentioned the effect visual stimuli had on decreasing their infant's fussy or crying behavior and on facilitating an alert response. One mother referred to a mobile of a colorful funny face that immediately alerted her infant. Another described the fascination of a grandmother's face that predictably stopped the infant's fussing or crying.

A soothing intervention unique to mothers with a colicky infant was the use of medication. Three mothers were given the prescription for an antispasmodic to manage the infant's unconsolable crying episodes. All three mothers expressed concern about the medicine and questioned the investigator regarding its safety. One mother found the medication was very effective and called it "the magic medicine." Another mother found
it difficult to awaken her infant after his initial dose and decided not to use it again. She said: "I gave him 1/2 teaspoon and he was smashed, I was checking on him every 5 minutes." The third mother found the medication helpful when the doctor gave it to the infant in the hospital emergency department, but subsequently found that it had no effect.

Mothers' responses to their infant's crying generally included multiple responses from two or more categories as outlined in Tables 5 - 8. There was a tendency for the mother to speak to her infant, pick him up, hold him, rock and carry him, offer him a soother, and change his diaper within minutes of the cry. It was therefore difficult for the mother to isolate the effectiveness of a particular response. Mothers did not necessarily know or understand the reason for the crying. The major intent for all mothers was to stop the cry. One mother summarized her actions: "I just do everything I can think of to make him stop." This statement is typical of a trial-and-error approach to resolving the problem of neonatal crying. A few mothers provided evidence to indicate their ability to "tune-in" to the infant. For example, when talking about interpreting her infant's cry, a mother stated: "... and once you could savvy what it meant, it was easy." The same mother also said: "We figure we have to learn with him." Another mother stated: "I just do what she happens to like at the time."

Mothers also varied in the number of soothing responses they used and the persistence with which they tried to quieten their infants. For example, one mother stated: "I try everything, I just try and try." As a group, mothers tended to persevere with their alternative responses until
the cry was terminated. One mother, however, recognized a cry that she felt she could do nothing about. She stated: "With gas, I can't do anything ... I just ignore it now because I know there is nothing I can do."

Mothers demonstrated consistency in their responses to the crying behavior of their infant. During the interview in the fourth postpartum week, mothers said they could usually predict their infant's crying episodes and the effectiveness of selected soothing interventions. A few mothers noted that specific techniques worked differently at different times. For example, if the infant was hungry, a bath or audio/visual stimulation would make him more irritable, whereas a soother and motor restraint would have a quieting effect.

The mothers varied in the promptness of their responses. Nine of the 19 mothers discovered that if they did not respond to the infant's initial signals of distress, the infant became increasingly upset: fussy behavior became crying, crying increased in intensity, and the infant became difficult to console. These nine infants belonged to the group of mothers who identified neonatal crying as a concern.

Two kinds of maternal responses to neonatal crying have been discussed in the literature. The first kind, just presented, refers to the mothers' responses instrumental in the soothing of the infant and in terminating his cry. The second refers to responses associated with the impact of the infant's crying behavior on his mother's feelings. The responses from this second group are presented in Table 9.

Feelings of frustration were most frequently expressed in such
statements as: "You should be able to do something, to comfort her somehow and it's just so frustrating"; "I'm running out of ideas"; and "This baby, she takes 26 hours of your day."

Table 9
Mothers' Emotional Responses to Neonatal Crying

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frustration</td>
<td>11</td>
</tr>
<tr>
<td>Fatigue and exhaustion</td>
<td>8</td>
</tr>
<tr>
<td>Helplessness</td>
<td>8</td>
</tr>
<tr>
<td>Failure</td>
<td>2</td>
</tr>
<tr>
<td>Depression</td>
<td>2</td>
</tr>
<tr>
<td>Guilt</td>
<td>2</td>
</tr>
<tr>
<td>Puzzlement</td>
<td>2</td>
</tr>
<tr>
<td>Sorrow</td>
<td>2</td>
</tr>
<tr>
<td>Exasperation</td>
<td>1</td>
</tr>
<tr>
<td>Fear</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. Participants reported more than one response.

Mothers who identified crying as a concern consistently spoke of fatigue and exhaustion. One mother said: "I am getting so tired, I just ask, is there any end to it?" Of the eight mothers who identified
feelings of fatigue and exhaustion, all found themselves less able to soothe their infant or tolerate the crying.

A feeling of helplessness was common to all mothers whose infant had unconsolable crying periods. Mothers stated: "I wish I could do something"; "I just don't know what else to do"; and "I can't help him and he can't help me, I just feel so sorry." Two mothers expressed failure and depression associated with their inability to console their infant.

Mothers who identified their infant's crying as a concern expressed many more negative feelings about themselves than did the mothers of an infant whose crying was not a concern. Six mothers expressed a need to get away from the crying. For example, one mother said to her husband: "Take her, I'll leave." Another explained: "We'd take turns walking around the block just to get away from the screaming, but it got so you could almost hear it when you were walking." The mothers in this study provide evidence of the negative impact of neonatal crying on their feelings associated with caregiving. Those who identified infant crying as a concern perceived themselves as having a particular, negative experience with neonatal crying.

Discussion

Most of the soothing responses identified by the mothers in this study are documented in the literature as being effective. Picking up and holding were the most frequent responses in the study, findings that support the similar findings of Bell and Ainsworth (1972) and Korner and Thoman (1972). Mothers' reports about rocking support the findings of
Wolff (1969), who found this technique the most effective soothing intervention for the 18 infants in his study. In this study, horizontal rocking was not noted to be any more effective than vertical rocking as demonstrated by Pederson and TerVrugt (1973). Similar to their findings, however, the eight mothers who reported the effectiveness of rocking did notice the infant's preference for a fast versus a slower pace. The mothers had observed their infant's response to changes in position. Brackbill (1973) demonstrated that infants slept longer and moved less when placed in a prone position. The mothers in the present study found the prone position particularly comforting to the colicky infant and that just changing the infant's position was only temporarily effective unless the infant was ready to go to sleep.

The infants usually required additional stimuli to maintain a state of contentment. Interventions such as walking, riding, and swinging have been recommended by Jones (1983), Smart and Smart (1978), and Spock (1977) but have not been investigated as to the reason for their effectiveness or for their effectiveness in relation to other soothing interventions.

The promotion of sucking was identified by 15 of the mothers as a predictable soothing response. This finding supports those of Bell and Ainsworth (1972), Brazelton (1962), Dunn/Bernal and Richards (1977), and Wolff (1969). The literature does not clearly differentiate between sucking to satisfy hunger and sucking for comfort. Wolff (1969) did attempt to separate the effects of sucking and swallowing and those of a full stomach and found that a full stomach was the major source of satisfaction. There was, however, no control of hunger as a variable.
Dunn/Bernal and Richards (1977) concluded that the rhythmic stimulation of sucking is a basic source of comfort for infants. The mothers in their study tended to agree that sucking soothed even the hungriest infant, at least for a short period of time. The comfort value of pacifiers was documented by Bell and Ainsworth (1972), Dunn/Bernal and Richards (1977), Smart and Smart (1978), and Wolff (1969) and is supported by the 13 mothers in the present study who comforted their infants by providing them with soothers.

The mothers' effective use of holding, cuddling, and carrying techniques and their use of the snuggly carrier incorporate and support the use of motor restraint as a comforting intervention for neonatal crying behavior. Brackbill (1971) found that swaddling was the superior soothing technique in her study and, on further investigation, found that motor restraint was the component of the swaddling technique that was responsible for quieting the infants. Swaddling was not mentioned by the mothers as a soothing alternative. Some of them may have benefited from the article by Romanko and Brost (1982), which summarizes research findings supporting the effectiveness of swaddling as a soothing technique and illustrates how it is accomplished.

The 10 mothers who noted the effectiveness of audio-visual stimuli for the soothing of crying infants support the findings of Wolff (1969), who noted the effect of mother's voice and face on infants as young as 2 weeks. Mothers' use of lullabies and other sources of low continuous sound support the work of Condon and Sander (1974) and that of Brackbill (1971), who demonstrated their value in soothing crying infants and
promoting sleep. The limited use of audio-visual stimulation in this study group is noteworthy as is the limited amount of literature discussing this approach for the nurturance and comfort of young infants. It is interesting that mothers whose infant's crying was of little or no concern used audio-visual stimulation as a soothing intervention for their distressed babies twice as often as did the group whose infant's crying was of concern. The literature review did not reveal any information that might relate to this particular finding.

Mothers expressed ambivalence regarding the use of antispasmodics for their infant's colic as did the 35 mothers described in the study by Harris (1979). Mothers in both studies, however, perceived themselves as without other soothing alternatives and willingly had accepted the prescriptions. The frequency of prescribing medication for colic, the criteria for use, and the significance of its effect were not within the realm of the literature review for this study but would be of interest and relevance to the management of neonatal crying.

Regarding the importance of the promptness of mothers' responses to the crying of their infant, findings in this study support those of Bell and Ainsworth (1972) and Clarke-Stewart (1973). The mothers who let their infant cry had more concerns about crying. It was noteworthy that several mothers in the group where crying was not a concern tended to anticipate their infant's needs, were alert for signs of pre-cry behavior and were confident in their ability to circumvent their infant's need to cry. These mothers described distinctive neonatal vocalizations that, if ignored, would turn into crying behavior. Such vocalization was
noted in older infants in the study by Bell and Ainsworth (1972), who concluded that prompt responses to crying facilitated the development of communication skills other than crying. Promptness of response was not a goal of every mother. Instead, mothers, particularly those in the group where neonatal crying was of greater concern, tended to feel the infant should learn to wait and in doing so may learn to comfort himself. Whereas the findings of Bell and Ainsworth (1972) indicated promptness was more important than the effectiveness of the response to crying, mothers in this study were more concerned with effectiveness.

The mothers' emotional responses to neonatal crying behavior revealed support for the findings of Harris (1979), who described the powerful negative effect of neonatal crying on mothers of new babies. Feeling responses expressed by the mothers were very similar to those of the 35 mothers in the study by Harris, in which 66% of the mothers identified their infant's crying as a concern as compared with 47% of the mothers in this study. Both groups of mothers identified frustration as the most frequent feeling expressed. Physiological responses to crying, such as those discussed by Frodi et al. (1978), were not explored; but some of the mothers, particularly those for whom crying was a concern, did complain of severe fatigue and exhaustion, anorexia, weight loss, and insomnia.

