

Sandra E. Gibson. THE RELATIONSHIP BETWEEN A PARENT'S ANXIETY AND THE CHILD'S BEHAVIOR DURING PAINFUL HEALTH CARE PROCEDURES. (Under the direction of Hazel Aslakson, R.N., Ed.D.) East Carolina Graduate School of Nursing, April 1985.

The research investigated the relationship between the mother's level of anxiety and her child's behavioral response during a painful health care procedure. The relationship between the child's age and the mother's ability to display comforting and supportive behaviors were also correlated with the mother's anxiety level.

The conceptual framework for this study focused on Sullivan's (1953) concepts of induction and empathy. These concepts explain the phenomena of "emotional contagion or communion" between the infant and his mother.

The study was conducted in a military pediatric clinic located in North Carolina. A convenience sample of twenty-five mother-child pairs was selected to participate. The State Trait Anxiety Inventory (STAI) and the mother-child observation rating scale were utilized for the collection of the data. Each survey was administered once within a three week period.

The data generated from the State Trait Anxiety Inventory and the mother-child observation rating scale were analyzed using the McNemar chi-square test and the Mantel-Haenszel chi-square test. Findings revealed that there were no relationships between the mother's anxiety and the child's upset when controlling for the mothers's age,

child's age, child's birth order or history of last injection. Testing of the hypotheses revealed that the mother's state and trait anxiety did not have a significant impact on children's behavioral upset. There was also no significant correlation found between the mother's level of state and trait anxiety and her comforting behaviors.

THE RELATIONSHIP BETWEEN A PARENT'S ANXIETY
AND THE CHILD'S BEHAVIOR DURING PAINFUL HEALTH
CARE PROCEDURES.

A Thesis

Presented to

The Graduate Faculty of
East Carolina University
School of Nursing

In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Nursing

by

Sandra E. Gibson

April 1985

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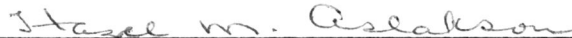
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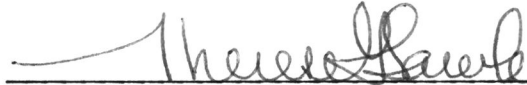
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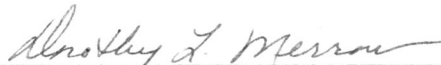
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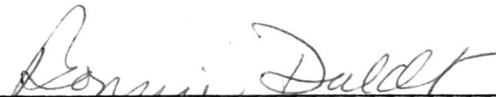
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CHAPTER I
GENERAL PROBLEM AREA

Introduction to the Problem

All children, in the course of growing up, encounter the stress of a diagnostic or therapeutic intervention, within a health care system (e.g., immunizations, accidents, illness). Several predetermined factors influence how the child manages the pain and anxiety associated with the health care intervention. Bellack (1974) and Davies (1984) explain that the level of development, past experiences with illness and injury, preconceived ideas of nurses and doctors and parental response to the child's situation has a great impact on his behavior (p. 1491, 30).

Children have limited resources for dealing with stress and frequently rely on their parents for guidance, protection, and encouragement (Bellack, 1974). They rely on parents for safety and security, and the young child believes he controls the events in his life (Bellack, 1974). Health professionals have implied that there is a positive relationship between parental anxiety and the child's behavior (Bellack 1974; Klinzing 1977).

The literature reveals that children are quite sensitive to the feelings and emotions of other people, especially those with whom they have a very close relationship (Skipper, 1966, 1968; Klinzing, 1977). For instance if the mother is very anxious and fearful about her

child receiving an injection, this may be conveyed to the child and increase his distress. This communication of feeling-states between mother and child may take place on a nonverbal as well as verbal level. It may also occur at a very early age and not be fully subject to the voluntary control of the mother. Sullivan (1953) explains that infancy is closely related to the personality of the mother or the mothering one (p. 39). Skipper (1966) also relates that Escalona termed this type of communication "contagion."

Several pediatric advocates have implied that if the mother were able to control and manage her own distress and to appear calm when the child is undergoing something stressful, this would be communicated to the child and would possibly ease the child's distress (Skipper, 1966, 1968; Davies, 1984). The mother may also become more capable of making rational decisions concerning her child's needs when undergoing a health care procedure (e.g., injection, venipuncture). This study is concerned with the impact the parent's level of anxiety has on the child's behavioral response during a painful procedure.

Hypotheses

The three hypotheses related to the research question are:

1. Children that display behavioral upset during a painful health care procedure have mothers that have high anxiety levels as measured by the state trait anxiety

inventory (STAI).

2. There is a relationship between the age of the child and his behavioral response to his mother's level of anxiety.
3. Mother's that display comforting and supportive behaviors toward their children during the painful health care procedure have low anxiety levels as measured by the state trait anxiety inventory (STAI).

Significance of the Problem

The phenomenon of parent anxiety and the impact it has on the child's behavior warrants investigation. A contribution to the theory and practice of nursing service and education may be rendered through the findings and conclusions of this study. A theoretical base may be enhanced by increasing our understanding of the impact parental emotions have on children's responses to painful health care procedures. Investigation of this problem may also show us the importance of parental presence for the child when he is experiencing a stressful event. Practice may benefit by gaining a guide to assist the nurse in making decisions about parental presence when the child must have a painful procedure. The participation of parents in their child's care is important for the child's recovery. Skipper (1972) explains that the mother is the prime factor in determining whether changes in the child's emotions and behavior will be detrimental or beneficial to his treatment

or recovery (p. 276). The research may also emphasize the importance of assessing the mother's anxiety level along with her child's prior to a health care procedure. The nurse's assessment of the mother's level of anxiety may have a direct impact on the child's cooperation and level of distress (Davies, 1984).

