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ANXIETY REDUCTION WITH CHILDREN RECEIVING MEDICAL CARE: COGNITIVE DEVELOPMENTAL CONSIDERATIONS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

L. Kaye Rasnake, B.A., B.S., M.A.

* * * * *

The Ohio State University

1987

Dissertation Committee:

P. M. Clark
T. R. Linscheid
G. A. Winer

Approved by

G. A. Winer
Adviser
Department of Psychology
To My Parents
and
Grandparents
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VITA

May 3, 1954 . . . . . . . . Born - Bluefield, West Virginia

1975 . . . . . . . . . . . . . . B.S., B.A., Concord College, Athens, West Virginia

1982-1985 . . . . . . . . . Graduate Teaching Associate Department of Psychology The Ohio State University, Columbus, Ohio

1983 . . . . . . . . . . . . . . M.A., Psychology The Ohio State University, Columbus, Ohio

1985 - present . . . . . . Pediatric Psychology Fellow Department of Pediatrics, Division of Psychology Ohio State University and Children's Hospital, Columbus, Ohio

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Chapter 1

Introduction

A. Specific Aims

The concept of illness appears to be a slowly evolving process that utilizes the developing emotional and cognitive abilities of the child, as well as the experiences of the child (e.g., Bibace and Walsh, 1981; Brewster, 1982; Perrin and Gerrity, 1980). Children's conceptions of illness are believed to follow a developmental progression that parallels shifts in cognitive processes in general, changing from primitive, circular, egocentric reasoning to more abstract and logical views (Bibace and Walsh, 1981). It has been assumed that the knowledge of how children understand illnesses should contribute to the process of clinical pediatrics. This knowledge should become the basis for health education for healthy children and should provide a framework for improved explanations of illnesses to sick children (Whitt, Weiss, and Taylor, 1979). Investigators in the area of children's conceptions of illness (e.g., Bibace and Walsh, 1981; Brewster, 1982; Perrin and Gerrity, 1980) have speculated that an improved understanding of the developmental progression of children's conceptions of illness should allow for revised preparation techniques and
explanations of medical care which will lead to improved compliance with medical treatments and reduced anxiety in children receiving medical care.

Several studies with adults have indicated that accurate information does indeed have positive effects on the manner in which the individual deals with stress (e.g., Andrew, 1970; Vernon and Bigelow, 1974). Thus, it seems reasonable to assume that similar results can be found with children. That is, if children are given information that is conceptually understandable, this should have positive effects on the manner in which they deal with stress.

Perrin and Gerrity (1980) note that the research that has been completed at this point has provided the necessary groundwork to determine "whether better tuned explanations of illness will result in better understanding by the child, and whether such understanding will in fact result in better adjustment and coping with illness, accompanied by less fear and more sense of control" (p. 848). "Better tuned explanations" are assumed to mean explanations based on the cognitive developmental level of the patient, explanations which match the conceptual abilities of the patient. It was the aim of this research to provide an improved explanation of a medical procedure to children, an explanation that was in accordance with their level of cognitive development, and to determine if the children did indeed exhibit reduced anxiety, more effective coping, and improved compliance with the medical procedure. More specifically, the goals of the
research project were: (1) to develop explanations of a specific medical procedure that fit the Piagetian stages of cognitive development; preoperations, concrete operations, and formal operations, and (2) to determine if children who receive explanations of the procedure which match their cognitive developmental level demonstrate less anxiety and improved compliance with the procedure.

B. Significance

A great deal of interest in the effect of illness and hospitalization on the developing child has been evident as early as the 1930's (Beverly, 1936). Cassell (1965) reported some amount of psychological upset in as much as 92% of the hospitalized children included in his studies. It is often assumed that children fear illness and hospitalization due to its association with punishment. Additionally, it is assumed that this fear and anxiety may be decreased to a great extent by proper preparation and explanation for the child. Much effort has been made in an attempt to determine what constitutes proper preparation for the child. Attention has been given to designing psychological preparation for the child that will act to reduce the stress and anxiety associated with hospitalization and medical care.

A variety of preparation techniques has been empirically investigated to determine the value of the techniques in anxiety reduction in the pediatric patient. These include: filmed-modeling (e.g., Melamed and Seigel, 1975), joint parent-child preparation (e.g., Visintainer and Wolfer,
formation of accurate expectancies (e.g., Johnson and Leventhal, 1974), and cognitive-behavioral coping strategies (e.g., Peterson and Shigetome, 1981). All techniques have been demonstrated to effectively reduce anxiety and stress. However, no one technique has been demonstrated unequivocally as the most effective.

Although all techniques have been shown to be useful for stress reduction, most demonstrate greater effectiveness with older children (e.g., Melamed and Seigel, 1975; Peterson and Shigetome, 1981; Wolfer and Visintainer, 1975). One explanation of this finding might be discovered in the fact that no studies have directly considered the cognitive developmental level of the child when designing and employing the preparation techniques. That is, no techniques have been designed with direct attention given to the conceptual abilities of the children receiving the preparation. Techniques are developed and then used with a wide age-range of children, crossing multiple levels of cognitive development (e.g., Melamed and Seigel, 1975). This practice is not found only in research on preparation for medical care but is also noted as a problem in research on dental preparation (Winer, 1982).

Adults often mistakenly assume if they tell a child something in a calm, rational manner, the child will comprehend. Jean Piaget (1955) demonstrated that how much of a message the child understands cannot be known unless one patiently probes his/her response. Piaget postulated a theory
which incorporates a structural model of cognitive development. According to the model, the child's comprehension of experiences is determined by the limit and characteristics of thought at each stage of cognitive development. Piaget identified four sequential stages of cognitive development; the sensorimotor period, the preoperational period, the concrete operational period, and the formal operational period. Characteristics of the stages include the increasing ability to engage in logical thought, to separate internal realities and thoughts from the outside world, and to distinguish other people's points of view from their own.

It has been hypothesized and empirically supported that children's conceptions of illness follow a developmental progression similar to the progression of cognitive processes in general identified by Jean Piaget (e.g., Bibace and Walsh, 1981). Effective communication between patient and health professional is a complicated process. Developmental differences in basic understandings of how the world works and of health and illness may further impede effective communication. As children move toward adulthood, their concepts of illness become enlarged, organized and repeatedly transformed. Prior to achievement of adulthood, the differences between the child's thinking processes and the adult's thinking processes make it necessary to listen to the child, in order to know what the child has heard and more importantly, what he/she has understood.
Simply providing information to the child, especially the young child, rarely brings out desired cooperations. "Children have their own conceptions of what has happened to them...their ability to assimilate the information is limited and they often distort what they are told" (Brewster, 1982, p. 355). Awareness of the child's level of understanding may play an important role in the process and efficacy of pediatric care.

Schacter and Singer (1962) illustrated that emotional responses can be altered by cognitive processes. It is assumed that one's cognitive processes evaluate a stimulus, interpret its meaning, and determine its significance (Lazarus, 1968). It seems reasonable to assume that one's cognitive developmental level must influence the evaluation and interpretation of a stimulus, thereby, influencing the significance assigned to the stimulus. Thus, the importance of this research emanates from the attempt to investigate empirically the assumption that preparation techniques founded in the child's level of cognitive development more effectively reduce anxiety and increase compliance with medical treatments than do preparation techniques which give no consideration to the cognitive developmental level of the pediatric patient.

C. Problem Statement

It is generally agreed that hospitalization and medical procedures cause some degree of anxiety in most all children. Many techniques have been devised and researched to determine
their effectiveness in reducing children's anxiety and in turn improving their cooperation with medical care.