In summary, the mothers' responses to the crying behavior of their infant included those from each of the four major interventions found in the literature: movement and position change, the promotion of sucking,
motor restraint, auditory and/or visual stimulation. The data in the study, however, necessitated the addition of the medication category. Mothers' responses tended to be multiple and not necessarily preceded by assessment or determination of the reason for the cry. The number and choice of soothing responses were determined by the mothers' knowledge of alternatives. The development of the mothers' response patterns to their infant's crying behavior was not clear. The use of multiple responses in a trial-and-error approach did appear to be a source of frustration and ineffectiveness. The literature review did not reveal any findings associated with the response patterns of mothers to the crying of healthy newborns. There is, however, a study of mothers' responses to the crying of chronically ill infants (Holaday, 1981).

Findings also revealed differences between mothers who identified neonatal crying as a concern and those who did not. Mothers for whom crying was a concern (Group 2) experienced less success in their efforts to terminate their infant's crying, tended to be less prompt to initial pre-cry or crying behavior, used audio-visual stimulation as a soothing technique half as often as mothers in Group 1, and experienced more negative feelings with neonatal crying.

As a total group, mothers' responses to the crying behavior of their infants varied, as did their promptness of response. They did, however, demonstrate consistency in their choice of responses and in their approach to their individual infant. None of the mothers demonstrated any specific knowledge associated with individual soothing interventions or with neonatal crying. There was no obvious pattern of assessing the
cry or identifying the most appropriate or effective response. Factors influencing what appears to be an intuitive approach, and the variation in responses characteristic of individual mother-infant pairs, follow in the next section of this chapter.

Factors Influencing Mothers' Responses to Neonatal Crying

This section presents and discusses findings associated with specific neonatal, maternal, and environmental factors that influenced the mothers' responses to their infant's crying behavior. The section begins with presentation and discussion of neonatal factors relevant to this study population.

Neonatal Factors

The infant's cry, the behavior associated with the cry, the amount of crying, and the readability and responsiveness to soothing interventions in particular influence the mother's action and feeling responses.

The Cry. Mothers' perceptions of their infant's cries determined the nature and immediacy of their responses. Mothers described "pain cries," "intense screaming," and "new cries," as cries that evoked an immediate response. One mother described her instant response to her infant's pain cry because it was "wild and scary." Infants varied regarding the amount of crying and the loudness and intensity with which they expressed their distress.

Most mothers reported an increase in the amount of crying their infant did in their early postpartum days as compared with that in hospital. In Group 2 there was no correlation between the mothers'
perceptions of the infants' crying on the third postpartum day and their crying in the third postpartum week. In Group 1, however, there was a positive and significant correlation between the mothers' perceptions of their infant's crying behavior on their third postpartum day and their actual crying in the third postpartum week ($r_s=0.532, p<.05$).

Findings indicated that the more the infant cried the more attention he received from his mother and other family members. The louder and more intense his crying became the more effort mother put forth to soothe him, and the more negative feelings she had in response to the crying behavior.

**Irritability.** Irritable infants did more crying, required more comforting and attention, and benefited from a quiet environment prior to sleep. Infants with episodes of colic were notably irritable and difficult for mothers to soothe. During an episode of colic, one mother exclaimed: "Nothing I do is right."

**Readability.** Data revealed that the infants' cues associated with distress varied as did the clarity of their cues. Cues indicative of hunger or pain were generally more clear than those of discomfort, fatigue, boredom, overstimulation, or frustration. Mothers expressed confusion with behaviors associated with crying such as: sucking cues following or between feedings, cues indicating closeness but resistance at the same time, cues associated with unconsolable crying from no apparent cause. Mothers gave descriptions that reflected uncertainty as
to what the infant wanted. For example, one mother said: "... between 4 and 5 and until 8 o'clock, he wasn't sure if he wanted to be up or if he wanted to be asleep." Another described her infant's confusing behavior: "She sucks for 5-10 minutes and she's off to sleep but I just put her down and she's awake again." Another said: "... by the night-time feeding she'll drink but she'd eat a bit, spit out the bottle and scream, then want it back right away ..." There were many more examples including those that portrayed the effects of clear cues on mothers' choices of response and their feelings of confidence in managing the crying behavior.

**Consolability.** The infant's ability to quiet himself or be soothed varied among the infants. None of the infants could console themselves for longer than 10 minutes. If the infant did not fall asleep within that time, the mother's help was required. The infant's responsiveness had a profound effect on the mother's feelings about her caregiving. Mothers expressed feelings of frustration, helplessness, and guilt when their infant did not respond to their soothing efforts. One infant's lack of responsiveness led to the mother's withdrawal from her child's crying behavior. The infant's cuddliness was reported as an important example of the infant's responsiveness. Cuddlers were easily comforted by close contact with their mother. On the other hand, when distressed, non-cuddlers tended to be more restless when held and preferred movement and audio-visual stimulation to motor restraint or sucking. Data thus revealed that cuddlers received more holding and snuggling than non-cuddlers. Two mothers indicated their disappointment in their
infant's resistance to cuddling. One stated: "She won't even lay her head on my chest and snuggle." Another said: "After a feed she'd rather just lay there and look around. I don't think she really cares that much about me yet, I'm just here for feeding."

The Mann-Whitney U Test was used to identify any statistical differences between the infants whose crying was a greater concern to their mothers (Group 2) and those infants whose crying was of little or no concern (Group 1). Findings indicate that, in this study population, no differences were found in relation to the infant's sex, or such temperamental characteristics as activity level, sensitivity to noise, intensity of expression, clarity of cues, predictability, contentedness, or self-quieting ability.

Mothers' interview data, however, illustrate some apparent, though not statistically significant differences between the infants in Group 1 and those in Group 2. For example, mothers in Group 2 perceived that their infants gave more confusing cues in relation to their distress and comfort. In Group 1, however, mothers perceived their infants to provide clear cues in relation to their distress and comfort, to be generally more content, and consistently consolable during crying or fussy episodes. It was noted too, that these infants had easily definable feeding, waking, and crying patterns and tended to have less waking time at night than the infants in Group 2.

Data revealed that the crying behavior of all 19 infants and their individual preferences for soothing interventions were predictable by the fourth postpartum week. Not all mothers perceived this predictability until they examined their Sleep/Activity Record and discussed their
soothing responses with the investigator. Interview data revealed that mothers in Group 1 were more aware of the predictability of neonatal crying than the mothers in Group 2, some of whom realized, for the first time, the regularity of crying episodes.

Discussion

The descriptions by participant mothers of their infant's cries illustrate the uniqueness, the organization, and the predictability of crying as a state described by Blackburn (1978). The findings also support those of other research studies, which addressed the influence of the infant's individual differences in the mother-infant relationship and the caretaking environment (Bell, 1974; Carey, 1972; Escalona, 1968; Sameroff & Chandler, 1975; Smart & Smart, 1978; Willemsen, 1979). The data also support findings of studies that illustrate the wide variation of infants' behavior associated with distress and comfort (Brazelton, 1969; Bernal, 1972; Korner, 1974; Korner & Thoman, 1972; Wolff, 1969).

The ability of mothers in the current study to differentiate between the cries of their young infants and to identify cries requiring immediate attention support the findings of Bernal (1972) and Wolff (1969), who noted these skills of mothers in their infant's first 2 weeks of life.

The gradual increase in the amount of neonatal crying during the first postpartum month reflects the trend noted by Brazelton (1962), who found that the total crying time of the infants in his study increased in the first month and peaked at 6 weeks.

Data related to the infants' readability support the findings of Barnard (1978), Clarke-Stewart (1973) and Moss (1967), who noted the
contribution infants made in eliciting particular maternal responses. The 19 mothers in the current study provided examples of interactive behavior between the mother and her infant as depicted in Barnard's Interactive Model (Chapter 3, Fig. 1). When infants provided clear cues, mothers were more likely to respond to their infant's needs and preferences. When the cues were confusing, mothers were less successful in relieving the infant's distress.

The irritability of the infant, which was particularly obvious during regular crying and fussing periods in the evening and characteristic of the infants with colic, increased the infant's contact time with his mother and increased her attempts to provide soothing interventions. These findings support those of Moss (1967), whose direct observation of 30 first-born infants in their first 3 months of life showed a "covariation between maternal contact and infant irritability . . . " (p.133).

The variation in neonatal soothability and the subsequent implications on maternal responses reflect Blackburn's description (1978) of consolability as a state-related behavior. The limited time the infants in the current study displayed self-consoling behavior emphasizes the importance of external sources of comfort to relieve neonatal distress (Clarke-Stewart, 1973; Dunn, 1977; and Korner, 1974).

Findings associated with the infant's cuddliness exemplify the conclusions of Rhinegold (1969), who documented the infant's skills in the socialization of his mother to his needs and preferences.

The behavioral styles of the infants in this study demonstrate a
wide variety of behavioral patterns. Those of the infants in Group 2 and those in Group 1 differed significantly only in their amount of crying. Unlike the profiles developed by Smart and Smart (1978) in their description of the "easy" versus the "difficult" infant, and those of Escalona (1968), who described the "active" versus the "inactive" infant, there were no significant differences between the temperamental characteristics that would assist in the description of infants whose crying was a caretaking concern and those whose crying was not of concern.

Maternal Factors

The influence of particular maternal factors was evident in the data associated with mothers' responses to their infant's crying behavior. The maternal factors that are relevant to this study group are the mothers' neonatal care preparation and experience, their perceptions and expectations of the infant, their sensitivity and responsiveness to their infant, and their attitude toward "spoiling" an infant.

Neonatal Care Preparation and Experiences. All the mothers had similar educational backgrounds, and only 3 of them had occupations that included preparation for and experience with the nurturance of infants or children. One of the mothers is an elementary school teacher, and the other two are nurses. All 19 mothers except 1 had at least 1 sibling.

Except for 1, none of the mothers recalled having the experience or responsibility for brothers or sisters less than 1-month old. Seven mothers, however, had some recent observational experiences with and some
participation in the care of infants of family or friends. Four mothers, only, had caretaking responsibility for a young infant for any period of time. Mothers' ratings of their experience with infants indicated they perceived themselves as having very little experience, and the ratings indicated there were no differences in experience between the mothers in Group 1 and those in Group 2. As mentioned previously, none of the mothers anticipated crying as a neonatal caretaking concern and, although a few had heard about crying as a problem, they did not feel it would be a concern for them. When faced with an unconsolable infant, mothers expressed the desperation of not knowing what to do.

In the hospital interview on the mothers' third postpartum day, and again in their fourth postpartum week, mothers rated their knowledge of neonatal care. In the hospital interview, the ratings were on a 10-point scale where 1 indicated the mother knew nothing and 10 indicated she knew a great deal. The mothers' scores ranged between 4 and 10 with a mean of 5.7. In the home interview, during the mothers' fourth postpartum week, the ratings were on a 5-point scale where 1 indicated the mother knew nothing and 5 indicated they knew a great deal. Their scores ranged between 2 and 5 with a mean of 3.2. There were no obvious differences between Groups 1 and 2 in the ratings of neonatal care knowledge on the third postpartum day. In the fourth postpartum week, however, mothers in Group 1 rated themselves higher (with a mean score of 3.5) than the mothers in Group 2 whose mean rating was 2.8.