Conceptual Framework

The conceptual framework for this study is based on Sullivan's (1953) concepts of induction and empathy. These concepts are taken from the developmental epochs of his interpersonal model. Sullivan believes when anxiety is present in the "mothering one" it induces anxiety in the infant (p. 41). He explains that this induction of anxiety occurs through an interpersonal process to which he applied the term empathy (p. 41).

For Sullivan empathy refers to "the emotional linkage that encloses the relationship of the infant with other significant people--the mother or the nurse" (Sullivan, 1953). Empathy exists long before there is any understanding by the infant of emotional expression. Empathy is said to be an "emotional contagion or communion" between the infant and the significant adult (p. 251). Sullivan further contends its greatest importance is from the age of six to twenty-seven months (p. 251).

Sullivan explains that crying in relation to infantile anxiety is often ineffectual. In fact crying often

increases the anxiety of the "mothering one," and thereby increases the anxiety of the infant. This is partly because of the direct induction of more anxiety in the infant when anxiety increases in the mother. In addition the anxiety of the mother interferes with her ability to manifest tenderness and particularly interferes with her competence to cooperate in the infant's escaping danger. There is no "right" behavior to display with infantile anxiety except for the mother to cease being anxious (p. 54). Anxiety interferes with both the mother's cooperation and the infant's behavior patterns. When the infant's needs are not met he alters his behavior pattern to gain relief, for example, crying (p. 54).

Assumptions

Assumptions derived for this study are identified as follows:

The administration of an injection to obtain an immunization is a distressful event for the mother and child.

The mother understands the medical reason for obtaining an immunization.

The mother does not have prior knowledge about expectations for her behavior during the procedure.

Definitions

Anxiety - A tension in opposition to the tensions of needs and to action appropriate to their relief; the loss of euphoria.

Infantile anxiety - Anxiety occurring within the infancy period (0-12 months).

Painful health care procedure - A medical procedure, specifically an immunization administered via the intramuscular or intradermal route which causes physical and psychological suffering.

Comforting and supportive behavior - A set of behaviors displayed by mothers toward their children to decrease the child's feelings of physical and psychological distress, as measured by the Mother-Child rating scale.

Behavioral upset - A set of verbal or nonverbal behaviors displayed by the child to express his physical and psychological discomfort during a stressful event, as measured by the Mother-Child rating scale.

Trait Anxiety (T-Anxiety) - Trait anxiety is the individual differences in anxiety proneness, causing people to perceive stressful situations as dangerous or threatening.

State Anxiety (S-Anxiety) - State anxiety is a reaction or process taking place at a given time and level of intensity.

CHAPTER II
REVIEW OF LITERATURE

There is a limited amount of research referring to the relationship between the parent's level of anxiety and the child's behavioral response during painful health care procedures.

A variety of studies were reviewed. Studies relating to parental presence, parental behavior, and the effect the nurse-mother interaction has on the child's stress level were reviewed. One study was found that addressed the relationship between the mother's anxiety and the child's display of distress.

Parental Presence

Frankl and Shiere (1962) studied the effects of maternal presence on 112 preschool children in a dental office. The subjects were divided into two groups. The control group consisted of children separated from the mother during dental treatment. Mothers of the experimental group were instructed to be passive observers in the exam room. The children's behavior was observed for cooperation with treatment and their behavior on separation or non-separation from the mother.

Findings indicated that only 2 of the 56 children accompanied by their mothers exhibited negative behavior. Children from age 41 to 49 months displayed negative

behavior primarily in the separated group. It was also demonstrated that children in the experimental age group from 41 to 49 months benefited from the mother's presence during treatment. The age group from 50 to 60 months exhibited insignificant differences in behavior with the mother present or absent.

Parental Behavior

Savedra (1979) studied parents' behavior when their children's blood was drawn in a pediatric clinic and in a large county hospital. She chose parents of 60 children 2 weeks to 6 years of age. Parents and children were given a minimal explanation by a technician regarding the procedure.

Data was collected by participant observation and parent interview. Four categories of parental behavior were observed: verbal, nonverbal, passive, and distress. The results showed that during predrawing, the majority (65%) of the parents talked to their child and made soothing sounds. Nonverbal strategies increased after blood drawing (20%), while verbal strategies alone decreased (15%). Fifteen parents (25%) indicated verbally or nonverbally that the experience was distressing; although the author gave several examples of these parents being responsive to their children despite their fears. Parental distress was decreased in the presence of a health professional, such as a pediatric nurse practitioner or a physician. Additional help to restrain resistive children was used significantly

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more often when parents exhibited distress and when a parent could identify what was hard about being with the child when blood was drawn (p. 80)

Effects of the Nurse-Mother Interaction

Mahaffy (1965) concentrated on preparatory and supportive efforts on mothers rather than the children who were having minor surgery. He had a sample of 43 children and parents who were randomly selected from a group in a pediatric surgical unit of a large urban hospital. All the children were between the ages of 2 and 10, had been admitted for tonsillectomy and adenoidectomy, and had no previous hospitalizations. The sample included 21 experimental subjects and 22 control subjects. A nurse was assigned to the experimental group to carry out the routine nursing admission procedure, determine the mother's needs and to provide her with the help and information that would meet her needs and enable her to cope with the immediate situation. The hospital unit personnel admitted the control group. During the admission the staff nurse answered the parent's questions but seldom volunteered information or initiated conversation.

The experimental group had lower vital signs, cried and vomited less frequently, had a higher oral fluid intake and incurred fever less frequently post-discharge than the children in the control group. The author concluded that the nursing care given in the experimental group gave the

mothers the ability to allay their children's fear and distress (p. 19).