Although it has been clearly demonstrated that children's cognitive developmental level influences their conceptions of illness and medical treatment, no techniques employed and investigated have directly considered conceptual abilities. The techniques that have been proven effective for anxiety reduction have been less effective with younger children than older children (Melamed & Siegel, 1975). This reduced effectiveness with younger children, children in the preoperational level of cognitive development, may be explained by the lack of concern given to cognitive developmental level and conceptual abilities when preparation is offered. The preoperational child is limited in his/her conceptual understanding; the preoperational child's thought is not logical, is of an empirical nature, and is associated with static characteristics of direct experiences. Most techniques designed for children ranging from 4 years to 17 years are likely beyond the conceptual abilities of the preoperational child.

Perhaps the specific nature of the technique - filmed-modeling, puppet therapy, cognitive-behavioral coping strategies - is not of primary importance. Rather, the significant factor may be that the information presented match the conceptual abilities of the child. It was hypothesized the children who receive explanations of medical procedures designed specifically for their particular level
of cognitive development will exhibit less anxiety and
distress during the medical procedure than children who
receive explanations designed without specific attention
given to cognitive developmental level, or children who
receive explanations which are conceptually advanced.
Chapter 2

Literature Review

The theoretical and empirical basis of the research can best be presented by first considering the data available on children's conceptions of illness and second considering information available on the techniques used for preparing children for hospitalization and medical care.

a. Children's Conceptions of Illness

In the 1950's, Maria Nagy (1951, 1953a, 1953b) published a series of investigations of children's ideas about illnesses, children's conceptions of bodily functions, and children's representation of germs. Her works were based on the theoretical orientations of Piaget (1929) and Oakes (1947) (as cited in Nagy, 1953a). Piaget and Oakes focused on conceptions of physical phenomena; Nagy's interests were in the area of conceptions of a biological nature, of the human body. Nagy (1951) conducted an investigation using 350 children ranging in age from three to twelve years. She reported finding a developmental trend, with the youngest children declaring that illness was caused by a temporary contiguity of events. By six years of age the children were identifying infections as the cause of illness; by ten years
they were naming microorganisms as the cause of illness; and by twelve years of age the children recognized that different organisms cause different illnesses. Thus, with increasing age, the children moved from seeing the causation of illness as due to a single factor to understanding multiple causations of illness.

Some twenty years later, attention returned to cognitive development and children's conceptions of illness. Based on the theoretical assumption that the concept of health and illness appears to be a subtle, complex, and slowly evolving process that utilizes the developing child's cognitive abilities, Brodie (1974) attempted to explore the views toward illness held by school-age children to determine if these views differed based on illness experiences. Previous documentation indicated that younger children who are sick most frequently express the belief that illness is a punishment for some wrongdoing (Beverly, 1936). What children who are not sick, who have not been subjected to illness, think about the topic of illness had not been clearly established. Brodie's sample consisted of 408 first, third, and fifth grade school children.

Several measures of anxiety were used. These measures included a General Anxiety Scale for Children (GASC) to determine whether children who were generally anxious had a higher level of anxiety about illness and a Children's Illness Anxiety Scale (CIAS) to measure the child's perceptions of illness in relation to punishment, their
parent's reaction, and the disruptive force in his/her life. In addition, a review of school records over a five month period of time was made to determine the children's absenteeism rate (assuming that absences of more than five days reflected a child with a history of recent illness).

Results of the data analysis indicated that regardless of age, healthy children do not view illness in the same way sick children do. They do not see illness as punishment for wrongdoing, do not feel that their parents are displeased with them when they are ill, and do not see illness as a disruptive force in their lives. Even those children who were defined as having had a history of recent illness (5 days or more of absences from school in the last 5 months) did not differ significantly in their responses to the perception of illness questions. There was a significant positive relationship found between high anxiety scores on the GASC and scores on the CIAS. Children who had elevated scores on the general anxiety scale also scored higher on the illness anxiety scale. Only children defined as anxious via the anxiety measures perceived illness as a possible punishment for misbehavior. Although found repeatedly in research with ill children, healthy, nonanxious children rejected the notion of illness as punishment for wrongdoing.

It must be noted that the measurement used by Brodie required a simple "yes" or "no" response to questions which were administered in a group setting. The research conducted
with ill children has most typically involved open-ended, individual interviews.

Continuing the attempt to understand children's conceptions of illness and medical care, Steward and Regalbuto (1975) investigated children's understanding of two medical instruments commonly seen in pediatric settings, a stethoscope and a syringe. Adhering to Piagetian theory, two age groups were studied; fourteen kindergartners assumed to be at the preoperational stage of cognitive development and thirteen third graders assumed to be at the concrete operational stage. Individual, open-ended interviews were conducted with each student to determine his or her understanding of the function of each of the tools. The authors reported that the kindergartners described the stethoscope in binary terms "as a way to determine life or death" (p. 148) and egocentrically to "see if I am happy" (p. 148). They did not demonstrate an understanding that a syringe has medication nor why injections were given. In contrast, the third graders demonstrated an understanding of the stethoscope as being used to listen to see if the heart was beating within a normal range and offered involved explanations of the heart and circulatory system physiology. The third graders knew syringes held medication and injections were given to prevent or cure illnesses.

The results were interpreted in terms of Piagetian theory. Young children (under the age of six years) "think in binary categories rather than in terms of a range of
possibilities; they think egocentrically, . . . they think in terms of what they can see" (p. 149). Older children have greater abilities to see a range of possibilities, to "think out relationships and therefore see causal sequences" (p. 149). Educational experiences might have contributed to the responses of the third grade students, especially their knowledge of the circulatory system. However, this research supports the idea that doctors must remember the limitations of the child's thought if communication is to be effective.

An elaborate investigation on this subject was conducted by Campbell (1975). The pursuit of information was based on an interest which differed somewhat from the previously discussed studies. An interest in the relationship between concept development and acquisition of social roles led Campbell to study the development of illness concepts. The assumption underlying the research was that "illness is a universally encountered phenomenon, and . . . there is a recognized social role attendant on it" (p. 92). The sick role is discontinuous, clearly delimited, and thus provides a very strategic area for investigation of role learning and concept formation. It was assumed that "the process by which individuals acquire their perspective on the sick role begins in childhood and extends over years" (p. 92).

Two hundred and sixty-four children, ranging in age from 6 to 12 years, and their mothers were studied. The children were short term patients in a pediatric hospital with a median stay of five days. Interviews were conducted with
both the children and the mothers to assess two aspects of a developmental process: The question of whether there is an emerging consensus in illness definitions which shows a developmental trend with children's responses becoming more similar to adults as they mature; as well as whether there were age-linked differences in the major themes in illness definitions.

Data analysis revealed that the typical child's view of illness was similar to that of the typical mother. However, older children more frequently presented themes employed by their mothers than did younger children, showing a developmental trend. There were substantial developmental variations in illness concepts. "Older children, having had an opportunity to acquire additional information concerning illness and having developed increased verbal facility, demonstrated in their illness concepts a thematic variety that exceeded the more limited perspective of younger children" (p. 94). With age there was a move away from defining illness in terms of feeling states to defining illnesses more precisely, recognizing psychosocial components.

Campbell (1975) suggested that "the developing definitional consensus evident in comparisons of group profiles may be less a reflection of direct interpersonal learning than it is a process of general social accretion that keeps pace with cognitive development" (p. 99). This was presented only as a supposition since no direct data were
collected on the cognitive abilities of the children. The assumption was based on age indices only. One further finding of the investigation worthy of note was the interaction between health histories and conceptualizations of illnesses. The nature of the experiential contribution did not appear to be a direct additive one; rather it was contingent on age. A three-step multiple regression analysis indicated that illness experience made a difference but the influence varied depending on the age. Children younger than nine and one-half years, who had experienced poor health, had the least sophisticated concepts of illness. Older children, who had experienced health problems in recent years, demonstrated much greater sophistication. Thus, when considering the development of illness concepts, children seem to profit from experiences, but the extent to which they do so appears to be contingent on their level of development when the illness occurs.