Data related to mothers' preparations for neonatal care included
prenatal classes, child care reading, child care discussion, hospital teaching and experience, and teaching by the community health nurse who visited each mother and baby in the postpartum period.

Mothers used a 10-point scale to rate the amount they felt they learned about neonatal care and neonatal behavior in prenatal classes, the amount of child care reading they had done, and the amount of neonatal care discussion they had had with their husband prior to the baby's birth. On the scale, 1 indicated none and 10 indicated a great deal. The mean ratings for each of these experiences are displayed in Table 10.

Table 10
Mothers' Mean Ratings of Prenatal Preparation Experiences for Neonatal Care

<table>
<thead>
<tr>
<th></th>
<th>PRENATAL CLASSES</th>
<th>CHILD CARE</th>
<th>CHILD CARE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neonatal Care</td>
<td>Neonatal Behavior</td>
<td>READING</td>
</tr>
<tr>
<td>Group 1 (N=10)</td>
<td>2.7</td>
<td>2.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Group 2 (N=9)</td>
<td>2.4</td>
<td>2.5</td>
<td>3.7</td>
</tr>
<tr>
<td>TOTAL (N=19)</td>
<td>2.6</td>
<td>2.3</td>
<td>4.8</td>
</tr>
</tbody>
</table>
Results indicate that prenatal classes were perceived as providing little preparation for knowledge and understanding of neonatal care or behavior. Although there was a range between 1 and 8, means for both experiences were low, with little difference between ratings for mothers in Group 1 and for those in Group 2. A number of mothers indicated their disappointment in the lack of neonatal care preparation in the prenatal classes.

The amount of child care reading and infant care discussion that took place in the prenatal period indicates an interest in learning about neonatal care at this time. It is interesting to note that six of the nine mothers who identified their infant's crying as a concern (Group 2) rated their child care reading as less than 5. On the other hand, 7 of the 10 mothers in Group 1, rated their child care reading in a range of 6 to 10. Thus, the mothers whose infant's crying was of little or no concern apparently did more child care reading in the prenatal period than those mothers in Group 2. However, the Mann-Whitney Test indicated there was no statistical difference between those means for Group 1 and Group 2 ($p < .1220$).

All mothers had the opportunity to care for their infants in hospital. The mean rating for this preparatory experience was 7.9, with little difference between the ratings of the mothers in Group 1 and those in Group 2.

In the third postpartum week, mothers rated the amount of neonatal care teaching they recalled receiving in hospital and the amount of
teaching they received from their community health nurse. Their ratings were made on a 5-point scale where 1 indicated none and 5 indicated a great deal. The mean rating for the hospital teaching was 2.7, with a mean of 3.1 for the 10 mothers in Group 1 and 2.3 for the 9 mothers in Group 2. Community teaching was rated a little higher with a mean of 3 and, although there seemed to be a difference, there was no statistically significant difference between Group 1 with a mean of 3.4 and Group 2 with a mean of 2.5. Each mother had received a visit from her district community health nurse by this third postpartum week, and 6 of the 19 mothers commented specifically about the value of the community health nurse as a resource person.

Findings indicate that mothers in this study population had little family preparation or formal prenatal education for the care of their infant. Teaching by health professionals occurred during a mean hospital stay of 4 days, during one to two community health nurse visits and visits to the physician.

Perceptions and Expectations of the Infant. Data regarding mothers' perceptions of neonatal behavior such as crying, feeding, sleeping, spitting, eliminating, and predictability were collected from the mothers' scores on the Neonatal Perception Inventory.

A summary of these perceptions is given in Table 11.
Table 11
Mothers' Postpartum Perceptions of their Infant's Behavior as Compared with that of an Average Infant

<table>
<thead>
<tr>
<th>Perception</th>
<th>GROUP 1 (n=10)</th>
<th>GROUP 2 (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 3</td>
<td>Week 4</td>
</tr>
<tr>
<td>More trouble</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Less trouble</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Same trouble</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Examination of the crying scores in particular are summarized in Table 12. These reveal that on the third postpartum day, 5 of the 19 mothers (26%) thought their infant's crying behavior would be as much trouble as that of the average infant. Four mothers (21%) thought the crying would be more trouble, and 10 mothers (53%) thought the crying of their infants would be less trouble.

By the fourth postpartum week, all the mothers in Group 1 perceived the crying of their infants to be of less trouble than that of the average infant. Whereas, mothers in Group 2 perceived the crying to be the same or more trouble than that of the average infant. These perceptions are congruent with the amount of neonatal crying. These data reveal a difference in mothers' perceptions in the fourth postpartum week between Group 1 (those mothers whose infant's crying is of little or no concern) and Group 2 (those mothers whose infant's crying is a concern).
Mothers' perceptions are summarized according to groups in Table 12.

Table 12
Mothers' Postpartum Perceptions of Their Infant's Crying As Compared With the Crying of the Average Infant

<table>
<thead>
<tr>
<th>Perception</th>
<th>GROUP 1 (n=10)</th>
<th>GROUP 2 (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 3</td>
<td>Week 4</td>
</tr>
<tr>
<td>More trouble</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Less trouble</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Same trouble</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

On the third postpartum day, mothers were asked to estimate the amount of crying they thought their infant would do in a 24-hour period when they took him home. The estimates ranged from 0 to 120 minutes, with a mean of 47 minutes.

During the third postpartum week, daily records of neonatal crying were kept by mothers for 5 consecutive days. Actual minutes of crying in 24 hours were averaged for the 5 days and examined in relation to mothers' estimates on their third postpartum day and their ratings of crying as a concern in the fourth postpartum week. These findings are presented in Table 13.
Table 13
Means and Ranges of Anticipated and Actual Amounts of Crying in 24 Hours and Ratings of Neonatal Crying as a Concern

<table>
<thead>
<tr>
<th></th>
<th>Minutes of Anticipated Crying</th>
<th>Minutes of Actual Crying</th>
<th>Ratings of Crying as a Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=10)</td>
<td>m = 71.5, Range = 0.5-120</td>
<td>m = 19.5, Range = 0-60</td>
<td>m = 1.8, Range = 1-2</td>
</tr>
<tr>
<td>Group 2 (n=9)</td>
<td>m = 41.7, Range = 0-60</td>
<td>m = 221.6, Range = 30-720</td>
<td>m = 3.9, Range = 3-5</td>
</tr>
</tbody>
</table>

Note. Concern Rating: 1=No Concern, 5=A Great Deal of Concern.

As previously discussed, by the third postpartum week, the infants of mothers in Group 2 cried significantly longer than the infants of the mothers in Group 1. On the third postpartum day the two groups of mothers had not significantly differed in the amount of crying they anticipated. None of the 19 mothers expected crying behavior to be a caretaking concern. Of particular interest, findings show that all 9 mothers in Group 2 underestimated the amount their infant would cry and 9 of the 10 mothers in Group 1 overestimated the amount their infant would cry (See Appendix M).
Responsiveness and Sensitivity. The mothers' responsiveness and sensitivity to their infant were not measured directly. Interview data, however, indicated that the mothers varied regarding their ability to read their infant's cues, identify reasons for crying behavior, and select effective soothing techniques. They also varied in their willingness to respond promptly to signs of distress and in their adaptation to the rhythms of their infant.

As indicated in the response data, all mothers were able to differentiate between cries and could describe their infant's individual preferences for soothing interventions. Mothers also indicated their sensitivity to a cry that required an immediate response, such as a cry indicative of pain in comparison to a hunger cry that indicates the infant could wait a short while.

Most mothers were able to describe their infant's patterns of eating, sleeping, waking, crying, and elimination. Two mothers to whom neonatal crying was a concern, did not realize the predictability of their infant's patterns until after completion of the Sleep/Activity Record.

Mothers in the group where crying was a concern tended to want to establish a predictable eating and sleeping schedule. They would encourage the infant to wait for 3 to 4 hours for feedings and kept their infant awake at specific times in hopes of facilitating sleep at other times. These mothers also expected that their infant should be able to wait between feedings and learn to comfort himself for short periods. The mothers thought that immediate responses to each cry would cause
manipulative and demanding behavior. Cries without an apparent physical cause were those that mothers felt they should try to ignore, at least for a while.

In comparison, mothers from Group 1 (to whom neonatal crying was not a concern) tended to respond to every cry and to pre-cry behavior. These mothers tended to enjoy socializing with their infants and carried them and held them most of their waking time.

A number of mothers in Group 1 displayed very flexible behavior regarding their infant's cues. One mother fed every 1-1/2 to 2 hours without concern. Another gladly played with her infant after the early 6 A.M. feeding because that was the time when the infant liked to play.

Findings in this study suggest there may be a relationship between these mothers' sensitivity and responsiveness and the crying of their infant. They do not, however, indicate if the infant's crying made his mother less able to read his cues and less willing to respond or, if the mother's lack of sensitivity and responsiveness increased the infant's distress.

**Attitude Toward Spoiling.** Mothers frequently expressed concerns about spoiling their infant. In the third postpartum week, mothers rated how much they thought they could spoil their infant by picking him up every time he cried. Their ratings were made on a 5-point scale where 1 indicated the child cannot be spoiled at all and 5 indicated he could be spoiled a great deal. Nine of the 19 mothers (47.4%) believed they could spoil their infant very little or not at all. Ten mothers (52.6%),
however, believed their infant could be spoiled from a moderate amount to a great deal. Mothers in Group 2, who identified their infant's crying as a concern, had a mean rating of 3.33, while mothers in Group 1 had a mean rating of 1.9. There is a statistically significant difference between the ratings of these two groups (Mann Whitney U=14.5, $p < .01$, two-tailed).

Content analysis of interview data, relevant to the influence of mothers' attitudes toward spoiling their infant on their responses to crying, revealed some interesting findings. Group 2 mothers frequently interpreted the immediate termination of crying at the sound, sight, or touch of mother as an indication that their infant was "spoiled." One mother explains: "I think we are getting to the 'spoilt' stage. She'll stop immediately when you go in her room . . . If you take too long she screams. As soon as you put your hands down she'll stop even before she is picked up." They tended to think that if there was a legitimate reason for crying the infant would continue to cry until that reason was corrected. If the mother could not identify a reason for the cry, such as hunger, discomfort, or pain, then the infant was crying for "attention" and to respond immediately by picking him up would reinforce his crying. Another mother explained that she waited for her infant to really cry before she went to her. She didn't respond to the fussy sounds prior to her crying because: "I don't want to spoil her into thinking that as soon as she whimpers somebody is going to come."