Skipper and Leonard (1968) studied the effect the nurse-mother interaction had on the child's stress level. The sample included 80 clients between the ages of 3 and 9 years admitted for tonsillectomy. An experimental design was used. Forty mothers were assigned to the experimental and control groups. The children were randomly assigned to each group. Communication and emotional support were given to the experimental group mothers by a special nurse. The control group was given limited information by the regular staff.

At admission each mother was asked if she would be willing to complete a short questionnaire which would be mailed eight days after the child was discharged. The questionnaire asked for the mother's perception of: her own level of stress before, during and after the operation, her possible distress about a future similar operation; her desire for information during the hospitalization and her feeling of helpfulness; her trust and confidence in the medical and nursing staff; and her general satisfaction with the hospital experience (p. 279). A second questionnaire was administered to the regular nursing staff to secure information about each mother's level of stress and general adaptation to the hospital experience.

Each child's temperature, systolic blood pressure and

pulse rate were recorded at four periods during the hospitalization. The time of first voiding after the operation was recorded as well as the incidence of emesis from the time the child entered the recovery room until discharge. The amount of fluids the child was able to consume after the operation was related to the mother's ability to get the child to cooperate (p. 279).

Findings from the questionnaires revealed that the experimental group mothers suffered less stress than control group mothers during and after the operation. Experimental mothers as compared to control group mothers also reported: less lack of information during the hospitalization; less difficulty in feeling helpful to their child; and a greater degree of satisfaction with the total hospital experience. The nursing staff's ratings were in agreement with the mother's evaluation of having less overall difficulty in adaptation to hospitalization (p. 280).

The experimental children had lower mean levels of systolic blood pressure, pulse rate, and temperature preoperatively, postoperatively, and at discharge than control group children. Experimental group children also had less postoperative emesis, voided earlier, and drank more fluids than control group children (p. 285).

Relationship of Mother and Child's Anxiety

Davies (1984) carried out a study to demonstrate the association between the extent of the mother's anxiety and

the amount of behavior upset shown by the child. The sample consisted of 41 children and their mothers. The children were admitted to the hospital for minor elective surgery. A short structured questionnaire was given to mothers to rate, on a four point scale, their anxiety level about specific aspects of the hospital and the operation to be undergone by their children. Also two nurses on the unit were asked to complete a checklist for each mother and child to assess the overall anxiety levels shown by them when the child was in the hospital. Finally, a post hospital questionnaire was used to ask the parents to compare their children's behavior one week after discharge to their typical prehospital behavior (p. 30).

She found the extent of the mother's anxiety was significantly related to the amount of behavior upset shown by the children one week after discharge. Boys were observed to have behavioral upset in the hospital and one week after discharge as related to their mother's anxiety. However, for girls, only the behavior upset in the hospital was related to the mother's anxiety. When the mother was not living in the hospital with her child there was considerably more correlation between the amount of behavior upset shown by the child and the amount of anxiety felt by the mother, especially in the older age group (p. 30). In addition she found that there was a positive correlation between the mother's self-reported anxiety and the amount of

behavior upset shown by the children. There was also an association between the mother's self-reported anxiety and the nurse's assessment of her behavior in the hospital (p. 31).

The literature review implies that parental presence and parental anxiety have an association with the child's level of distress during health care procedures and hospitalization. The literature partially supports the three hypotheses offered in this study. Findings reveal that the extent of the mother's anxiety level has an impact on the child's level of behavior upset during hospitalization. However, the mother's ability to display comforting behaviors toward her child when her anxiety levels are low is not consistently documented. Frankl and Shiere (1962) reported that as the child's age increased above 4 years no differences were found in behavior with the mother present or absent. There were no studies that focused on the relationship between the mother's level of anxiety and the child's behavioral reaction in different age groups. There was one study by Davies (1984) that reported a difference in behavior upset based on gender.

This study partially replicates the designs of Savedra (1979) and Davies (1984); however, subjects were obtained from an outpatient setting in a military pediatric outpatient clinic in North Carolina.

CHAPTER III

METHODOLOGY

Subjects

The sample population consisted of twenty-five mother-child pairs obtained from a military outpatient clinic. The mother-child pairs were a convenience sample selected according to the following criteria:

1. The children were from six to twenty-four months of age.
2. The mothers were at least twenty-one years of age.
3. The mothers were accompanying their children to the pediatric clinic for a physical exam and immunization.
4. The children were in good health as evidenced by a well child physical exam performed in pediatric clinic.

Excluded from the researcher's sample were:

1. Adults accompanying children to the pediatric clinic other than the child's mother.

Design of Study

This study correlated the relationship between the mother's level of anxiety and the child's behavioral reaction to painful health care procedures. Mothers were asked to participate in the study while seated in the waiting area. A verbal explanation of the project was

provided by the researcher. If the client agreed to participate a signed permission statement was obtained (Appendix A). Mothers were asked to complete the State Trait Anxiety Inventory (STAI) (Appendix B) in order to obtain information about their level of anxiety regarding their child's upcoming immunization. Instructions were given individually to each participant to complete the State Anxiety scale first, followed by the Trait Anxiety scale. The researcher read the questions when requested to do so by the client. However, none of the clients requested assistance.

The child's stressful behavior was observed by the researcher before, during, and following immunization. The researcher started recording parent and child pre-procedure behaviors for the first three minutes after they entered the waiting area. The second observation was begun when the immunization technician started cleaning the injection site and ended with the application of a band-aid. Post-procedure behaviors were recorded for three minutes following the application of a band-aid. Mothers were observed for exhibiting comforting behaviors toward their children within the same time intervals. An observation checklist was used by the researcher to code the mother's and child's response before, during, and after immunization (Appendix C and D).