Perhaps the individuals most frequently associated with the investigation of children's conceptions of illness are Roger Bibace and Mary Walsh. These authors presented a paper at the annual meeting of the American Psychological Association in 1977 and later published a series of articles on their findings of the development of children's concepts of illness (1979, 1980, 1981). They most clearly demonstrated "that children's perceptions and understanding of illness can be ordered in a systematic manner. The order is developmental; more specifically, it is the order that has
characterized the cognitive development of causal reasoning" (1980, p. 912). The authors argued that no studies previously had delineated the general categories of beliefs about illnesses or the manner in which these beliefs change with development. Other studies had pointed out a similarity between children's themes and Piagetian cognitive development, but had not demonstrated a comprehensive account of the explanations to be found at specific cognitive levels of development. There had been "no attempt to highlight ways in which children assimilate a particular phenomenon to the general schemas available to them at a given point in their cognitive development" (1979, p. 287).

Bibace and Walsh hypothesized that children's concepts of illness would follow the same pattern as the development of causal reasoning demonstrated by Piaget (1955) and Werner (1948).

The cardinal dimension of this development is the degree of differentiation between the self and the other. This variation in degree of differentiation between the self and the other will manifest itself in significant differences in children's conceptions of health and illness. (Bibace and Walsh, 1989, p. 912)

Recognizing that in many areas, it is difficult to predict particulars from the general with respect to Piagetian and Wernerian theory, or more specifically it is difficult if not impossible to predict a child's conception of illness from
knowing his level of cognitive development, Bibace and Walsh described their interest as an effort to make the theories more useful to the health profession, by defining "categories that reflect the interaction between the general stages of cognitive development and particular content areas" (1979, p. 288). Their method of research was consonant with that used by Piaget. An attempt was made to analyze the particular cognitive processes used in arriving at the conception via the clinical interview, in contrast to standardized questioning approaches used by other investigators.

A pilot study of 180 subjects, ranging in age from three to thirteen years, was initially conducted to delineate a preliminary category system. The data from the pilot study were organized in terms of Piaget's three stages of preoperations, concrete operations and formal operations. In addition, each stage was further broken down into two substages such that six categories resulted. These categories, developmentally sequenced, were 1) phenomenism (cause is an external, concrete phenomenon that is spatially or temporatally remote), 2) contagion (cause is located in objects or people proximate to the child), 3) contamination (cause is a person, object or action that has a harmful quality), 4) internalization (cause is linked to internal effect through inhaling), 5) physiological (cause may be triggered by external events, source lies in specific internal structures and functions), and 6) psychophysio-
logical (illness described in terms of internal processes but can have psychological cause).

The second step was a testing phase to verify the accuracy of the system. The sample for this phase consisted of 72 children of three age groups; four, seven and eleven years. The results were consistent with the findings of the pilot data. The type of explanation given by the child varied as a function of their developmental status. The four year olds gave predominantly contagion explanations (70.8%); the seven year olds gave predominantly contamination explanations (75%); and the eleven year olds gave predominantly physiological explanations (70.8%). In addition, the other responses given by the four year olds were either in the category just below contagion, phenomenism, or the next level, contamination. This same pattern was noted in the seven and eleven year olds.

A second study was conducted to refine the scoring system further and to make a second empirical test of the system. This sample consisted of 72 children; 24 four year olds, 24 seven year olds, and 24 eleven year olds. The findings were consistent with earlier findings. Among the four year olds, 54% gave contagion explanations and 38% gave contamination explanations. Among the seven year olds, 63% gave contamination explanations and 29% gave internalization explanations. Among the eleven year olds, 56% gave internalization explanations and 34% gave physiological explanations.
The authors propounded multiple clinical implications of their findings (1981). An appreciation of the child's conceptions of illness can "foster(s) empathy; facilitate(s) explanation of illness and medical procedures; and bolster(s) health education" (1981, p. 45). The authors advised that professional responses to children's questions or misconceptions should be based on the child's understanding, and consequently will lead to greater reassurance for the child. In addition, this information should be useful when designing educational strategies for children. Bibace and Walsh noted that "it has been our clinical experience in pediatric settings that a response from the health professional is more genuinely reassuring when it takes into account the psychological level of the child's beliefs about illness" (1980, p. 916).

Research with goals similar to those of Bibace and Walsh (1981) was conducted by Perrin and Gerrity (1980). They attempted to describe the nature of the concepts typical of children at differing developmental stages. Their results supported the notion of a developmental progression of conceptions of illness based on cognitive levels. However, an additional and interesting finding of this research was that the development of illness concepts seems to lag a bit behind conceptual development of other content areas such as physical causality.

The study sample consisted of 128 children in five grade levels; kindergarten, second grade, fourth grade, sixth
grade, and eighth grade. The children were all considered to be healthy and free of any known serious illness. A two-part, semistructured interview was conducted with each subject; one part assessed the understanding of causes, prevention and treatment of illnesses; the other assessed the child's general cognitive development. A hierarchically organized coding scale was devised which looked at conceptual growth moving from global to concrete to abstract understanding, including transitional points. The authors suggested that their investigation demonstrated a developmental progression in children's understanding of concepts regarding illness. The conceptions of illness were consistent with what might be expected from our understanding of children's conceptual abilities within each of the Piagetian stages of preoperations, concrete operations and formal operations.

A kindergarten or second grade child defined illness in terms of external cues, such as being required to stay in bed. He/she believed illness resulted from a wrongdoing and thus, would go away if a set of rules was adhered to. By fourth grade or sixth grade, the child defined illness primarily in terms of germs; believed that illness could be avoided by avoiding the germs; and believed the illness would go away if he/she took medicines and followed the advice of the physician. By the eighth grade, if formal operations had been achieved, children defined illness abstractly, emphasizing internal aspects and recognizing that there were
multiple causes of illnesses and thus, multiple treatment strategies. It was noted that in all ages, the concept of prevention was less well understood.

Interestingly, the findings also indicated that mean scores for responses to questions regarding illness causality were consistently lower than mean scores for responses regarding physical causation. The authors argued that the results were consistent with "Piaget's observation that development proceeds at variable rates dependent on both the child's experiences with the phenomenon and the affect connected with it" (p. 848).

Thus, these findings are generally consistent with those of Bibace and Walsh (1981) and others, asserting the developmental progression of children's conceptualizations of illnesses. As did Bibace and Walsh (1981), Perrin and Gerrity (1980) speculated that this improved understanding could lead to "...better compliance with medical care regimes, and more appropriate medical care and medical utilization" (p. 848).

One final study worthy of note in this area is one conducted by Brewster (1982), looking at the conceptions of illness held by hospitalized, chronically ill children. Brewster suggested that patient education has become a routine component of medical care, particularly for the chronically ill child. Patient education programs can take several forms but all are "designed to provide information to the child about the cause of his illness and necessity of
treatment, and to alleviate psychological problems brought about by his condition" (p. 355). The author argued that patient education often does not accomplish what it is intended to accomplish because medical staff is not aware of children's differing levels of cognitive development; thus, the fit between cognitive level and the information provided is poor. Brewster sought to provide "a more adequate foundation for patient education" (p. 355), by examining the conceptions of the chronically ill, hospitalized child in terms of how he/she understands the cause of their illness and how he/she understands the role of the medical personnel in providing treatment.

Her sample included 50 chronically ill children between the ages of five years and twelve years, eleven months. The length of hospitalization for each of the children varied from 10 to 300 days. A variety of diseases was included such as juvenile onset diabetes, asthma, and juvenile rheumatoid arthritis. Each child's cognitive level was evaluated with five measures; two measures were based on Piagetian tasks of logical thinking and physical cause and effect, one measure was of the child's understanding of social role perspective, and two measures were related to illnesses, the cause of illness and the role of the medical personnel and medical procedures. Results indicated a significant correlation between all five measures. The levels of responses fell into three major stages. Again, as
had been found previously, children's understanding of illnesses were primarily determined by cognitive maturation. Brewster (1982) proposed several important implications of her findings. She advised that the first step for medical personnel in providing education for the pediatric patient is to find out what the child's current perceptions of illnesses and treatments are. Explanations must be based on the child's current conceptual abilities. Understanding is an evolving process and educational material must fit each child's level. She concluded that "good patient education programs tailor information to fit each child's cognitive and emotional needs. . . above all, successful intervention depends on the staff's flexibility and willingness to deal with each child at his own level" (p. 362).