Another mother explains that although she hates to hear her infant cry: "I don't want to spoil him so I'll leave him a few minutes."
The mothers whose infant's crying was not a concern tended to respond more promptly to the cry without first trying to determine a cause. If the reason for the cry was not physical, these mothers assumed their infant was lonely, needed to cuddle, or wanted a change of stimulation. A mother explained that she didn't think her infant would be spoiled. She said: "I think she only cries when she needs something... only if she needs cuddling, she needs it." Half of the infants of these mothers cried very little, and the mothers felt they anticipated their needs and responded to pre-cry sounds and behavior, which reduced the infant's need to elicit a response from his mother.

Both groups of mothers found it difficult to explain the concept of "spoiling" but had heard about it as a behavior that reinforced an infant's crying and his attention-seeking behavior. Both groups of mothers let their infants cry a little to see what happened, and all mothers found that the crying became louder and more intense.

In summary, findings revealed that participants in the study group had little education or experience related to the care of infants. Findings also revealed that mothers who had negative perceptions of their infant had concerns about the crying behavior of their infant, the amount of which they certainly underestimated. Findings also indicated that the mothers who responded promptly to their infant's signals of distress and adapted to their infant's individual rhythms had an infant who cried very little. On the other hand, mothers who delayed their responses to signs of distress to prevent spoiling their infant had infants who cried more.
These data identify the relevancy of the following maternal variables to the study participants' responses to neonatal crying: a mother's preparation and experience; her perceptions and expectations of her infant; her responsiveness and sensitivity, particularly to her infant's signals of distress; and her attitude toward "spoiling."

Discussion

The mothers' limited preparation for the understanding and care of infants in this study population is characteristic of the present generation of new mothers in our society. This finding is congruent with those of Brazelton (1978), Clark (1966), Cronenwett (1976), Huntington (1979), and LeMasters (1965), who for the past two decades have recommended more adequate preparation for mothers of young infants.

Mothers' interest in preparing themselves for the caretaking role by reading and discussing neonatal care in the prenatal period challenges the decision to exclude such content from their prenatal programs. Their prenatal interest and their expressed postnatal need for such learning opportunities support the value of early parenting education as demonstrated by Anderson (1981) and Davidson and Leonard (1981).

Mothers in the group who identified crying as a concern felt particularly unprepared for the amount of neonatal crying and for their inability to console their infant. Their concern and frustration and their negative feelings associated with crying behavior reflect similar responses of mothers in the studies by Adams (1963), Fillmore and Taylor (1976), and Harris (1979).
Mothers' perceptions of their infant, as measured by the Neonatal Perception Inventory, indicated that mothers in Group 1 perceived their infant to be less trouble than the mothers in Group 2 on both the third postpartum day and in the fourth postpartum week. In Group 2, four infants were perceived to change from less trouble to the same or more trouble than the average infant from the third postpartum day to the fourth postpartum week. These findings support those identified in The Nursing Child Assessment Project (Barnard & Douglas, 1974), which revealed that mothers who perceived the behavior of their infant to change from positive to negative scores over the first postpartum month described the infant as "difficult" in terms of temperament. The four mothers in the current study whose perceptions of their infant's behavior changed from positive to negative were mothers of infants who had been diagnosed with colic. The crying of these infants had also been rated as a concern.

The dramatic difference between the crying estimates of the mothers in Group 1 and those in Group 2 was unanticipated and difficult to explain. Factors that may contribute to this difference but are yet to be explored in the literature are mothers' perceptions of the crying behavior and their preparation for and experience with neonatal crying.

The mothers' sensitivity and responsiveness to their infant's signals of distress and to the infant's needs and preferences varied among the study participants but appeared more evident in Group 1. In
this group, the mothers were more flexible with their infant, had fewer negative feelings associated with their caregiving, and their infants had less crying. These findings support those in other studies that demonstrate the positive effect of maternal sensitivity and responsiveness on the mother-infant relationship (Brazelton et al., 1974; Kaplan, 1978; Newson, 1977; Schaffer, 1977).

The ability of mothers in the current study to differentiate between cries and to know which cry required an immediate response supports similar findings in studies by Wolff (1969) and Bernal (1972). Those mothers who tried to structure the feeding and sleeping patterns had infants who cried more. The work of Brazelton et al. (1974), Newson (1977), and Schaffer (1977) indicated that mothers should try to follow their infant's cues and organize their activities in synchrony with those of their infant. A mother's responsiveness to her infant's rhythm is viewed as crucial to an enjoyable and effective interaction between mother and infant (Brazelton et al., 1974; Kaplan, 1978; Newson, 1977; Osofsky & Conners, 1979; Schaffer, 1977). Mothers who tried to deliberately delay their response to the crying of their infant found that the infant not only cried longer but also more intensely and was more difficult to console. These findings are supported by those of Bell and Ainsworth (1972), and Clarke-Stewart (1973), who demonstrated that a prompt response to early crying decreases overall crying during the infant's first year of life. During the interview in the fourth
postpartum week, most of these mothers who delayed their response to crying behavior stated that they had learned it was best to respond immediately to their infant's signs of distress. This is a characteristic example of the infant's contribution to his own nurturance (Bell, 1974; Korner, 1974; Lester, 1982; Moss & Robson, 1968).

The responsiveness of mothers to neonatal distress and their abilities to alleviate that distress are major maternal tasks in the process of mutual adaptation between mother and infant (Barnard, 1979). Numerous examples of maternal awareness of this aspect of the caregiving role are seen in the efforts of mothers to prevent crying and in other mothers' persistent efforts to soothe unconsolable infants. Mothers, however, who missed, misread, or ignored their infant's cues experienced less success with their soothing interventions. These data obviously support the goal of reciprocal interaction, which facilitates a more effective and enjoyable relationship between mother and infant.

The influence of mothers' beliefs about "spoiling" replicated related findings of Bell and Ainsworth (1972) and Dunn/Bernal and Richards (1977), which also revealed that mothers deliberately were unresponsive to their infant's crying to prevent "spoiling" him. A larger and more recent study by Wilson et al. (1981) confirmed mothers' continued concerns about spoiling their infant with too much holding and rocking and allowing parents' schedules to be altered by the infant. Such data indicate that parental behavior is typically incongruent with the findings in current research, which emphasize the importance of contact, prompt relief of distress, and adapting to the infant's rhythms.
Mothers in the current study, who were influenced by the notion of "spoiling" but felt uncomfortable about delaying their response to their crying infants, were caught in a dilemma regarding their responses.

Findings have revealed differences in maternal variables between mothers for whom neonatal crying is a concern and mothers for whom neonatal crying is of little or no concern. The literature associated with mother-infant interaction supports the relevance of these variables in early mother-infant adaptation. The chapter will now discuss the influence of environmental factors on the 19 mothers' responses to the crying behavior of their neonates.

**Environmental Factors**

In this study, the major environmental factors that were identified as having influenced mothers' responses to their infant's crying were beliefs and values associated with mothering and infant crying, and mothers' perceptions of help and support. Findings particular to these two major factors are presented and discussed.

**Beliefs and Values.** The beliefs and values prevalent in the mother's social environment influence her concept of the maternal role: the behavior expected, the preparation required, and the criteria for evaluating performance. Mothers learn their role as they grow and observe others in the role. Thus it is assumed that mothers are prepared for meeting the needs of their infants. In this study, the mothers' levels of knowledge and preparation for the management of neonatal crying are reflected in the following comments about their expectations related to neonatal crying: "I don't know how much she'll cry, I haven't given it
much thought at all”; "I don't think he'll cry that much, he'll be like his father”; "I think I'd let her cry 30 seconds, that would be a long time”; and "I hope he won't cry much. People say if the baby cries a lot, there's something wrong with his mother." These quotations indicate that the mothers knew very little about crying and had not prepared themselves for the management of this aspect of neonatal care.

Attitudes associated with neonatal crying and maternal responses are reflected in such statements as: "It's good to let them cry"; "I don't really think about it. Crying is only natural and I'm not going to be running in and picking him up everytime he cries"; "My doctor said, 'Don't let the baby run your life'"; "The nurse told me I wasn't supposed to let the baby use my breast as a soother"; and "My mother-in-law said, 'Bring her here and I'll put her on a schedule, this crying is ridiculous'." Other statements reflected the expectations of significant others: "Here, you take her," was a common response if the infant cried or fussed in the father's arms; "My in-laws and my husband think I should be able to do something to stop her from crying"; and "... Do something, shut her up." Such statements imply that mothers should know what to do and are responsible for consoling the infant.

Evaluative statements were also made: "With all this crying, I figure it has to be me"; "My girlfriends don't believe it, he hardly ever cries ... I do everything right, that's all!"

Data indicate that assumptions are made about preparation for the maternal role. Mothers in this study, particularly those with infants
whose crying was a concern, expressed awareness of their lack of preparation and experience and guilt associated with their inability to fulfill their own and others' expectations.

**Perceptions of Support and Help.** Mothers' perceptions of their sources of help and support were also of considerable importance in the first 4 postpartum weeks. They were of particular significance to mothers of infants whose crying was a concern (Group 2). In this group, two fathers were absent from the home: one, for the first 2 postpartum weeks and the other, for the entire postpartum month. Four other fathers were very busy with their work and away from the home from early morning until late at night and wanted only to eat and sleep when they came home. Two of the fathers not working were experiencing the stress of unemployment. One had very little to do with the infant, but the other shared the frustrations of a crying infant with the mother. This same group had families who were willing but limited in their ability to help. Four of the nine grandmothers worked but visited on their lunch hours and after work for short periods to provide support and to hold the baby while their daughter prepared supper for her husband. Other family members also had young children and were limited in their ability to help. A few brought their children when they visited, and the mothers had not only their own crying infant but the demands and confusion of other children in the household.

In comparison, the mothers in the group whose infant cried less appeared to have family and friends who were free to visit and help.
Husbands, though working, were identified as major sources of help and seemed available and helpful with household activities as well as neonatal care. These mothers did not, however, discuss their support system as much as the mothers in the group whose infants' crying was of concern; nor did they perceive their need for help and support as such an important issue.

In the total group, the father of the infant was identified as the mothers' major source of help and support. Mothers rated the degree of support in a variety of ways. Results indicated that mothers viewed their husband's perception of their infant's crying behavior as similar to their own and felt that their husband shared their concerns about neonatal crying. Mothers also viewed their husbands to be in agreement with their decisions regarding the infant's care, and to be as effective, or nearly as effective, in soothing their crying infant.