Data Collection and Instrumentation

The two instruments chosen for the study are the State Trait Anxiety Inventory (STAI) developed by Charles Spielberger (Appendix B) and an observation checklist rating scale based on observational data collected by Savedra (1979) and Sheredy (1984).

The State Trait Anxiety Inventory was constructed to provide a reliable and brief self-report measure of trait anxiety and state anxiety. Trait anxiety (T-Anxiety) refers to relatively stable individual differences in anxiety proneness, that is, to differences between people in their tendency to perceive stressful situations as dangerous or threatening (Spielberger, 1983). State anxiety (S-Anxiety) refers to a reaction or process taking place at a given time and level of intensity (Spielberger, 1983). It consists of separate self-report scales for measuring state and trait anxiety. The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that evaluate how respondents feel at the moment. The T-Anxiety scale (STAI Form Y-2) consists of twenty statements that assess how people generally feel. The STAI-Y S-Anxiety and T-Anxiety scales are printed on opposite sides of a single-page test form (Spielberger 1972, 1983).

The STAI was designed to be given individually or to groups. College students take approximately ten minutes to complete the scales. Less educated or emotionally disturbed

persons may require twenty minutes to complete the scales (Spielberger, 1983).

The STAI has been widely used in assessing clinical anxiety in medical, surgical, psychosomatic and psychiatric patients (Spielberger, 1983; Brook, 1976; Garrie, 1974). Reliability for the STAI Form-Y is reported as relatively high. The overall median alpha coefficients for the S-Anxiety and the T-Anxiety scales are .92 and .90 respectively. Validity for the STAI Form-Y yielded correlations between .75 and .85 for college students and psychiatric patients (Spielberger, 1983). Scores for high school males and females in the 50-69 age group revealed median coefficients greater than .50 (Spielberger, 1983).

Each STAI item is given a score of 1 to 4. A rating of 4 indicates the presence of a high level of anxiety for ten S-Anxiety items and eleven T-Anxiety items. A high rating indicates the absence of anxiety for the remaining ten S-Anxiety items and nine T-Anxiety items. The scoring weights for the anxiety present items are the same as the blackened numbers on the test form. The scoring weights for the anxiety absent items are reversed, i.e., responses marked 1, 2, 3, 4 are scored 4, 3, 2, or 1, respectively (Spielberger, 1983). The anxiety absent items for which the scoring weights are reversed on the S-Anxiety and T-Anxiety scales are:

S-Anxiety: 1, 2, 5, 8, 10, 11, 15, 16, 19, 20.

T-Anxiety: 21, 23, 26, 27, 30, 33, 34, 36, 39 (p. 4).

Spielberger (1983) explains that to obtain scores for the S-Anxiety and T-Anxiety scales, the scores for the twenty items that make up each scale are added. Scores for both the S-Anxiety and T-Anxiety scales can vary from a minimum of 20 to a maximum of 80 (p. 4). The author categorized the scores for the S-Anxiety and T-Anxiety scales as high and low. The upper forty percent of the scores were considered high. For the state anxiety, the scores of 40 and above were considered high and those 39 and below were considered low. For the trait anxiety, the scores of 32 and above were considered high and 31 and below were considered low.

The observation rating scale was developed to help the author record the behavior of mothers and children during painful health care procedures. Behaviors for the children and mothers were selected from observational data collected by Savedra (1979) and Sheredy (1984). It is felt that the behaviors accurately classify parent and child behavior during painful health care procedures (Savedra, 1979 and Sheredy, 1984). Data was collected via an event observation sampling technique. Shelley (1984) explains that the event observation technique includes all events of interest that occur during a specified time period, whenever and for however long an event occurs (p. 285).

Behaviors were identified by developing a numerical rating scale. A sequence of numbers from zero to three were assigned to four descriptive categories. The researcher selected the most appropriate number for the behavior being rated at the time of observation. Each set of behaviors (i.e., infant, toddler, and mother comforting behaviors) contained an option called "other." This option was included to allow the researcher to include one additional behavior unique to the mother and child. Numerical values for the four categories were scored as follows:

0 - never - The behavior was not observed during the observation period.

1 - mildly - soft, whispering sounds or gentle movements observed during the observation period.

2 - moderately - The behavior was varying in intensity from mild to severe during the observation period.

3 - severely - The behavior was intense for extensive periods of time during the observation period.

To obtain a score for the total observation period the author looked at the number of times the number three (i.e., severe behaviors) occurred within the observation period. If the score of three occurred one or more times the infant and toddler was considered upset. If the score of three was not present for the observation period upset was considered low.

To obtain scores for the mother comforting behaviors

the author used guidelines suggested by Irwin and Bushnell (1980). The scores for the items that made up each set of behaviors were added individually for time periods prior to the procedure, during the procedure and post procedure. Scores for mother comforting behaviors varied from a minimum of five to a maximum of fifteen. The scores were averaged to gain a final score for high and low comforting. A score greater than 7 was considered to indicate high comforting behaviors and scores 7 and below indicated low comforting behaviors.

Statistical Procedure

The study used two statistical procedures. The McNemar's chi-square test was used to determine if the sample data supported hypotheses one and three. The Mantel-Haenszel chi-square test was used to determine the impact covariates (i.e., age) have on the relationships specified in hypothesis number two. The odds ratio defined for the McNemar chi-square (2x2 tables) and for the Mantel-Haenszel test were given to indicate the level of association. The significance level .05 was used for all statistical tests.

CHAPTER IV

FINDINGS

Introduction

Chapter four focuses on results from the analysis of the data. Data analysis includes descriptive information about the sample groups, as well as descriptive measures generated from the research tools. Each hypothesis was tested and the research question addressed.