Thus, it has been clearly established empirically that children's conceptions of illness follow a cognitive developmental sequence which parallels the sequence of general cognitive development defined by Piaget (1955). Bibace and Walsh (1981) and Perrin and Gerrity (1980) have provided valuable information about the typical conceptions of children in three cognitive developmental levels; preoperations, concrete operations, and formal operations. Differences in conceptions of illness are sometimes found between healthy children and sick children, with sick children being more likely to perceive illness as punishment. However, in part, this difference may be attributed to
differing measurement techniques (e.g., group vs individual interview).

The scientists exploring the topic of children's conceptions of illness appear to be in general agreement that the significance of their research emerges in the use of the information in clinical practice. An assumption is made that communication based on specific conceptual abilities more effectively reduces anxiety and gains cooperation in pediatric populations, than communications which fail to consider the cognitive developmental levels of the recipient.

b. Preparation of Children for Hospitalization and Medical Procedures

In a survey of pediatric hospitals, Peterson and Ridley-Johnson (1980) found that 70% of the hospitals surveyed offered prehospital preparation of various types to parents and patients. Recognition of the need for preparation of children for hospitalization and surgery came about as early as the 1930's (Beverly, 1936). The need for preparation is based on the belief that exposure to medical treatments and care is stressful and this stress may lead to psychological disturbances in pediatric patients. Emotions and behaviors, such as stress, anger, aggression, panic reactions, phobias, sleep disturbances, appetite disturbances, and enuresis, are often associated with pediatric hospitalizations (Chapman, Loeb, and Gibbons, 1956).

Early studies focused on alleviating the stressful effects of hospitalization through allowing full visitation
rights for parents; providing familiar toys and clothing for the child; and minimizing injections and treatments that can be the source of additional stress. While it is generally accepted that some type of preparation is helpful, there is no agreed upon technique or method of preparation.

As early as 1936, recognition of the impact of hospitalization and illness on children's emotional development was addressed by Dr. Bert Beverly. He described the fear as being "stimulated principally as a response to threatened security... by uncertainty and lack of confidence" (p. 534). According to Beverly, there is frequently an association of medicine with fear due to two reasons. The first is that illness is associated with the possibility of death; and second, illness has an air of mystery and magic in its connotation of sin and punishment. It was readily apparent at that time that young children had illogical explanations of illnesses; 90% of the children surveyed at the Children's Memorial Hospital suggested that they were sick because they had been bad. Beverly vividly described typical experiences of children when hospitalized, clearly demonstrating that children have feelings of terror and emotional upset.

He suggested that a child will be less afraid if he/she is told exactly what is going to happen to him/her. His/her confidence and feelings of security will have been maintained, thus, leaving nothing to fear. He described the procedure followed at the hospital of his practice. The
hospitalization preparation included an explanation of procedures which would be experienced by the child and a visit to the hospital prior to admission. Additionally, a play lady who shared toys and games with the child and properly trained nurses to assume the mother role were considered important.

More recent work has largely examined techniques for preoperation preparation and preparation for dealing with painful procedures. Several methods of psychological preparation have been utilized and investigated empirically, unlike the early preparation techniques of Beverly (1936) and others, assumed to be useful and effective, without systematic and critical evaluation.

Melamed and Seigel (1975) have conducted interesting research using modeling techniques to reduce anxiety in children. Demonstrations of reduced anxiety-mediated avoidance behavior through modeling techniques led the authors to the investigation of whether similar techniques might be useful in the reduction of anxiety of children facing hospitalization and surgery.

In 1975, a study was conducted using 60 children between the ages of 4 and 12 years as subjects. While several studies had demonstrated the effectiveness of filmed modeling in reducing dental-related anxieties (e.g., Melamed, Hawes, Heiby and Glick, 1975; Melamed, Weinstein, Hawes and Katin-Borland, 1975), the effectiveness of the technique for hospital settings had not been clearly evaluated. Thus,
children who were being hospitalized for the first time ever, for elective surgery, were selected as subjects of study.

Great care was taken in the measurement of anxiety since it is considered to be a multidimensional construct. Three measures were used to assess trait anxiety; The Children's Manifest Anxiety Scale (Casteneda, McCandless, and Palermo, 1956), The Human Figure Drawing Test (Koppitz, 1968), and the Anxiety Scale (Klinedinst, 1971). Three measures of state anxiety were made; the Palmar Sweat Index (Johnson and Dabbs, 1967), the Observer Rating Scale of Anxiety, and the Hospital Fears Rating Scale.

The modeling preparation involved a seven year old named Ethan who is shown going through the process of admission, preoperation tests, operation preparation, recovery, and departure. The subjects were divided into an experimental group who viewed the film narrated by Ethan during the hour prior to admission to the hospital and a control group who were shown a film about nature during the hour prior to admission to the hospital. The results of the study suggested that the film depicting hospitalization and medical experiences, narrated by the child, was very effective in reducing anxiety. Overall, the younger children were more anxious. However, the children who viewed the modeling film demonstrated a significant reduction in anxiety both preoperatively and postoperatively.

In 1976, Melamed, Meyer, Gee, and Soule demonstrated that children, 7 years and older, benefited from seeing the
film one week in advance of hospitalization; the younger children required preparation to be more immediately linked with hospitalization for it to be effective in significantly reducing anxiety. Thus, it was determined that the optimal time for prehospitalization preparation varies depending on the age of the child.

Ferguson (1979) also demonstrated the effectiveness of filmed modeling for reducing anxiety in children facing hospitalization and surgery. This study examined the differential effectiveness of two methods of preparation; filmed modeling and preadmission contact between a health professional, the mother, and the child. The subjects of the study were between the ages of 3 and 7 years and were being hospitalized for the first time for elective tonsillectomies. Four groups were randomly formed; one group received a regular hospital admission procedure and viewed a nonhospital-related film; one group experienced a regular hospital admission procedure and viewed a hospital-related peer-modeling film; one group experienced a preadmission visit from a nurse in their home prior to hospitalization and viewed a nonhospital-related film; and one group received the preadmission visit and viewed the hospital-related peer-modeling film.

The preadmission visit involved providing mother and child information about the hospital procedures. Mothers were given information about services available to them such as the cafeteria and lounge. Written information about the
impending hospitalization was left with the mother. On the
day of admission, the same nurse met the mother and child and
assisted in the admission procedure. The hospital-related
peer-modeling film was similar to that developed by Melamed
and Seigel (1975), depicting two children, ages 5 and 6
years, going through a hospitalization and tonsillectomy.

Several measures were used to assess the effectiveness
of the preparation techniques. Two self report measures were
used. Children responded to the Hospital Fears Rating Scale;
omothers responded to the Mood Adjective Checklist.
Physiological variables were assessed using an
electromyography. Behavioral measures completed included
Melamed and Seigel's (1975) Observer Rating Scale of Anxiety;
and Vernon, Schulman and Foley's (1966) Post-Hospital
Behavior Rating Scale. A Satisfaction With Care and
Information Questionnaire, developed by the researchers, was
completed by the mothers after the hospitalization.