Mothers also identified their best sources of information for questions or concerns about their infants or neonatal care. These sources are summarized in Table 14. Mothers whose infant's crying was a concern found it difficult to obtain help or information about their infant's unconsolable crying. Professional sources such as: physician, public health nurse, hospital maternity nurses, and LaLeche League representatives tended to acknowledge and appreciate the mother's distress but offered little concrete help. For example, one mother approached her doctor about her crying infant. He acknowledged her exhaustion and said: "You must relax and get some rest." She returned home wondering how she was going to do that.
### Table 14

**Mothers' Best Sources of Information**

<table>
<thead>
<tr>
<th>Source</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>11</td>
</tr>
<tr>
<td>Mother (or Mother-in-Law)</td>
<td>8</td>
</tr>
<tr>
<td>Friends</td>
<td>7</td>
</tr>
<tr>
<td>Books</td>
<td>6</td>
</tr>
<tr>
<td>Public Health Nurse</td>
<td>4</td>
</tr>
<tr>
<td>Sister (or Sister-in-Law)</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note. Participants gave more than one response.*

Another mother called the hospital about her crying infant. The response was: "It's probably colic, all babies have it and they get over it."

Specific help tended to come from non-professional sources. For example, one mother said: "My husband would come from work everyday with a new suggestion."

Interview data revealed that despite lack of educational and experiential preparation, mothers expected themselves to assume the care of their newborn infant with little difficulty. They did not anticipate neonatal crying as a caretaking concern, but mothers whose infant's crying became a concern expected they should be able to identify the reason and alleviate the distress. As products of the same society, the
professional and non-professional support system also tended to
demonstrate these expectations.

In summary, the beliefs and values of the mothers' social milieu and
perceptions of help and support are major environmental factors that have
influenced the mothers' interpretations and responses to neonatal
crying.

Discussion

The literature addresses the importance of sociocultural influence
and of mothers' perceptions of their support system on their responses to
neonatal crying. The major influence of beliefs and values associated
with mothering and neonatal crying in the environments of study
participants support the writings of Kagan (1979), who stresses the
significance of community values on mothers' approaches to caregiving.
Approaches in neonatal care that are identified and recommended in the
literature were not consistently evident in mothers' responses to the
cries of their infant. For example, mothers frequently compared their
infant to other infants, expecting commonalities rather than individual
differences. Mothers also interpreted their infant's crying,
particularly without apparent physical cause, as demands for attention
that quick responses could reinforce. As well, mothers questioned the
rightness of soothers, demand feeding schedules, and too much attention.
These examples reflect the tenacity of traditional values and beliefs
despite research evidence to support changes in old thinking and
behavior. The data also showed that most mothers had little exposure to
the literature relevant to the understanding and management of neonatal
crying.
Mothers' responses in this study demonstrate the importance of exploring mothers' values and attitudes associated with neonatal crying prior to assessing their responses to crying behavior or initiating help. This finding is supported by Duckett (1983) in her approach to assisting mothers with concerns about neonatal crying and their confusion in response to conflicting advice.

The importance of the mothers' support systems is well documented in the literature (Curry, 1983; Cronenwett, 1976; Mercer, 1981). Mothers who identified the crying of their infant as a concern perceived themselves as requiring more guidance and support than they received. This finding supports those of Harris (1979), Jones (1983), Kitzinger (1978), and Smart and Smart (1978), who acknowledge the challenge of infants who are difficult to soothe. The role of the husband as the mother's major source of help and support defends a conclusion of Barnard (1979) which emphasizes the importance of parent mutuality in assessing mother-infant interaction.

This concludes the presentation of neonatal, maternal, and environmental factors that have influenced 19 mothers' interpretations and responses to the crying of their neonate. The chapter now proceeds to the data associated with neonatal crying and its effects on maternal confidence.

The Effect of Neonatal Crying on Maternal Confidence

In this study, maternal confidence is associated with a mother's belief in herself and her ability to care for her infant. Data
associated with maternal confidence indicated that neonatal crying does affect mothers' feelings of confidence. Findings also indicate that the impact of neonatal crying on maternal confidence is variable and dependent upon a number of neonatal, maternal, and environmental factors. This last section of the chapter presents these findings and discusses them in relation to those in the relevant literature.

In the fourth postpartum week, mothers used a 5-point scale to rate the degree to which the crying of their infant made them feel less confident. On the scale, 1 indicated the crying did not make them feel less confident whereas a 5 indicated that it made them feel a great deal less confident. Mean ratings are summarized and compared with mean ratings of crying as a concern in Table 15.

Table 15
Mean Ratings of Crying As A Concern and of The Degree to Which Crying Made Mothers Feel Less Confident

<table>
<thead>
<tr>
<th></th>
<th>Crying as a Concern</th>
<th>Crying Makes Less Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=10)</td>
<td>1.8</td>
<td>1.9 *</td>
</tr>
<tr>
<td>Group 2 (n=9)</td>
<td>3.8</td>
<td>3.7 *</td>
</tr>
</tbody>
</table>

* Mann-Whitney U=14, p<.006, two-tailed.
Analysis of the ratings indicate that there is a statistical difference between the mean ratings of the effect of crying on mothers' feelings of confidence of Group 1 (mothers who identified their infant's crying as little or no concern) and Group 2 (mothers who identified their infant's crying as a concern). In Group 2 the ratings of crying as a concern correlate positively with a decrease in maternal confidence, that is, the more crying is of concern the more it makes mothers feel less confident ($r_s=0.7316$, $p<.013$).

As maternal confidence has not been defined in the literature, mothers' comments in the interview data were examined for content that would contribute towards a definition from the mothers' perspectives. These data also helped to explain the effects of neonatal crying on maternal confidence. For example, some mothers referred to confidence as "a good feeling" and associated it with a baby who ate, slept, eliminated normally, and was happy and content when awake. One mother explained: "When he feeds and burps and does everything right and goes back to sleep again." Another mother said: "When he (the infant) feels happy and content, then I feel confident that I have done everything right." On the other hand, some mothers spoke more about the lack of maternal confidence and related it to a "down feeling" and associated it with crying, problems with eating, sleeping and bowel movements, colic, and fussy, irritable behavior that mothers could not understand or control. One mother whose infant's unconsolable screaming episodes frightened and concerned her, described the meaning of maternal confidence from her
perspective. She said that it was: "... what I have in myself, like how I am with her. I think of how I am with her and if I'm good enough, like if I'm capable."

Daily recordings of mothers' feelings of confidence and interview data revealed that the confidence of mothers fluctuated throughout the day and from day to day. The interview data revealed that specific factors seemed to influence the impact of the infant's cries on the mother's feelings of confidence. Factors that increase the negative effects of neonatal crying on maternal confidence and those that decrease the negative effects are summarized in Tables 16 and 17.

In summary, the mothers in this study indicate that neonatal crying behavior has a negative effect on maternal confidence. Data reveal that the relationship between neonatal crying and maternal confidence appears complex. Feelings of confidence tended to decrease when neonatal crying was unconsolable but termination of crying behavior did not subsequently increase feelings of maternal confidence. The major factors that seem relevant regarding the impact of crying on maternal confidence are the infant's well-being and his responsiveness to soothing intervention; mother's ability to understand her infant's needs, her success in relieving his distress, and her level of fatigue; and the presence of help and support.
### Factors That Increased the Negative Effects of Crying on Mothers’ Feelings of Confidence

<table>
<thead>
<tr>
<th>Factors</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant’s inconsolability</td>
<td>15</td>
</tr>
<tr>
<td>Maternal fatigue and exhaustion</td>
<td>14</td>
</tr>
<tr>
<td>Inability to understand infant’s needs</td>
<td>13</td>
</tr>
<tr>
<td>Functional problems of infant</td>
<td>8</td>
</tr>
<tr>
<td>Amount of crying</td>
<td>7</td>
</tr>
<tr>
<td>Fears about the reason for crying</td>
<td>4</td>
</tr>
<tr>
<td>Effective soothing by others</td>
<td>2</td>
</tr>
<tr>
<td>Critical feedback about responses</td>
<td>2</td>
</tr>
<tr>
<td>Mother’s mood</td>
<td>2</td>
</tr>
<tr>
<td>Lack of preparation or experience</td>
<td>2</td>
</tr>
<tr>
<td>Doing something new with infant</td>
<td>2</td>
</tr>
<tr>
<td>Absence of help or support</td>
<td>1</td>
</tr>
<tr>
<td>Nighttime</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note.** Participants gave more than one response.
Table 17

Factors That Decreased the Negative Effects of Crying on Mothers’ Feelings of Confidence.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Frequency (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s knowledge of what to do</td>
<td>11</td>
</tr>
<tr>
<td>Infant’s periods of contentment</td>
<td>7</td>
</tr>
<tr>
<td>Mother’s experience with her infant</td>
<td>7</td>
</tr>
<tr>
<td>Normalcy of infant’s functions</td>
<td>6</td>
</tr>
<tr>
<td>Mother’s contentment &amp; happiness</td>
<td>6</td>
</tr>
<tr>
<td>Infant’s responsiveness &amp; consolability</td>
<td>5</td>
</tr>
<tr>
<td>Mother’s understanding of the cry</td>
<td>3</td>
</tr>
<tr>
<td>Mother’s access to help &amp; support</td>
<td>3</td>
</tr>
<tr>
<td>Presence of husband</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Participants gave more than one response.

Discussion

The importance of neonatal crying on participant mothers’ feelings of confidence supports similar evidence in studies by Adams (1963), Brazelton (1962), Harris (1979), Kaplan (1978), Kitzinger (1978), and Korner (1974).

Mothers expressed the need to know and understand the needs of their infant and to be successful at meeting them. Wilson (1978) had
identified the understanding of child behavior and the acquisition of skills for providing care as major components of learning to parent. Mothers, however, are characteristically lacking in specific knowledge and skills particular to crying and other aspects of care. The mother's definition of maternal confidence as quoted (p.57) referred to feelings of capability. This definition is congruent with White (1976) in his view of confidence as an element of self-concept, or what a person feels capable of doing.

White (1976) and other researchers such as Barnett and Baruch (1978), Clark (1966), and Rubin (1961) emphasized the importance of experiencing success as a prerequisite in developing confidence. Mothers in this study had had little formal preparation or practice to master the skills associated with neonatal care. Previous success, such as the mother's sense of mastery in the labor and delivery experience, is documented as influencing the mother's self concept and growth of confidence (Barnett & Baruch, 1978; Brackbill, 1979; Mercer, 1981; and Rubin, 1966). Data in this study, however, were not adequate to examine this influence.