Descriptive Characteristics

Demographic characteristics of the sample are found in table 1. Infants represented 76% (19) of the children's population. Twelve of the infants were six months of age. Toddlers represented 24% (6) of the children's population.

State Trait Inventory

Table 2 shows the frequencies, percents, ranges, means, and standard deviations of the state and trait anxiety scores for the mothers.

There was a statistically significant correlation between the state and trait scores, $r = .6578$, $p < .05$. This correlation indicated that the two scales seemed to classify the women similarly. However, no correlation was found between the classifications high/low state and high/low trait anxiety; $r = .2584$, $p = .28$. A finding which indicates that these classifications do not always coincide, or occur simultaneously. These results are contradictory,

TABLE 1. SELECTED GENERAL DEMOGRAPHICS OF SAMPLE

Variables	N	%
Sex of Infants		
Male	9	47.36
Female	10	52.63
Sex of Toddlers		
Male	3	50
Female	3	50
Birth Order of Children		
First born	12	48
Second born	10	40
Third born	3	12
Date of Last Injection		
Within two months	12	48
Within four months	9	36
Within six months	4	16
Age of infants (in months)		
Range = 6-8		
Mean = 6.55		
Age of toddlers (in months)		
Range = 15-19		
Mean = 17.16		
Age of mothers (in years)		
Range = 21-36		
Mean = 25.72		
Mode = 22.0		

TABLE 2. STATE AND TRAIT INVENTORY SCORES FOR MOTHERS

Scores	N	%	Range	Mean	Standard Deviation
State Anxiety (Y-1)					
High	10	40	45-63	53.40	7.18
Low	15	60	20-40	30.87	6.95
Total	25	100	20-63	39.88	13.20
Trait Anxiety (Y-2)					
High	10	40	36-53	43.80	6.42
Low	15	60	22-32	27.67	3.54
Total	25	100	22-53	34.12	9.37

and no doubt due to the cut points used in determining high state and high trait anxiety, i.e., the 60th percentile for both scales. Although the above results appear to be in contradiction, it is possible for a woman to have a high trait anxiety but low state anxiety, and with the given sample size only a few mothers would be required to cancel a statistical correlation. Also 48% of the children had recently had injections which might have lowered state anxiety levels.

Mother-Child Observation Rating Scale

Upset scores. The children's behavioral upset scores may be found in table 3, and Appendix D. The author chose to examine all of the children's behavior instead of separating them into categories of infant and toddler because of the small number of toddlers.

The scores reveal that a majority of the children were observed to have low behavioral upset before, during, and after the procedure. In the category entitled "other" the behaviors observed were varied. These behaviors observed before immunization were tightly closed eyes, crying, and mild general body movement. The two latter behaviors were identified in the toddler behavior category. The "other" behaviors observed after immunization were: children reaching out and holding their mother tightly, resting on mother's shoulder, sucking the thumb and calling out for father. In the "other" category a majority of the behaviors

TABLE 3. COMPARISON OF CHILDREN'S BEHAVIOR UPSET SCORES ON THE MOTHER-CHILD OBSERVATION RATING SCALE BEFORE, DURING AND AFTER IMMUNIZATION

Variables	Before		During		After	
	N	%	N	%	N	%
High Upset	4	16	10	40	6	24
Low Upset	21	84	15	60	19	76

were seen after the procedure.

Comforting scores. The scores for mother comforting behaviors are in table 4. The majority of the mothers were observed to carry out comforting behaviors during the procedure. However, 64% of the mothers had low comforting and 36% of them had high comforting. The most common behaviors observed during the procedure were stroking, rubbing and verbalizations. The mothers continued stroking and rubbing after the procedure with an increase in verbalizations and playing.

The comforting behaviors observed in the "other" category in their order of frequency were: rocking, encouraging the father to hold the child during the procedure, giving the child to the father after the procedure, and mothers leaving the area immediately after the procedure.

Testing of Hypotheses

The hypotheses were tested using the Mantel-Haenszel and McNemar Chi-square test. The mothers and children were compared to determine the relationship of the mother's comforting behavior, level of anxiety and age on the child's level of upset controlling for mother's age, child's birth order and history of last injection. No significant relationships were found between the groups when controlling for these variables. Results of the statistical test for each hypothesis based on the research question are reported

TABLE 4. MOTHER-COMFORTING SCORES BEFORE, DURING AND AFTER IMMUNIZATION

Mother Comforting Categories	Numerical Scores												
	Before Rating				During Rating				After Rating				
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	
1. Stroking/Rubbing	N	12	6	5	2	9	4	9	3	2	2	19	2
	%	48	24	20	8	36	16	36	12	8	8	76	8
2. Kissing	N	19	1	4	1	16	5	3	1	8	9	7	1
	%	76	4	16	4	64	20	12	4	32	36	28	4
3. Verbalizations	N	4	5	15	1	3	3	12	7	1	1	18	5
	%	16	20	60	4	12	12	48	28	4	4	72	20
4. Playing	N	11	4	8	2	17	4	3	1	6	4	13	2
	%	44	16	32	8	68	16	12	4	24	16	52	8
5. Other	N	10	1	10	4	7	1	12	5	10	1	10	4
	%	40	4	40	16	28	4	48	20	40	4	40	16

* behavior not observed

in the sections that follow. In these sections the research hypotheses, given in the introduction of chapter one, are rephrased as null hypotheses.

Null Hypothesis 1: There is no association between a child's behavioral upset and his/her mother's level of anxiety as indexed by the state trait anxiety inventory.

The data for examining hypothesis number one are in tables 5 and 6. As noted in table 5, 20% of mothers classified as high state anxiety had children with high behavioral upset while 47% of mothers classified as low on this scale had children with high behavioral upset. This difference, although contrary to what was expected was not significantly different, $X^2 = 1.852$ with 1 df, $p = .174$.