Results indicated that the younger children (3-5 years)
consistenty demonstrated greater anxiety, but responded most
positively to the peer-modeling film; the older children (6-7
years) responded as positively to the preadmission visit.
The effects of the preadmission visit were noted primarily in
the mother's responses. When considering both preparation
techniques, it was noted that combining both techniques was
not stronger than using one or the other of the individual
conditions. However, a preadmission visit, the peer-modeling
film or a combination is more effective than nothing.
Peterson, Schultheis, Ridley-Johnson, Miller and Tracy (1984) compared three different modeling techniques to assess their differential effectiveness. Forty-four children between the ages of 2-11 years who were undergoing oral surgery served as subjects. The children were assigned to one of four treatment groups; 1) an informal preparation group receiving information from the physician, nurse, and anesthesiologist, 2) a group seeing a puppet show of a "Teddy Bear" portraying a typical hospital visit, 3) a commercial film group watching "Ethan Has An Operation", and 4) a local videotape group receiving information similar to the commercial film. Self report and parental reports, parental and nurse ratings, and behavioral observations were used to assess anxiety and distress.

Results based on parent and nurse ratings and behavioral observations all suggested that children in the experimental treatments were less distressed than those receiving only the informal preparation. No significant differences were found between the various modeling procedures, suggesting that factors which were varied in the modeling techniques, such as similarity of model or familiarity of the setting, were not as important as those factors which were the same (i.e., presentation of information, display of adaptive coping behaviors).

Other means of giving preparatory communication have been investigated. In a study of children's stress reactions to cast removal, a relationship was found between type of
preparatory communication and distress ratings of the children during the procedure (Johnson, Kirchoff, and Endress, 1975). Johnson and Leventhal (1974), using adult patients undergoing endoscopic examinations, demonstrated that patients who received preparatory messages which described typical sensations showed less anxiety than patients who were given other types of preparatory information. These studies "prompted the question of whether children, given verbal descriptions of the sensations they would experience, would also find a threatening procedure less upsetting" (Johnson, Kirchoff, and Endress, 1975, p. 406).

Children, aged 6 to 11 years, who were being seen in an orthopedic fracture clinic, who had not had a cast removed within three months, and who had no neurological or developmental problems were included in the study. The children were placed in two age groups, 6 to 8 and 9 to 11, and were assigned to different information conditions in a fixed order, considering sex. Children participating in the study listened to one of two taped messages giving information about the cast removal procedure. Children in a control group were given no information. One taped message, the sensation message, included a few seconds of the saw noise; explanation of where the case would be cut; and description of the vibration and warmth that would be felt, the chalk dust that would be seen, and how the skin would look when the cast was removed. The other taped message, the
procedure message, explained to the child where she/he would go; the position that would be assumed; the type of saw that would be used; and the spreaders and scissors that would finish removing the cast.

Measures of anxiety included a pulse count taken prior to the message and after the message was heard. The pulse count was also taken at four intervals during the procedure. Additionally, the child was asked to note, with the use of stick figures, whether he/she was "not at all afraid", "a little afraid", "quite a bit afraid", or "very, very much afraid" (p. 406) immediately after listening to the message and as they prepared to leave the cast removal room, after completion of the procedure. Finally, the child was observed for the exhibition of minor signs of disturbance (e.g., grimacing, frowning, closing eyes) and major signs of disturbance (e.g., kicking, hitting, crying). A total distress score was derived by adding the minor and major scores.

Results indicated that only the sensation message reduced significantly the observation distress scores of the children. Information obtained about anxiety through the pulse rates was difficult to interpret, but suggested that the sensation group was less distressed. Reported fear did not appear to be significantly affected by the preparatory information. Thus, the authors concluded that preparatory messages which describe sensations that will be experienced are more effective in reducing behavioral displays of
distress during medical procedures than simply giving procedural information which does not describe sensation.

Cognitive-behavioral coping is another method of anxiety reduction which has been applied with pediatric patients. Peterson and Shigetome (1981) assessed the effect of combining this procedure with filmed modeling. The children in the study ranged in age from 2.5 years to 10.5 years who had had no previous surgeries and no hospital admissions within one year. All were anticipating elective tonsillectomies. Approximately four days prior to hospitalization, the children viewed a puppet show which portrayed Big Bird in a typical hospitalization experience, being admitted for a tonsillectomy. Following this, they viewed the film used by Melamed and Seigel (1975). In addition, three components of a cognitive-behavioral coping procedure were taught the children assigned to the coping group. These components were: (a) cue-controlled deep muscle relaxation, the cue word being "calm"; (b) distracting mental imagery (guided imagery) in which the children were asked to imagine a quiet scene that made them feel happy; and (c) comforting self instruction phrases such as "I will be all better in a little while." The children heard the technique described, watched Big Bird perform it, and then practiced it. Children in the coping plus the filmed modeling group received the puppet information, then were given the coping instructions, and finally viewed the film. As the last
aspect of the preparation, children in all groups were taken on a tour of the hospital.

Several measures of anxiety were made including the Hospital Fears Rating Scale, the Faces Scale (Venham, Bengston, and Cipes, 1977), child observational ratings made by laboratory technicians, parent and nurse ratings, pulse and temperature measures, and time until postsurgical voiding. The results, though only marginally statistically significant, indicated that the combined preparation of filmed modeling and cognitive-behavioral coping strategies was the most efficacious. There were large differences found between the "modeling only" and "coping strategies only" groups. The children receiving the coping preparation experienced less distress during their hospital experiences and parents of the children receiving coping strategies experienced reduced anxiety.

Findings of a follow-up of these subjects one year later (Peterson & Shigetomi, 1982) suggested that hospitalization may be less traumatic for children than believed. Sixty-two percent of the mothers contacted (N=40) reported that the children were more likely to recall positive aspects of the hospital experience. An overwhelming majority reported that the prehospital preparation had been beneficial to their child. However, only 30% of the mothers who received training in coping techniques described using the strategies following discharge from the hospital.
Other studies have been conducted to investigate the effect of joint parent-child preparation. Skipper and Leonard (1968) conducted a field experiment "designed to test the effects on the behavior of hospitalized children of nurses' interactions with the children's mothers" (p. 275). The authors suggested that the effect the parents and especially the mother may have on the child had not been fully considered. If the mother is experiencing great stress she may be less able to aid her child and in addition may increase the child's stress by communicating her feelings of stress. The authors hypothesized that mother's who were able to manage their own stress would be able to communicate calmness and confidence and ease their child's distress. In other words, "children's stress can be reduced indirectly by reducing the stress of the mothers" (p. 277).

The experimental approach consisted of a special nurse who greeted the mother and child at the time of admission. The nurse's responsibility was to "create an atmosphere which would facilitate the communication of information. . . maximize freedom to verbalize her fear and anxiety. . .and to ask any and all questions which were on her mind" (p. 277). In experiment I, the nurse, in addition to meeting with the mothers at the time of admission, met with them at other times considered as particularly stressful. In experiment II, she met with the mothers only at the time of admission.
The study sample consisted of children between the ages of 3 and 9 years who were being hospitalized for their first time. They were all to receive tonsillectomies. The dependent variables included mother's self ratings of her stress level and desire for information, completed after conclusion of hospitalization; a questionnaire administered to the regular nursing staff on mother's stress and general adaptation to the hospital; mothers' ratings of children's behavior during the first week home following hospitalization; somatic ratings of children's stress during hospitalization (e.g., temperature, blood pressure, pulse rate); time of first voiding after operation; and amount of fluid consumption.

Results indicated that experimental group mothers experienced less stress than control group mothers during and after the operation. The control children exhibited higher average blood pressures, higher average temperatures, and more emesis than experimental group children. The physiological measures suggested the experimental children were much less stressed. Posthospital behavior questionnaires completed by the mothers indicated that control group children exhibited fear of the hospital, disturbed sleep, excessive crying, and eating and drinking problems more frequently than did experimental group children. Thus, the authors concluded that reducing mother's stress level, due to her intimate relationship and
interaction with the child, can effectively reduce the child's level of stress in the hospital setting.