The references by participant mothers to their infant's eating, sleeping, and bowel function and their responsiveness to soothing interventions support the findings of Korner (1974) and Shereshefsky et al. (1973), who noted relationships between an infant's functioning and well-being and a mother's development of confidence in the maternal role.

Previous studies have identified neonatal crying as a relevant variable in a mother's adjustment to the maternal role and her growth of
confidence. This study has contributed to a definition of maternal confidence from the mother's perspective, has verified the negative impact of neonatal crying on maternal confidence, and has identified factors that modify the impact of crying on mothers' feelings of confidence in their caregiving role.

Summary

This chapter presented and discussed findings associated with mothers' perceptions of why their infant's cry, what they do about it, and what factors influenced their instrumental and feeling responses. It also presented and discussed mothers' perceptions of the effects of their infant's crying, and factors associated with those effects on their feelings of maternal confidence.

Findings indicate that neonatal crying was an unanticipated concern for 9 of the 19 participants (47%) in the study sample. Maternal, neonatal, and environmental factors that influenced the mothers' responses to the crying of their infant emerged from the data. Maternal factors such as the mothers' perceptions and expectations of their infant, sensitivity and responsiveness to their infant, and beliefs about neonatal crying and the maternal role influenced their responses to signs of distress. Neonatal factors such as the amount and nature of the crying behavior, the clarity of cues associated with distress and comfort, and responsiveness to the mothers' soothing interventions influenced the mothers' actions and feeling responses. Environmental factors such as beliefs and values associated with neonatal crying and
mothering and mothers' perceptions of help and support also influence mothers' responses and the unique interaction initiated by the infant's crying behavior.

The data associated with mothers whose infant's crying was of concern can be differentiated from the data associated with those mothers whose infant's crying was of little or no concern. Data common to both groups of mothers also contributed to the understanding of mothers' interpretations of and responses to neonatal crying.
CHAPTER FIVE

Summary, Conclusions, and Implications for Nursing

Summary

This study investigated mothers' interpretations of and responses to neonatal crying behavior. Since neonatal crying has been documented as a caregiving concern for mothers of young infants, it is important to understand the basis for this concern from the mothers' perspective. As mothers are the focus of perinatal teaching and health care, an understanding of their interpretations of and responses to neonatal crying behavior should provide direction for more relevant and effective nursing care.

The literature was reviewed to investigate the significance of infant crying behavior as a caregiving concern, to examine findings associated with mothers' understanding and management of neonatal crying, and to seek direction for relevant nursing care interventions. The review revealed that there was considerable research evidence to support the premise that neonatal crying was a caregiving concern for mothers of young infants. There was also evidence to verify the significance of neonatal crying to infant growth and development and to maternal-infant adaptation. There was, however, minimal literature that addressed: the process by which mothers interpret and respond to neonatal crying, factors that influenced their responses, circumstances under which neonatal crying becomes a caregiving concern, mothers' selections of soothing responses, and the impact of neonatal crying on feelings of
maternal confidence. The small amount of literature directed to the research objectives was drawn from the large bodies of literature in the areas of infant growth and development and maternal-infant interaction. The literature was the source and provided support for the use of the interactive framework.

This is a descriptive study in which an interactive framework was used to guide the collection of data specifically related to neonatal, maternal, and environmental components of a mother-infant interaction that is initiated by neonatal crying behavior. Data were collected from 19 primiparous women who gave birth to healthy, full-term infants.

The study was designed to collect quantitative and qualitative data using a variety of instruments at three different time periods during the first postpartum month. The first data collection period was on the mothers' third postpartum day, at which time information was gathered by interview regarding the mothers' expectations about and preparations for the management of infant crying behavior. Also, data indicative of the mothers' perception of their infant, including those about neonatal crying behavior, were collected via Part I of the Neonatal Perception Inventory (Broussard, 1971). The second data collection interval occurred in the third postpartum week when mothers recorded the waking, feeding, and crying behavior of their infant throughout the 24-hour period for 5 consecutive days. They also rated their degree of energy, anxiety, happiness, and confidence in the morning and in the evening. The third data collection period took place in the fourth postpartum week
when mothers completed a questionnaire that provided data associated with neonatal crying, infant behavior, and maternal adjustment. They were subsequently interviewed and their records of neonatal behavior and maternal feelings were reviewed and discussed. This initiated and guided an in-depth discussion of their experiences with the crying behavior of their infant. They also completed Part II of the Neonatal Perception Inventory.

Quantitative data were summarized, compared, and described using measures of central tendency and frequency distributions. Interestingly, mothers' ratings of their concern about the crying of their infant divided the study population into two distinct groups: the 10 mothers who identified their infant's crying as of little or no concern (Group 1) and the 9 mothers who identified their infant's crying as a concern (Group 2). As well, many of the data separated out according to the concern ratings. Therefore, data were analyzed further using the Mann-Whitney U Test, which provided a suitable test of the difference between selected means of the two independent samples (Armore, 1975). Where relationships between two particular variables were of interest, Spearman's rho correlation coefficients were calculated.

The qualitative data from the 19 interviews were transcribed verbatim and organized according to their relevancy to each of the four specific study objectives. These data were examined in relation to the quantitative data and, where appropriate, consistency of responses was checked. This methodology and design resulted in a rich data base about
mothers' perception of their infant's crying behavior, their interpretive action and feeling responses, and the effects of neonatal crying on their feelings of maternal confidence.

Findings indicated that neonatal crying was an unanticipated concern for 47% of the mothers in this study population. Mothers' concerns about the crying of their infant were directly related to the minutes of actual crying.

The reasons mothers gave for the crying behavior of their infant revealed that physiological causes for distress were more frequently identified and more clearly understood than the infant's need for social contact or a change of environmental stimuli. The reasons mothers gave for neonatal crying and their responses demonstrated a lack of specific knowledge about either neonatal crying or soothing interventions.

Maternal responses varied but were consistent within mother-infant pairs. The mothers' responses to the crying behavior of their infant suggested the influence of specific neonatal, maternal, and environmental factors. These factors help to account for some of the differences in response to crying behavior between mothers with infants whose crying was a concern and those with infants whose crying was of little or no concern. Neonatal factors such as the amount and nature of the crying behavior, the clarity of the infant's cues associated with distress and comfort, and his responsiveness influenced the mothers' actions and feeling responses. Maternal factors, such as the mothers' expectations and perceptions of their infant, their sensitivity and responsiveness to
their infant's cues for attention, their preparations for and experience with neonatal care, and their attitudes toward spoiling infants influenced their responses. Environmental factors such as the mothers' perceptions of their help and support, and the ramifications of social beliefs and values in their immediate and community environment also determined both action and feeling responses. Findings indicated that neonatal crying had a negative impact on mothers' feelings of confidence in the caregiving role if the infant's crying was unconsolable, his behavior indicated a functional problem, the infant's needs or wants were difficult to understand, the mother was fatigued, or if she perceived a need for help or support.

**Conclusions**

Findings in this study have led to the following conclusions:

1. Neonatal crying is a potential unanticipated concern for mothers of first-born infants. This concern develops in the first few weeks after the birth and should be addressed by those providing care and support to mothers in the early postpartum period.

2. Mothers' interpretations of and responses to neonatal crying are empiric and reflect inadequate preparation and experience to understand and manage neonatal crying behavior. Mothers typically do not demonstrate a current knowledge of infant crying or possess a wide variety of soothing alternatives. They are generally unaware of neonatal crying as a state or of the influence of state-related behavior on mothers' effectiveness with selected soothing interventions, and seem
ignorant of the value of a prompt response to signals of distress.

3. Mothers' individual expectations of their mothering ability, their educational opportunities for learning about the care of infants, and their perception of the contributions made by the health care professionals they encountered reflect a societal belief that mothering is instinctive, intuitive, and a vocation to be learned "on the job."

4. The behavior of mothers influences and is influenced by neonatal crying behavior. The more crying the infant does, the more attention he elicits and the more effort mother spends in the provision of consoling interventions. The more often the infant cries and the more difficult he is to console, the more negative feelings his mother experiences with caregiving. The longer the mother delays her response to his cry, the more crying he does and the more difficult he is to console. There are interactive differences between mothers of infants whose crying is of greater concern and mothers of infants whose crying is of little or no concern.

Implications for Nursing

Implications for Nursing Practice

1. Nurses involved with the care of childbearing and childrearing women and families should anticipate neonatal crying as a caregiving concern. In order to respond effectively to this concern, nurses require access to current research-based literature related to infant crying and maternal response. They need an opportunity to examine their own beliefs and values associated with mothering, neonatal behavior, and neonatal care. Nurses should share relevant knowledge and promote the use of a
problem-solving approach to help mothers in the application of theory to their individual situations. Like the mothers, nurses require experience with young infants and opportunities to apply knowledge and skills in the family context. Nurses must appreciate the interactive nature of neonatal crying behavior and maternal response and be sensitive to the impact of one on the other.

2. Nurses involved with perinatal care must take an active role in the interpretation of the present knowledge base related to such caregiving concerns as neonatal crying. They need to appreciate the limits of nursing knowledge associated with such concerns, and utilize their clinical opportunities with mothers and young infants to build an appropriate theory base to provide the help and support required.

3. Mothers' lack of preparation to understand and manage neonatal crying behavior indicates the need for appropriate educational resources and opportunities to prepare new mothers for the care of their infant. Nurses teaching prenatal classes should consider the inclusion of content on neonatal behavior and neonatal care as necessary to their programs. During the antepartum period, parents should have opportunities to explore beliefs and values associated with neonatal care and become familiar with current information and resources related to the care of the infants and adaptation to the maternal role. Expectations of neonatal behavior and the associated caregiving responsibilities may become more realistic, and women may grow more appreciative of the complexity of their role as mothers. As fathers have been identified as
a major source of help and support, educational programs should encourage their participation in infant caregiving preparation.

4. The postnatal community health nurse visits should include an assessment of the infant's crying pattern and behavior and of the mother's action and feeling responses associated with crying. For mothers who identify their infant's crying as a concern, assessments should be more detailed and followed by the planning and implementation of specific therapeutic and anticipatory nursing interventions. The use of the Sleep/Activity Record may increase the mother's awareness of the rhythms and behavioral patterns of her infant. The record would facilitate examination of the unique patterns of the infant and promote individualized nursing approaches to concerns about neonatal crying. Use of a record for mothers' feelings may facilitate discussion of maternal adjustment in the early postpartum period.