With respect to the trait scale of anxiety, a similar result was observed. Mothers classified as high trait anxiety had a lower proportion of children with high behavioral upset, $X^2 = 0.260$, $df = 1$, $p = .61$. The odds ratios (measures of association for mother and child behaviors) for state and trait are .286 and .643. Both are less than unity indicating that the child is more likely to be not highly upset if the mom has a high level of anxiety. In both cases, the null hypothesis is not rejected at the .05 level of significance. Children's level of upset does not have a significant association with mother's level of anxiety.

TABLE 5. TABLE OF MOTHER'S STATE ANXIETY LEVEL AND CHILD'S UPSET WITH MANTEL-HAENSZEL TEST STATISTIC AND ODDS RATIO MEASURE OF ASSOCIATION

	Upset		Not Upset	
	N	%	N	%
High State Anxiety	2	20.0	8	80.0
Low State Anxiety	7	46.67	8	53.3

$$X^2 = 1.85, df = 1, p = .286$$

$$\text{Odds ratio} = 0.286$$

TABLE 6. TABLE OF MOTHER'S TRAIT ANXIETY LEVEL AND CHILD'S UPSET LEVEL WITH MANTEL-HAENSZEL TEST STATISTIC AND ODDS RATIO MEASURE OF ASSOCIATION

	Upset		Not Upset	
	N	%	N	%
High Trait Anxiety	3	30	7	70
Low Trait Anxiety	6	40	9	60

$$X^2 = 0.260, df = 1, p = .617$$

$$\text{Odds Ratio} = 0.286$$

Table 7 contains the Mantel-Haenszel X^2 value and associated p-value for tests of association when controlling for one of several demographic factors. The first of these tests relates to hypothesis two.

Null Hypothesis 2: There is no constant partial association between the child's level of upset and mother's level of anxiety across the levels of the child's age.

The data for examining hypothesis number two is in table 7. As noted in table 7 the chi-square value of state anxiety by upset controlling for age is 1.815 with 1 degree of freedom and a p-value of 0.178. The null hypothesis is not rejected because X^2 fell in the non rejection region. Hence, there is not a significant relationship between the age of the child and his behavioral upset to his mother's level of state anxiety.

The chi-square value of trait anxiety by upset controlling for age is 0.232 with 1 degree of freedom and a $p = 0.630$. As with state anxiety the null hypothesis is not rejected and no significant relationship between the age of the child and his behavioral upset to his/her mother's level of trait anxiety. The summary odds ratios for state and trait anxiety by upset controlling for the child's age are 0.312 and 0.666. Both are less than unity indicating that the child is less likely not to display upset in relation to his/her mother's high level of anxiety regardless of age.

TABLE 7. TABLE OF MOTHER'S STATE AND TRAIT ANXIETY BY CHILD'S UPSET CONTROLLING FOR DEMOGRAPHICS

		D.F.	χ^2 value	P
Child's Age	S	1	1.815	0.178
	T	1	0.232	0.630
Mother's Age	S	1	0.797	0.372
	T	1	0.191	0.662
Birth Order	S	1	1.937	0.164
	T	1	0.310	0.578
Last Injection	S	1	2.760	0.097
	T	1	0.255	0.613

S = State anxiety
T = Trait anxiety

Null Hypothesis 3: There is no association between mother's comforting behaviors and her level of anxiety as measured by the state trait anxiety inventory.

Data for examining hypothesis number three are in tables 8 and 9. In table 8, 22% of mothers classified as high state anxiety had high comforting behavior and 77% of mothers classified as low state anxiety had high comforting behavior. The chi-square value of state anxiety by comfort is 1.852 with 1 degree of freedom and $p = 0.174$. Since the calculated χ^2 fell in the non rejection region the null hypothesis is not rejected. The mother's low state anxiety level was not shown to have a significant positive association with their comforting behaviors.

As noted in table 9, 44% of mothers with high comforting had high trait anxiety while only 37.5% of low comforting mothers had high trait anxiety. The chi-square value of trait anxiety by comfort is 0.1167 with 1 df and a $p = 0.734$. The odds ratio for state and trait anxiety by comfort are 0.286 and 1.333. The measure for state anxiety is less than unity indicating the mothers are more likely not to comfort if anxious. However, for trait anxiety the measure is greater than unity indicating a positive association between trait anxiety level and comforting.

Table 10 contains data comparing the association between mother's comforting and child's upset. Forty-four

TABLE 8. TABLE OF MOTHER'S STATE ANXIETY LEVEL AND COMFORTING BEHAVIORS WITH MANTEL-HAENSZEL TEST STATISTIC AND ODDS RATIO MEASURE OF ASSOCIATION

	High Comforting		Low Comforting	
	N	%	N	%
High State Anxiety	2	22.2	8	50
Low State Anxiety	7	77.7	8	50

$\chi^2 = 1.85, df = 1, p = .286$
 Odds Ratio = 0.286

TABLE 9. TABLE OF MOTHER'S TRAIT ANXIETY LEVEL AND COMFORTING BEHAVIORS WITH MANTEL-HAENSZEL TEST STATISTIC AND ODDS RATIO MEASURE OF ASSOCIATION

	High Comforting		Low Comforting	
	N	%	N	%
High Trait Anxiety	4	44.4	6	37.5
Low Trait Anxiety	5	55.6	10	62.5

$\chi^2 = 0.116, df = 1, p = 0.739$
 Odds Ratio = 0.286

TABLE 10. TABLE OF MOTHER'S COMFORTING BEHAVIOR AND CHILD'S UPSET WITH MANTEL-HAENSZEL TEST STATISTIC AND ODDS RATIO MEASURE OF ASSOCIATION

	Upset		Not Upset	
	N	%	N	%
Comforting Mothers	4	44.4	5	55.6
Non-Comforting Mothers	5	31.3	11	68.7

$\chi^2 - 1.028, df = 1, p = 0.537$
 Odds Ratio = 1.76

percent of the comforting moms had upset children and thirty-one percent of the non-comforting moms had upset children. The X^2 value of comfort by upset is 1.028, 1 df, and $p = .537$. The author expected that mother's comforting behavior would significantly determine whether or not the child was upset. However, the results imply that non-comforting moms have children that are not upset. Thus, comforting cannot be shown to have a significant association with the child's level of upset.