In an effort to more clearly determine the effect of joint parent-child preparation, Wolfer and Visintainer (1975) hypothesized that children and parents who receive joint special psychological preparation in contrast to unprepared children and parents, would demonstrate less upset behavior and better adjustment to hospitalization. The investigation combined psychological preparation and supportive care. Two groups of children, between the ages of 3 and 14 years, hospitalized for the first time, receiving elective tonsillectomies, were included in the study. One group received regular nursing care. The other group received special preparation and supportive care provided by the same nurse at six different times during their hospitalization. These six different times were considered to be stressful times, such as time of blood test and when transported to the operating room. The preparation and support was integrated for the parent and the child. Preparation and support consisted of providing accurate information to the mother explaining how the mother could help to provide care for the child; giving information and sensory expectations to the child; and allowing time for rehearsal for the child. The dependent variables used as indicators of anxiety were blind observer ratings of children's upset behavior and cooperation with procedures, pulse rates, resistance to anesthesia induction, recovery room medications, ease of fluid intake,
time to first voiding, posthospital adjustment, mother's self-rating of anxiety, mother's rated satisfaction, and mother's rating of adequacy of information received.

The results of the study confirmed the hypothesis. Children in the prepared condition demonstrated greater ease of fluid intake, lower heart rate, lower resistance to anesthesia induction, and lower posthospital adjustment scores. Younger children (3-6 years) showed greater upset that older children (7-14 years) regardless of the group assignment. Overall, the experimental group had lower upset ratings and higher cooperation ratings. The parents in the preparation condition had lower self ratings of anxiety and higher ratings of general hospital satisfaction.

In a follow-up investigation, Visintainer and Wolfer (1975) attempted to parcel out the specific treatment contribution of each component of the original study; supportive relationship, information, and supportive relationship and information in combination. The subjects were children between the ages of 3-12 years with no previous hospitalizations, who were to receive elective tonsillectomies. They were assigned to one of four treatment groups. One group received stress point preparation at six different times designed to provide information, instruction, rehearsal and support from a single nurse. Parents were included in the preparation. The preparation was the same as that use in the previously described study. A second group of children received a
single-session preparation. Shortly after admission, the child and parent were given information similar to that given in the stress-point preparation group. The difference was that the overall hospital experience was described during this one session. A third group received consistent supportive care, at the same identified stress points. A nurse gave warmth and reassurance, answering questions, but did not provide relevant information. The fourth group was a control group receiving regular nursing care.

The dependent variables were the same as in the original study, with the exception of resistance to induction which was not included. The results suggested that only the stress-point preparation was consistently superior to the other treatment conditions. Substantiating the important role of information in anxiety reduction, supportive care at critical points without information was not as effective at stress reduction as was the combination of information and support. Parents in this group indicated less anxiety and more satisfaction with care.

The practicalities of preparation for pediatric populations (e.g., time involved, staff required) often influences the technique chosen for use. Considering some of these practical issues, Twardosz, Weddle, Borden and Stevens (1986) explored the differences between three types of preparation ranging from brief individual preparation by a nurse, to a videotaped presentation, to a comprehensive class preparation. The preparation techniques varied on
information, personal contact, and opportunity for "hands-on" experience. Children between the ages of 3-12 years scheduled for minor elective ear, nose or throat surgery were used as subjects. All preparation was provided on the evening before surgery. Observational data collected during the preoperative injection and the trip to the operating room served as the measure of anxiety and distress. Additionally, physiological measures of blood pressure, pulse rate, and temperature were recorded.

Data analysis indicated that children who attended the comprehensive preparation class displayed significantly fewer negative behaviors than those who viewed the videotape. The children who received the brief nurse preparation tended to display fewer negative behaviors than those in the videotape group but more than those in the class. This difference was not statistically significant, however. These results suggest that personal contact and the opportunity to participate are important components of a preparation program. However, due to the multiple differences among the three techniques including length of time with child (i.e., ranging from 5 to 30 minutes), opportunity for personal contact, opportunity for contact with other children, opportunity for "hands-on" experience with medical tools, it is impossible to identify ich component or combination of components actually contributed to the increased effectiveness of the preparation technique.
Faust and Melamed (1984) used children who were to receive same day surgery and children who were hospitalized overnight for next day surgery as subjects in an attempt to assess not only the effectiveness of a preparation intervention but also the influence of other variables on the technique effectiveness. The subjects ranged in age from 4-17 years and were assigned to either an experimental group viewing a 10 minute hospital relevant film or a control group viewing a nonrelevant film of a child fishing. Two physiological measures (i.e., pulse rate and palmar sweat) and one self report measure (i.e., The Hospital Fears Rating Scale of Anxiety, Melamed & Siegel, 1975) were used to assess anxiety prior to and immediately following presentation of the film. A measure of hospital relevant information acquired was administered to all children after watching the film. Hospital charts were accessed to obtain information on post surgery recovery (e.g., frequency of vomiting, number of days in the hospital).

Expectedly, children viewing the hospital relevant film showed increased pulse rate following the film; regardless of the time of preparation; children viewing the nonrelevant film did not. However, increases in sweating responses were related to time of preparation, with those children who viewed the hospital relevant film the night before surgery showing a significantly greater reduction in palmar sweat than any other group. Those children who viewed the hospital relevant film on the same day as surgery demonstrated a
significant increase in sweating after viewing the film. Finally, children who viewed a nonrelevant film on the same day as surgery reported a larger reduction in their anxiety than those watching a hospital relevant film. Thus, the type of preparation, information versus distraction, which results in anxiety reduction, may depend on several variables, including the time of preparation in relation to the time the medical procedure is to be conducted.

While reduction of anxiety in children anticipating hospitalization is certainly a worthwhile endeavor, several recent studies have emphasized the potential of primary prevention approaches. Roberts, Wurtele, Boone, Ginther, and Elkins (1981), attempting to reduce general medical fears in children, assessed the effects of viewing a hospital slide-and-tape package with school children between the ages of 7-12 years. All subjects were administered three anxiety measures; the short form of the Children's Manifest Anxiety Scale (CMAS), the Medical Fears Subscale of the Fear Survey Schedule for Children (FSS-FC), and the Hospital Fears Questionnaire (HFQ). One week later subjects were assigned to one of two groups, matched for age and sex, and viewed either the hospital slide-and-tape package which depicted children being hospitalized for tonsillectomies, or a travel slide-and-tape presentation showing children vacationing. Immediately after viewing the presentations and two weeks later, the children were again administered the three anxiety measures.
Data analysis revealed that on initial assessment the groups were equivalent in their anxiety and medical fears scores. However, the children who viewed the hospital specific presentation demonstrated a significant reduction in their scores on the FSS-FC and HFQ, both immediately after viewing the slides and at the two week follow-up period.

Using a similar procedure, Elkins and Roberts (1985) investigated the comparative effectiveness for reduction of medical fears of three hospital-related audiovisual techniques. Subjects were 80 boys and girls in the third and fifth grades in two public elementary schools. The children responded to three measures of anxiety; the CMAS, the FSS-FC, and the HFQ. Three weeks later they viewed one of four audiovisual presentations: 1) "Ethan Has An Operation" (Melamed & Siegel, 1975), 2) "Let's Talk About Having An Operation" - a commercially distributed videotape featuring Mr. Rogers, 3) "Paul and Dot have a Hospital Experience" (Roberts et al, 1981), 4) "The Case of the Elevator Duck" - a film portraying a peer model coping with a new experience unrelated to a hospital setting. The children responded to the anxiety and fear measures immediately following the videotapes and again three weeks later.

Results indicated that no significant differences in fear levels were found due to the audiovisual procedures. However, post hoc analysis suggested that the more fearful children who viewed any of the three hospital-related
presentations demonstrated a decrease in subsequent measures of medical fears.