5. Preparing mothers to understand and manage neonatal crying behavior is but one aspect of perinatal preparation for mothering. Nurses must be advocates for better educational opportunities, better resources, and better care for the mothers of our generation. In a Mothercraft Manual written in 1917 by Read, the author expresses despair about the lack of preparation for motherhood. She questions the consequence:

... a generation of women, the majority of whom are notoriously (and sometimes shamelessly) ignorant and unskilled in the most vital and significant human responsibilities. In millions of homes women are wasting their time and energy, losing the joy of their motherhood
perplexed, harassed, overburdened, because they are bungling, stumbling blindly, groping at their vocation (p.4).

Sixty-seven years later, despite the enormous progress in other aspects of our lives and the improvement of educational opportunities for women, preparation for motherhood remains a low priority in our society. Nurses, as knowledgeable and skilled caregivers, could play a vital role as advocates for and participants in the development of educational opportunities that would prepare mothers for the care and nurturance of their infants and children. Research must continue to increase the understanding of mother-infant interaction and to generate and test out innovative nursing interventions that will increase the confidence and enjoyment of mothers in their caregiving role.

Implications for Nursing Research

Findings in this study suggest a number of implications for nursing research.

1. As the research was confined to a small study population, it is important to examine mothers' interpretations and responses in a larger population of primiparas. This population should also include multiparas and mothers and infants identified as high-risk perinatal clients.

2. In this study, the only neonatal variable that statistically differentiated between infants whose crying was perceived as a concern and those whose crying was not perceived as a concern was the amount of crying recorded in the third postpartum week. Although there was no significant difference in temperamental characteristics and behavioral
patterns between the infants whose crying behavior was a concern and those whose crying was of little or no concern, the frequency with which mothers identified such variables as: contentedness, consolability, clarity of cues, and waking, feeding and crying patterns, indicates the need for further investigation with a larger neonatal population.

3. The maternal variables that differentiated between mothers with infants whose crying was a concern and those whose crying is of little or no concern require further exploration to indicate their significance in a larger study population and to determine the nature of their impact. Such variables as mother's beliefs about "spoiling" the infant and her expectations and perceptions of neonatal crying appear particularly interesting.

4. Findings that demonstrate mothers' trial-and-error approach to the alleviation of neonatal distress indicate a need to clarify the process by which mothers learn to interpret their infant's cries and select effective soothing interventions. This information would provide a background for identifying the usefulness of a problem-solving approach to help mothers assess and respond to crying behavior. The goal would be to reduce frustration associated with multiple ineffectual soothing interventions and minimize the number of experiences with unconsolable crying.

5. Findings associated with the impact of neonatal crying on maternal confidence reveal that specific factors increase or decrease the negative impact. Such factors as the consolability and contentment of the infant and the normalcy of his body function, and the mother's knowledge and experience with infants and her level of fatigue and
exhaustion should be examined in a larger population to determine their relationship to confidence and to aid in the identification of high-risk mothers and infants requiring additional help and supervision.

6. Since the findings demonstrate the value of understanding responses to neonatal crying from the mother's perspective, it is important and relevant to explore the responses of mothers to other neonatal behavior. Nurses involved in the care of mothers and infants should initiate and participate in such studies.

7. Another study focusing on infant crying behavior and maternal responses in the infant's first year of life would provide valuable knowledge about the influence of mothers' responses to crying behavior on the growth and development of their infant. It would also provide information about longer-range effects of neonatal crying on mothers' progress and confidence in the maternal role.

8. Findings demonstrate the interactive nature of neonatal crying and maternal response and therefore support the appropriateness of interactive methodology for studying the process. Direct observation may clarify differences between mothers with concerns about neonatal crying and those without concerns, and between infants who cry a great deal and those who cry very little.

In conclusion, research related to neonatal crying behavior and maternal responses requires more in-depth attention to address maternal concerns about neonatal crying behavior. More knowledge is required to understand the relationship between neonatal crying and maternal responses.
The mothers in this study demonstrated the negative impact of neonatal crying behavior on mothers who identified crying as a concern. They revealed the necessity for educational opportunities and resources for all mothers with infants, and for specific care and support for mothers with caregiving concerns.

Findings generated from this study indicate the necessity for better educational preparation for the mothers of our generation. Findings also should inspire nurses to pursue ways of providing more effective and relevant nursing care to mothers who identify neonatal crying as a caregiving concern.
List of References


## Appendix A

### Background Data Sheet

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
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<td>Project Number</td>
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<td>Questionnaire Number</td>
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<td>16.</td>
<td>If Yes, How?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
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<td>Duration of Labor</td>
</tr>
<tr>
<td></td>
<td>1st Stage ________ (hours)</td>
</tr>
<tr>
<td></td>
<td>2nd Stage ________ (minutes/hours)</td>
</tr>
<tr>
<td></td>
<td>3rd Stage ________ (minutes)</td>
</tr>
<tr>
<td></td>
<td>Total ___________</td>
</tr>
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<td>Yes ___</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>When? _____ (cm of Dilatation)</td>
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<td>25. Number of Days in Hospital</td>
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<td>Mother _____</td>
<td>45</td>
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<tr>
<td>Infant _____</td>
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<td>26. <strong>Feeding</strong></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>---</td>
</tr>
<tr>
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<td>Bottle</td>
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Appendix B

Interview Schedule #1

The questions that I will ask today will help me to learn about factors that have influenced your feelings and concerns about the care of your new baby.

1. Where were you born? 
   (If outside Canada, how many years?)

2. What is your ethnic background?

3. How much schooling have you completed?
   
   [ ] Some High School
   [ ] High School
   [ ] Community College
   [ ] Vocational Institute
   [ ] Some University
   [ ] University

4. How much schooling has your husband/partner completed?
   
   [ ] Some High School
   [ ] High School
   [ ] Community College
   [ ] Vocational Institute
   [ ] Some University
   [ ] University

5. ______________
Appendix B. Cont'd

5. Did you work prior to having the baby?
   ____ Yes
   ____ No
   If yes, what kind of work did you do?

6. Does your husband/partner work?
   ____ Yes
   ____ No
   If Yes, what kind of work does he do?

7. In your family, where you grew up, how many children were there?

8. In terms of birth order, which position were you?

9. How many children are in your husband/partner's family?

10. In terms of birth order, which position is he?

11. Which of the following best describes your living quarters?
   ____ House
   ____ Apartment
   ____ Townhouse
   ____ Suite in a house
   ____ Other (Specify)

12. __________________________

13. __________________________

14. __________________________
Appendix B, Cont'd

12. Besides you, your husband/partner and your baby, are there any other persons living in your home?
   
   ____ Yes
   ____ No

   If Yes, how many?
   16. __________

   How old?
   17. __________

   What relationship to baby?
   18. __________

For you, having this person or these persons in your home could be a helpful or non-helpful situation. On a scale of 1-10, how helpful is having this person (or these persons) in your home. 1 = not helpful and 10 = very helpful. 19. __________

13. Upon thinking back on your pregnancy on a scale of 1-10 where 10 = Very Positive and 1 = Very Negative, how would you rate this experience for you? 20. __________

14. Upon thinking about your labor and delivery, on a scale of 1-10, where 10 = Very Positive and 1 = Very Negative, how would you rate this experience for you? 21. __________
15. On a scale of 1-10, how would you rate the amount of experience you have had with the care of infants of 1-month of age or less? 10 = A Great Deal of Experience, and 1 = No Experience. 22

16. If you have cared for an infant of 1-month of age or less, how did you get this experience? 23

- Family
- Friends
- Education
- Occupation
- Other (Specify)

17. Did you attend prenatal classes? 24

- Yes
- No

18. If yes, on a scale of 1-10, how much did you learn about pregnancy? 10 = A Great Deal. 1 = Nothing 25

- How much did you learn about labor and delivery? 26
- How much did you learn about infant behaviour? 27
- How much did you learn about infant care? 28
19. On the same scale of 1 - 10, where 10 = A Great Deal and 1 = Nothing, how much child care reading have you done? 29.

20. How much opportunity have you had to date to care for your infant in hospital? 10 = A Great Deal and 1 = No Time at all. 30.

Most new mothers are concerned about their ability to care for their babies.

21. Using a scale of 1 - 10, where 10 = Very Well and 1 = Not Very Well at all, How well can you tell what your baby needs or wants? 31.

22. Using a scale of 1 - 10, where 10 = Very Confident and 1 = Not Very Confident At All, rate how confident you feel in caring for your infant now. 32.

Some mothers feel close to their infants right away, while others need time to get acquainted.

23. Using a scale of 1 - 10, where 10 = Very Close and 1 = Not Very Close at All, rate how close you feel towards your baby today. 33.
Appendix B, Cont'd

24. Using the same scale, rate how close you think your baby feels towards you.  

25. In the next few months, when do you think your baby will enjoy being with you?  

26. Do you have any particular concerns right now? Please explain.  

27. How about your husband/partner? What do you think are his primary concerns at this time, about anything.  

What about crying?  
Babies do cry. I wonder if you'd tell me about your thoughts and feelings associated with an infant's crying behavior. (What is normal crying? How long does it last? What should mothers do? What does it mean?)  

All rating scale items will be placed on small cards and given to the mothers. The answers to the questions will be recorded in writing on the interview guide by researcher at the time of the mother's responses.
Appendix C

Interview Schedule #2

1. Tell me what it has been like for you to have a new baby in your home?

2. On a scale of 1 to 10 where 10=Very Confident and 1=Not Very Confident At All, how would you rate your present feelings of confidence regarding the care of your baby?

   1 ____________________________ 10

   How did you decide on # _____?

   What makes you feel more confident?

   What makes you feel less confident?

I am most interested in how mothers experience and respond to their baby's crying.

In hospital, I asked you about your thoughts and feelings about infant crying. (Refer to previous comments in Interview #1).

3. Comment on any changes in your thoughts and feelings about infant crying now in comparison to those you talked about in hospital.
Appendix C, Cont'd

4. Tell me what your baby's crying has been like for you. #
   What causes him/her to cry?
   Do the cries differ with the reasons? What have you
   noticed?
   What do you do? How do you decide?
   How do you feel about the crying? #

5. Tell me about your baby's longest crying episode so far.
   How long did it last? Is this a reasonable time you
   could have expected crying to last?
   What did you do?
   How did you feel?

6. If your baby has a dry diaper, has been fed and has
   been held for a while and cries;
   What usually is the cause?
   What do you do?
   If you are unable to quieten the baby, what do you
   do?
   How do you feel?

7. What would you say is the most helpful to you when
   your baby is crying and you are unable to console
   him/her?

8. In general, in this past month, what kind of help
   would you say was the most important to you?
The addition of a new baby to the household often requires a variety of changes in the routines for household members.