Overall, the data generated from the STAI and the mother-child observation rating scale indicated that the relationship between a parent's anxiety and the child's behavior during immunization is not a significant one. No associations were found between a mother's anxiety, mother's age, child's level of upset, birth order or history of last injection. Note that for some relationships significant differences may have occurred with a larger sample size.

CHAPTER V

SUMMARY

One purpose of this study was to determine the relationship between the mother's level of anxiety and her child's behavioral response during a painful health care procedure (i.e., immunization). An additional purpose was to examine whether the age of the child, the birth order and history of last injection affected the mother's anxiety and her child's upset.

The conceptual framework used for this study evolved around the concepts of induction and empathy developed by Sullivan (1953). These concepts explain the phenomena of emotional contagion or communion between the infant and his mother.

The literature review partially supported the conceptual framework and hypothesis by identifying that the extent of the mother's anxiety level has an impact on the child's level of behavior upset during hospitalization. The relationship between the mother's level of anxiety and the child's age was reported in one study. There were no studies that looked at the relationship in an out-patient setting in different age groups.

The study was conducted in a military pediatric clinic located in North Carolina. Twenty-five mother-child pairs composed the convenience sample. The mothers were

classified into high and low anxiety and comforting groups. The children were classified into high and low upset groups. The subjects were observed before, during, and after immunization. The tools utilized for the collection of the data were the State Trait Inventory developed by Charles Spielberger and the mother-child observation rating scale based on observational data collected by Savedra (1979) and Sheredy (1984). Three weekdays (Tuesday, Wednesday and Thursday) for a 3 week period were used to collect data.

The data were analyzed using the McNemar and Mantel-Haenszel chi-square test. The significance level .05 was used for all statistical tests. The data revealed that no associations were found between the classifications high/low state and high/low trait anxiety. The mother-child rating scale revealed that the children had low behavioral upset before, during and after immunization. Also, a majority of the mothers (64%) were observed to have low comforting behaviors. The testing of the hypotheses evidenced that there was not a significant association between the mother's anxiety and the child's upset. There were also no significant associations found between the mother's level of state and trait anxiety and her comforting behaviors. An association between the mother's anxiety and the child's upset when controlling for the mother's age, child's age, child's birth order and history of last injection also did not prove to be significant.

Limitations of the Study

Several limitations were identified. The convenience sample from which this data was taken limits their generalizations to other populations. This study could be carried out with a larger sample that included an equal number of infants and toddlers. Since this study included a large number of infants conclusions cannot be based on different age groups. In addition, a limited number of 18 month old children were available due to a nation wide DPT shortage. Due to the shortage children were administered only the first three DPTs and OPVs in the basic immunization series. During the time this study was carried out there was a great deal of publicity regarding the danger of pertussis. Several mothers stated that the only reason they felt anxious prior to their child's immunization was because of this recent publicity.

Last, it was identified that some of the mothers felt that the questions on the anxiety inventory were repetitious and difficult to answer prior to their child's immunization. They would have preferred to answer the inventory after the child had received the immunization.

Recommendations for Future Study

The recommendations for future study are as follows:

1. Explore the relationship between demographic data, such as race, educational level and gender of the parent and the child's response to stressful

procedures.

2. Conduct a study with a health care procedure where the parent and child undergo a prolonged stressful event (i.e, dental extraction, cleaning, filling).
3. Conduct a study with an experimental and control group to examine the impact parental presence has on the child's level of behavioral upset when confronted with a painful health care procedure.
4. Explore the relationship between the child's past experiences with illness and injury and his ability to cope with a stressful health care intervention.

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APPENDICES

APPENDIX A

APPENDIX A
LETTER OF CONSENT

I, Sandra Gibson, am a nurse and currently a graduate student at the School of Nursing at East Carolina University. As part of my program, I am conducting a study on the relationship between a mother's anxiety and her child's behavior during immunizations.

I would appreciate your participation in my study since I hope to discover some information that will help nurses make decisions about parental presence when a child must have a painful procedure. My project director is Hazel Aslakson, Ed.D., at East Carolina University. The telephone number is 919/757-6061.

I need permission to give you a short questionnaire to determine your level of anxiety about your child's immunization. The form that you will fill out should take approximately 15 to 20 minutes. An observation form will be used by the researcher to record your child's behavior during his immunization. This researcher will be available to assist you to fill out the form and be available to answer any questions.

All material will remain confidential. No one will have access to the forms you complete except the researcher. A copy of the results will be sent to you on request. Your participation in this project is voluntary and you may refuse to participate if you so desire without any loss of benefits entitled you.

If you are willing to participate please sign below.

I _____ have read the above and
(Signature)

agree to participate in a nursing research project
at _____.