Using fourth and fifth grade school children, Peterson and Ridely-Johnson (1984) also conducted a comparative investigation of two types of hospital preparation techniques; filmed-modeling and lecture demonstration. Children were assigned to one of three conditions; the lecture demonstration in which a typical hospital visit for elective surgery was described, the filmed modeling condition in which the videotape of "Ethan Has An Operation" was presented, and the control group in which a presentation on the space shuttle was heard. Children were pretested one week prior to the intervention and posttested immediately following the intervention and two weeks later, using a multi-item questionnaire which assessed anxiety, medical and hospital fears, and knowledge of hospital and medical topics.

Results suggested that the two hospital specific techniques were essentially equal to one another and superior to the control method for reducing hospital related fears. However, only the lecture demonstration also increased children's knowledge about hospital related topics.

Again, considering the general population of school age children, Elkins and Roberts (1984) evaluated the effectiveness of a more comprehensive program, "Let's Pretend Hospital" (LPH), as a means of reducing children's fears of medical situations. The LPH program involved a mock hospital setting in which children could have "hands-on" experience
with medical tools and personnel. Fifty children, ages 6-7 years, from two urban public elementary schools participated in the study. Twenty-five students attended the LPH, the other twenty-five did not. All children were assessed using the Medical Fears Subscale of the Fear Survey for Children (FSS-FC) and the Hospital Fears Questionnaire (HFQ). As might be expected, results indicated that children exposed to the LPH reported significantly lower medical fears than those not exposed.

Many different techniques for reducing stress and anxiety associated with pediatric hospitalization and medical care have been researched. This variety of techniques; filmed modeling, cognitive-behavioral coping strategies, mother stress reduction, have all demonstrated effectiveness in reducing stress and anxiety. No one technique has been identified as clearly superior to the others, however, all of the techniques appear to be more effective with older children (Ferguson, 1979; Melamed and Siegel, 1975).

Acknowledging the recommendations resulting from the abundance of research on children's conceptions of illness, it is surprising that no investigations have specifically considered conceptual abilities or age in the designs of the preparation techniques. Techniques have been designed and presented to a wide age-range (e.g. 4-17 years) (Faust & Melamed, 1984) or presented to one narrow age group (Elkins & Roberts, 1984). It seems reasonable to conclude that this lack of consideration for cognitive developmental level and
conceptual abilities has led to reduced effectiveness with younger children and perhaps to the inconsistent results found in the comparative analysis of different techniques (Peterson et al, 1984; Peterson & Shigetomi, 1981; Peterson & Ridely-Johnson, 1984).
Methodology

A. Design

A 2 (age groups) X 3 (preparatory techniques) between subjects, equal "N" design was used, with 8 subjects per cell. Subjects in each of the two age groups were assigned to one of three treatment conditions. They received either a videotape preparation which was considered to be developmentally appropriate, a videotape preparation which was considered to be developmentally advanced (i.e., appropriate for the next level of cognitive development), or a videotape preparation of the information typically relayed by the gastroenterology nurse.

Subjects were randomly assigned to groups with one restriction: an equal number of males and females was assigned to each treatment condition. It has been demonstrated that females tend to display greater behavioral distress than males undergoing the same medical procedures across a wide age-range (Katz, Kellerman, & Siegel, 1980). Thus, to control for these identified sex differences, an attempt was made to assign an equal number of males (n=4) and females (n=4) in each condition. With the realities of subject recruitment, three of the conditions were ultimately comprised of 5 females and 3 males.
B. Sample

The subjects were 48 children who were patients of the pediatric gastroenterology clinic, Children's Hospital, Columbus, Ohio between October, 1985 and January, 1987. The children were scheduled to undergo a specific medical procedure in the gastroenterology clinic, a proctoscopy. The proctoscopy procedure was selected since it is a well-defined medical procedure. It represents a specific process capable of being articulated step-by-step. The proctoscopy procedure has a clear beginning (i.e., the insertion of the proctoscope) and end (i.e., the removal of the proctoscope), and generally lasts approximately 10-20 minutes. This procedure is commonly performed on children presenting with intestinal symptoms such as stomach pain and rectal bleeding. The children frequently exhibit considerable anxiety and distress during the procedure. In addition, sedating medication is rarely given to children for the procedure, thus, eliminating this as a confounding factor. No children were included as subjects for this investigation if medications had been given prior to the procedure.

Several additional criteria were applied for subject selection. First, the child had to be between the ages of 3 - 5 1/2 years or 6 1/2 - 10 1/2 years. These age groups were selected since evidence from innumerable studies has suggested that preoperational thinking is characteristic of most children between the ages of 3 - 6 years and concrete
operational thinking is characteristic of most children between the ages of 6 1/2 - 10/11 years (Bibace & Walsh, 1981; Flavell, 1963). Ideally, cognitive development would have been assessed to ensure functioning in each of the two stages, preoperations and concrete operations. However, validity of such measures of cognitive development would be debatable given the anxiety state of the children elicited by the awareness of the medical setting and the impending visit with the physician. Additionally, such assessment was not feasible in the clinic setting with the time available for each subject. Thus, age was used as a rough indicator of cognitive level, acknowledging that this index is not always an accurate predictor. Table 1 presents detailed descriptive information on the study sample.

No children believed to be in the formal operational level of development were included since it was believed that these children should theoretically be able to comprehend information presented to them at any of the three levels (i.e., preoperational, concrete operational, formal operational). Also, children reaching the early adolescent and adolescent years are infrequently seen in the gastroenterology clinic for a proctoscopic examination, thus, eliminating this age group as potential subjects.

Second, since the topic of interest was based on cognitive development as described by Piaget, it was deemed important to use a sample of children that was considered to be normally progressing in the area of conceptual abilities.
Table 1

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Pre-Operational</th>
<th>Concrete Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmentally</td>
<td>50*</td>
<td>106*</td>
</tr>
<tr>
<td>Appropriate</td>
<td>(8.18)</td>
<td>(19.17)</td>
</tr>
<tr>
<td>Control</td>
<td>53</td>
<td>94</td>
</tr>
<tr>
<td>(11.41)</td>
<td>(16.78)</td>
<td></td>
</tr>
<tr>
<td>Developmentally</td>
<td>53</td>
<td>103*</td>
</tr>
<tr>
<td>Advanced</td>
<td>(10.42)</td>
<td>(15.61)</td>
</tr>
</tbody>
</table>

Note. Standard deviations indicated by parentheses under age statistic. * = unequal number of males and females; all unequal cells were comprised of 5 females and 3 males.
Thus, for inclusion in the study, the child had to be free of obvious neurological or developmental disabilities.

Third, in order to prevent interference of prior experience, the child had to be undergoing his/her first proctoscopy examination. Faust and Melamed (1984) found that filmed preparation for children who had had previous surgery experiences resulted in increased palmar sweating, suggesting a sensitization effect which increases anxiety. Frequently, children seen in the gastroenterology clinic have chronic illnesses which are evaluated on a regular basis through a proctoscopic examination. These children were excluded from the study.

One final criterion was applied for subject selection. Only those children whose parent(s) accompanied them during the procedure were used as subjects. The typical practice of the clinic was to encourage parents to remain with the child during the examination. The gastroenterology nurses, after meeting the parent and obtaining permission for the procedure, made a decision as to whether the parent should be invited to accompany their child. This decision was based on their clinical experience and intuitive belief about whether the parent would provide a calming, supportive influence for the child or whether the parent, being overly anxious themselves, would likely exacerbate the anxiety of the child. Most generally the parents were encouraged to stay to support the child and also to have an opportunity to see the findings "first hand" through the teaching scope. Since the
literature suggests that children receiving medical care behave differently in the presence of their mother (Gross, Stern, Levin, Dale & Wojnilower, 1983; Peterson, Mori & Carter, 1985; Shaw & Routh, 1982), it was decided to keep parental presence constant, including only those children whose parents accompanied them during the procedure. It should be noted that no child was eliminated from the study due to lack of parental participation in the procedure process.