1. How much has your lifestyle changed?
   - A Great Deal
   - A Good Bit
   - A Moderate Amount
   - Very Little
   - Not At All

2. How much would your husband/partner say his lifestyle has changed?
   - A Great Deal
   - A Good Bit
   - A Moderate Amount
   - Very Little
   - Not At All

3. How much has the baby interfered with your rest and sleep?
   - A Great Deal
   - A Good Bit
   - A Moderate Amount
   - Very Little
   - Not At All

PARTICIPANT'S CODE: 00 00
Your feelings have probably been changing from day to day over the past while. Place an (X) on the line above the phrase or word that best describes how you feel now.

<table>
<thead>
<tr>
<th></th>
<th>Very Energetic</th>
<th>Fairly Energetic</th>
<th>About Average</th>
<th>Fairly Tired</th>
<th>Very Tired</th>
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<td>About Average</td>
<td>Fairly Unhappy</td>
<td>Very Unhappy</td>
</tr>
<tr>
<td>7.</td>
<td>Very Content</td>
<td>Fairly Content</td>
<td>About Average</td>
<td>Fairly Discontent</td>
<td>Very Discontent</td>
</tr>
<tr>
<td>8.</td>
<td>Very Confident</td>
<td>Fairly Confident</td>
<td>About Average</td>
<td>Lacking Confidence</td>
<td>Not At All Confident</td>
</tr>
</tbody>
</table>
Most mothers have concerns about knowing how to care for their baby.

9. When you took your baby home from the hospital, how much do you feel you knew about his/her care?

10. How much teaching about the care of the baby did you receive in the hospital?

11. How much teaching about the care of the baby did you receive from the public health nurse?
Most mothers are concerned about the following aspects of care: feeding, crying, bathing and elimination. Using the scale given, place an (X) on the line above the phrase or word that best identifies how much each of these is a concern for you.

12. How much has feeding been a concern for you?

<table>
<thead>
<tr>
<th>A Great</th>
<th>A Good</th>
<th>A Moderate</th>
<th>Very</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deal</td>
<td>Bit</td>
<td>Amount</td>
<td>Little</td>
<td></td>
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</table>

13. Which method of feeding are you using? Place an (X) on the line beside your method.

- Bottle
- Breast
- Both

14. How much has crying been a concern for you?

<table>
<thead>
<tr>
<th>A Great</th>
<th>A Good</th>
<th>A Moderate</th>
<th>Very</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deal</td>
<td>Bit</td>
<td>Amount</td>
<td>Little</td>
<td></td>
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</table>
15. How much has bathing your baby been a concern for you?

| A Great Deal | A Good Bit | A Moderate Amount | Very Little | Not at all |

16. How much has your baby's bowel elimination been a concern for you?

| A Great Deal | A Good Bit | A Moderate Amount | Very Little | Not at all |

17. Have you had any other particular worries about the care of your baby?

YES ______

NO ______

18. If YES, please explain ____________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
19. How much would you say your husband/partner shares your concerns about the baby's care?

   A Great  A Good  A Moderate  Very  Not at all
   Deal     Bit     Amount   Little

20. How often would you say your husband/partner agrees with your decisions about the baby's care?

   A Great  A Good  A Moderate  Very  Not at all
   Deal     Bit     Amount   Little

21. Who would you rely on as the best source of information if you had questions about your baby and his/her care? (List TWO most important sources for you).

   BEST SOURCES OF INFORMATION

   1. ____________________________

   2. ____________________________
In the past month you have probably learned a lot about your baby as an individual.

The following questions are specifically about your baby.

Some babies are very active. They kick, wriggle, turn their heads and move a lot when you are trying to feed and change them. Other babies are more quiet and move about very little.

22. How would you describe your baby's activity level on a scale from 1 to 5, where 1 = Very Quiet and 5 = Very Active.

23. Some babies express their needs and feelings loudly, others express themselves softly and quietly. On a scale from 1 to 5, where 1 = Softly and Quietly and 5 = Loudly and Intensely, rate how your baby usually expresses him/herself.
Some babies are very sensitive to noise. They are easily startled and respond by fussing and crying or attempting to find where the noise is coming from. Other babies sleep through almost anything.

24. How would you describe your baby's sensitivity to noise on a scale of 1 to 5, where 1 = Not At All Sensitive to Noise and 5 = Very Sensitive to Noise.

25. Rate the clarity with which your baby is able to tell you what he/she needs or wants on a scale of 1 to 5, where 1 = VeryClearly and 5 = Not Very Clearly At All.
Some babies are very predictable. You can anticipate when they are going to be hungry, when they will have a bowel movement and when they will sleep. Other babies are not at all predictable. They eat and sleep at different times.

26. How would you describe your baby's predictability on a scale from 1 to 5, where 1 = Not At All Predictable and 5 = Very Predictable or as regular as clockwork.

27. Some babies seem generally content, while others are generally irritable. On a scale of 1 to 5, where 1 = Generally Irritable and 5 = Generally Content, rate your baby's general response.
As infant crying is a common concern for most mothers, the following questions focus on this concern.

28. Compared with other babies you know or have observed, how much crying does your baby do?

29. How much would your husband/partner say your baby has cried this past month?

30. As far as you know, how much crying did your baby do in hospital?

31. How much would you say your baby's crying affects your mood?
32. How much would you say your baby's crying makes you feel less confident as a mother?

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<th>A Good</th>
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<th>Very</th>
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<td>Amount</td>
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33. How much do you know about how to stop babies from crying?

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34. How much does your husband/partner influence your response to the baby's crying?

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35. How would you describe your effectiveness in stopping your infant's crying?

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36. How would you describe your husband/partner's effectiveness in stopping your infant's crying?

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<tr>
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</table>
37. How much do you think your infant can quiet him/herself?

38. How much would you say you know about the causes of infant's crying?

39. How much would you say you know about the causes of your infant's crying?

40. How much would you say other mothers know about the causes of infant crying?

41. How much can you spoil a baby by picking his/her up every time he/she cries?
42. Did you receive any information in hospital that would help you to understand your infant's crying?

YES       

NO       

If YES, how much did this information assist you in managing your infant's crying?

A Great Deal A Good Bit A Moderate Amount Very Little Not At All

If NO, what information in relation to infant crying would you have liked to have had? (Please specify)
Appendix E

The Neonatal Perception Inventory

The Neonatal Perception Inventory will be introduced in the following way as instructed by Dr. Broussard.

On the second postpartum day, the mother will be given Part I.

Instructions for the first form will read: "Although this is your first baby you probably have some ideas of what most little babies are like. Please check the blank you think best describes the AVERAGE baby." (See Attached)

Instructions for the second form which will be given to the mother following the completion of the first one will read: "While it is not possible to know for certain what your baby will be like, you probably have some ideas of what your baby will be like. Please check the blank that you think best describes what your baby will be like." (See Attached)

In four weeks, the mother will be asked to complete Part II of the Neonatal Perception Inventory.

Instructions for the first form in Part II will read the same as those for the first form in Part I. (See Attached)

Instructions for the second form in Part II will read: "You have had a chance to live with your baby for about a month now. Please check the blank you think best describes your baby." (See Attached)
Appendix E

NEONATAL PERCEPTION INVENTORY PART I

AVERAGE BABY

Although this is your first baby, you probably have some ideas of what most little babies are like. Please check the blank you think best describes the AVERAGE baby.

How much crying do you think the average baby does?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much trouble do you think the average baby has in feeding?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much spitting up or vomiting do you think the average baby does?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much difficulty do you think the average baby has in sleeping?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much difficulty does the average baby have with bowel movements?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much trouble do you think the average baby has in settling down to a predictable pattern of eating and sleeping?
- a great deal
- a good bit
- moderate amount
- very little
- none

Form A1

YOUR BABY

While it is not possible to know for certain what your baby will be like, you probably have some ideas of what your baby will be like. Please check the blank that you think best describes what your baby will be like.

How much crying do you think your baby will do?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much trouble do you think your baby will have feeding?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much spitting up or vomiting do you think your baby will do?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much difficulty do you think your baby will have in sleeping?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much difficulty do you expect your baby to have with bowel movements?
- a great deal
- a good bit
- moderate amount
- very little
- none

How much trouble do you think that your baby will have settling down to a predictable pattern of eating and sleeping?
- a great deal
- a good bit
- moderate amount
- very little
- none

Form B1
### NEONATAL PERCEPTION INVENTORY PART II

#### AVERAGE BABY

Although this is your first baby, you probably have some ideas of what most little babies are like. Please check the blank you think best describes the AVERAGE baby.

- **How much crying do you think the average baby does?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much trouble do you think the average baby has in feeding?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much spitting up or vomiting do you think the average baby does?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much difficulty do you think the average baby has in sleeping?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much difficulty does the average baby have with bowel movements?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much trouble do you think the average baby has in settling down to a predictable pattern of eating and sleeping?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

#### YOUR BABY

You have had a chance to live with your baby for about a month now. Please check the blank you think best describes your baby.

- **How much crying has your baby done?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much trouble has your baby had feeding?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much spitting up or vomiting has your baby done?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much difficulty has your baby had in sleeping?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much difficulty has your baby had with bowel movements?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none

- **How much trouble has your baby had in settling down to a predictable pattern of eating and sleeping?**
  - a great deal
  - a good bit
  - moderate amount
  - very little
  - none
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**SYMBOLES**

**SUMMARY**

**Totals**

Developed by the University of Washington, School of Nursing NCAP Project.
Appendix G

Mother-Infant Study

Maternal Feelings Record

Your feelings will probably be changing throughout the day and from day
to day. For the next 7 days, describe how you feel using these rating
scales. Fill one out twice each day, one in the morning and one in the
late afternoon or evening.

Example to Complete at the Hospital
Interview
Date ____________
Time ____________

Place an (X) above the word or phrase that best describes how you
feel. In the space at the bottom, note any additional comments
about your feelings that are important to you that day.

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Additional Comments: Time ____________________
Appendix I

Consent Form

I am willing to participate in a study conducted by Pauline Dunn, a graduate student of the University of British Columbia.

I have read the Mother-Infant Study Information Letter explaining the project and understand that:

1. the interviews will be tape recorded.
2. all information obtained will be coded so that my contributions will be identified only by Pauline and her two advisors. Once analyzed, original questionnaires, notes, the sleep-activity record, and tapes will be destroyed.
3. my refusal to participate or my desire to withdraw from the study at any time will be respected and will not prejudice the present or future care of me or my baby.
4. written consent involves access to my infant's and my own current hospital records.
5. participating in this study will not involve any risks to myself or my infant.

Mother's Signature ____________________________

Date ____________________________
Appendix M

Minutes of Crying in 24 Hours and Ratings of Neonatal Crying As A Concern

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M = 71.5 M = 19.5 M = 1.8 M = 41.7 M = 221.6 M = 3.9