Date _____

APPENDIX B

SELF-EVALUATION QUESTIONNAIRE

Developed by Charles D. Spielberger
in collaboration with
R. L. Gorsuch, R. Lushene, P. R. Vagg, and G. A. Jacobs

STAI Form Y-1

Name _____ Date _____ S _____

Age _____ Sex: M _____ F _____ T _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

VERY MUCH SO
MODERATELY SO
SOMEWHAT
NOT AT ALL

- | | | | | |
|--|---|---|---|---|
| 1. I feel calm | ① | ② | ③ | ④ |
| 2. I feel secure | ① | ② | ③ | ④ |
| 3. I am tense | ① | ② | ③ | ④ |
| 4. I feel strained | ① | ② | ③ | ④ |
| 5. I feel at ease | ① | ② | ③ | ④ |
| 6. I feel upset | ① | ② | ③ | ④ |
| 7. I am presently worrying over possible misfortunes | ① | ② | ③ | ④ |
| 8. I feel satisfied | ① | ② | ③ | ④ |
| 9. I feel frightened | ① | ② | ③ | ④ |
| 10. I feel comfortable | ① | ② | ③ | ④ |
| 11. I feel self-confident | ① | ② | ③ | ④ |
| 12. I feel nervous | ① | ② | ③ | ④ |
| 13. I am jittery | ① | ② | ③ | ④ |
| 14. I feel indecisive | ① | ② | ③ | ④ |
| 15. I am relaxed | ① | ② | ③ | ④ |
| 16. I feel content | ① | ② | ③ | ④ |
| 17. I am worried | ① | ② | ③ | ④ |
| 18. I feel confused | ① | ② | ③ | ④ |
| 19. I feel steady | ① | ② | ③ | ④ |
| 20. I feel pleasant | ① | ② | ③ | ④ |



APPENDIX C

APPENDIX D

APPENDIX D
OBSERVATION CATEGORIES

Infant Behaviors:

Crying: May be scored when a loud outcry is at least 5 seconds.

General body movement: May be scored when movements of the arm(s), leg(s), one or both feet, hand(s), and head occur.

Withdrawing affected limb: May be scored when infant withdraws affected limb away from the health provider.

Attempt to push the person away: May be scored when infant attempts to push health provider away from him.

Screaming: May be scored when infant has a loud outcry that is high pitched and piercing for at least 5 seconds.

Toddler Behaviors:

Clenched teeth: May be scored when upper and lower teeth are approximate and held tightly together.

Tightly shut lips: May be scored when child holds both lips together tightly.

Widely opened eyes: May be scored when both eyes are stretched open larger than their regular size.

Aggressive physical behavior: May be scored when resistive physical behavior is displayed (e.g., kicking, hitting, biting).

Crying: May be scored when a loud outcry is at least 5 seconds.

Screaming: May be scored when toddler has a loud outcry that is high pitched and piercing for at least 5 seconds.

Holding rigidly still: May be scored when child holds a body part still and tense.

Breath-holding: May be scored when breath is held on expiration or inspiration for a few seconds followed by cyanosis and ending with a gasp and the return of breathing.

Withdrawing affected limb: May be scored when child withdraws affected limb away from health provider.

Mother Comforting Behaviors:

Stroking/rubbing child: Mothers makes gentle, movements against part of the child's body.

Kissing child: Mother's lips come in contact with some part of the child's body to kiss.

Verbalizations: Score when mother talks to child in a soothing voice to give verbal reassurance including offering a reward for child's cooperative behavior.

Playing: Score when mother tries to redirect the child's attention by using games, songs, or toys.

APPENDIX E

APPENDIX E

CHILDREN'S BEHAVIORAL UPSET SCORES ON THE MOTHER-CHILD
OBSERVATION RATING SCALE BEFORE, DURING, AND AFTER IMMUNIZATION

Behavior Categories	<u>Behavior Upset Scores</u>											
	Before				During				After			
	High		Low		High		Low		High		Low	
	N	%	N	%	N	%	N	%	N	%	N	%
1. Crying	1	4	24	96	7	28	18	72	2	8	23	92
2. General Body Movement	0	0	25	100	0	0	25	100	0	0	25	100
3. Withdrawing Affected Limb	1	4	24	96	0	0	25	100	0	0	25	100
4. Attempts to push away			*		0	0	25	100	0	0	25	100
5. Other	2	8	23	92	1	4	24	96	3	12	22	88
6. Clenched teeth			*		0	0	12	100	0	0	25	100
7. Tightly shut lips			*		0	0	25	100	0	0	25	100
8. Widely opened eyes			*		0	0	25	100	0	0	25	100
9. Aggressive physical behavior (e.g., kicking, hitting, biting)			*		0	0	25	100	0	0	25	100
10. Breath holding			*				*				*	
11. Screaming			*		2	8	23	92	1	4	24	96
12. Holding rigidly still			*				*				*	

*behavior not observed

APPENDIX F

EAST CAROLINA UNIVERSITY
GREENVILLE, NORTH CAROLINA 27834
POLICY AND REVIEW COMMITTEE ON HUMAN RESEARCH

'58

OFFICE OF THE CHAIRMAN
BRODY BUILDING 6N-70, 6N-74
SCHOOL OF MEDICINE

Telephone (919) 757-2914 (Secretary)
(919) 757-2773 (Chairman)

MEMORANDUM

TO: Ms. Sandra Gibson, G-3 Cannon Court, Greenville

FROM: Dr. William H. Waugh, Chairman *W. H. Waugh*

SUBJECT: Review of research proposed No. 84-107

DATE: February 7, 1985

The proposal by you entitled "The Relationship Between a Parent's Anxiety and the Child's Behavior During Painful Health Care Procedures" has been referred to this office for review and given the No. 84-107.

This notice is to confirm that the proposal is judged to qualify as exempt from full committee review under Exemption Categories No. 3 and No. 4 as defined by 45 CFR 46.101(b). In addition, the proposal is judged to be a no more than minimal risk research project and the sample consent form appears satisfactory.

WHW/pwd

Copy: Dr. Hazel Aslakson, School of Nursing