C. Treatment Conditions

**Control Condition**: Three videotapes were made of a gastroenterology nurse explaining the proctoscopy examination as she typically did prior to the initiation of the research project. One videotape reflected the explanations she usually gave to a 4-5 year old child. The second videotape reflected the explanations typically given to an 8-9 year old child. The third tape reflected the explanations given to a 12-13 year old child. The monologue for these videotapes was prepared entirely by the gastroenterology nurse. Children assigned to the control condition viewed one of first two videotapes, depending on their age.

**Developmentally Appropriate Condition**: After, the control videotapes were made, the experimental videotapes were developed. The same nurse appeared in these videotapes wearing the same clothes and located in the same room. The monologue delivered was prepared by the author. Videotapes considered to developmentally appropriate for a
preoperational child, a conrete operational child, and a formal operational child were prepared. These developmentally appropriate videotapes were developed using the transcripts of the control tapes. The transcripts of the control tapes were content analyzed on the basis of the variables of number and type of information pieces presented, mean length of utterance (Whitehurst, 1982), total time of the presentation, and the use of imagery. The experimental tapes were designed using this content analysis, keeping constant the length of the tape and the number and type of information pieces presented.

The developmentally appropriate videotapes were designed considering linguistic and cognitive abilities. Recent research in language development and acquisition has focused on the language addressed to children, more simply termed "motherese" (Molfese, Molfese, Carrell, 1982). Two basic assumptions about language acquisition have been the result of this research focus (Snow, 1977). These assumptions are: 1) language acquisition results from the interaction between mother and child, and 2) language acquisition is guided by and is the result of cognitive development. Additionally, it has been discovered that the method of speech used by mothers when addressing their children is not primarily an effort to teach language, but rather an effort to communicate (Garnica, 1977). Thus, the language used in the monologues prepared for the nurse to follow for the developmentally appropriate videotapes was patterned after the findings from studies of
motherese, particularly for the videotape considered to be developmentally appropriate for preoperational children. Further, the conceptual nature of the information provided was based on what is generally known about the characteristics of thought in children at differing cognitive developmental levels (Flavell, 1963).

Children in the preoperational stage of cognitive development cannot decenter from isolated perceptual referents of illness and cannot link even concrete physical symptoms such as rashes to other bodily events (Bibace & Walsh, 1981). Children in this cognitive stage cannot conceptualize the internal parts of the body and, when asked to do so, rely on external visible parts. Preoperational children are able to use symbols, such as language, but have single interpretations for words. They are unable to understand complicated processes; are mainly aware of immediate, present experiences; and are unable to generalize from one experience to another (Flavell, 1963; Whitt, Weiss, & Taylor, 1979). Thus, for this videotape presentation the name of the test was eliminated; focus was given to external, observable events such as the noise the machine would make and the light on the scope; and reference was not made to the internal body structures such as the intestines. For the developmentally appropriate preoperational videotape, the linguistic pattern was simple, redundant, and contained many questions and imperatives (Garnica, 1977) (see Appendix A).
The child in the concrete operational period of cognitive development can use elementary logic; can understand more than one dimension of a situation; and can generalize from one experience to another. The concrete operational child has improved concepts of time, has a notion of past, present, and future. This child, however, continues to focus on external events, only understanding phenomena seen in the real world (Flavell, 1963). Thus, the information presented in the videotape to be shown to concrete operational children made reference to previous experiences related to the upcoming medical procedure (e.g., the enema received on the previous evening); provided analogies (e.g., comparing the external part of the proctoscope to a microscope); related symptoms to the examination; and discussed the approximate time of involvement. The linguistic structure was slightly more advanced, with longer utterances and less redundancy (see Appendix A).

The formal operational child can transcend the concrete and think abstractly. They begin to describe a coherent mechanism operating within the body resulting in illness (Flavell, 1963). The videotape developed for formal operational children focused on details of anatomy, discussed possible findings of the test, and detailed the steps of the procedure (see Appendix A).

The transcripts for the three developmentally appropriate videotapes were evaluated by "experts" in the
field of developmental psychology to verify the fit to the conceptual abilities of children in each of the three levels of cognitive development. Children assigned to the developmentally appropriate condition viewed the videotape which corresponded to their particular cognitive developmental level as determined by the age indices.

**Developmentally Advanced Condition:** Children assigned to the developmentally advanced condition viewed a videotape considered appropriate for the next advanced cognitive level. In other words, the children in the 3 1/2 - 5 1/2 age group, assigned to this treatment condition, viewed the videotape considered to be appropriate for the concrete operational child. Children in the 7 1/2 - 9 1/2 age group, assigned to this treatment group, viewed the videotape considered to developmentally appropriate for formal operational thinkers.

D. Measures

In order to assess the various response classes considered to be reflective of the multidimensional nature of anxiety, a number of evaluation measures were employed.

**Behavioral Observation Scale:** A rater, blind to the preparation received, observed the child's behavior during the proctoscopy procedure and completed the observational rating scale. The observational scale used was based on a version of the Procedure Behavioral Rating Scale developed by Katz, Kellerman and Siegel (1980) and The Burn Treatment Distress Scale developed by Elliott and Olson (1983). The scale was designed to include 10 categories of verbal and
skeletal motor behavior thought to represent behavioral manifestations of anxiety in children (see Appendix B). The 10 behavior categories considered to be indicative of anxiety included nervous behavior, crying and screaming, information seeking, restraint, verbal resistance, emotional support, muscular rigidity, verbal fear, verbal pain, and flail. Each behavior category was objectively defined so as to preclude multiple interpretations (see Appendix C).

An interval recording procedure was implemented using 10 second observation periods followed by 5 second recording periods continuously for the length of the examination. For each observational interval, the presence or absence of each of the 10 response categories was recorded. A check mark indicated presence and a blank delineated absence of the behavior. The behavioral observation ratings were summarized to yield an overall score of observed behavioral distress. Since the total number of observation intervals per subject was unequal (overall $\bar{X} = 27.5$, $SD = 7.6$; younger group $\bar{X} = 25.9$, $SD = 7.4$; older group $\bar{X} = 29.1$, $SD = 7.7$), depending on the actual length of time of the medical procedure, the summary score was derived by calculating the percent of intervals in which at least one distress behavior was exhibited.

Two training videotapes were developed, recording children undergoing a proctoscopic examination. A criterion observational score was established for each of the videotapes by the author through repeated observations,
closely examining the children's behavior. The observer who had prior experience with direct observational assessment was trained via the videotapes to reliably use the established observational codes. Training continued until inter-observer agreement (between the author and observer) reached an overall reliability of at least 90%, with no single category less than 80%.

During the actual data collection, reliability checks, using the agreement/(agreement + disagreement) method, were made on 20% of the total observations. Overall reliability was 91%, with specific category reliabilities ranging from 75% to 100% (see Table 2). The lowest inter-observer reliability was found for the "flail" category, a category rarely used, occurring on only 4 intervals for all inter-rater checks.

**Manifest Upset Scale:** The physician who performed the proctoscopic examination and the nurse who assisted were asked to rate the child on a five point scale "designed to reflect the emotional state of a child at a given point in time, primarily in terms of verbal and nonverbal expressions of fear, anxiety, or anger" (Visintainer and Wolfer, 1975, p. 194). This rating was completed immediately following the conclusion of the examination.

With the scale, the child's degree of upset was measured as a function of two variables; the energy expended in expressing it (i.e., soft crying versus screaming) and the external force required to control the expression (i.e.,
Table 2

**Interobserver Reliability Data Using Agreements/Agreements + Disagreements Method**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Percent Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervous Behavior</td>
<td>86%</td>
</tr>
<tr>
<td>Information Seeking</td>
<td>94%</td>
</tr>
<tr>
<td>Cry/Scream</td>
<td>90%</td>
</tr>
<tr>
<td>Restraint</td>
<td>99%</td>
</tr>
<tr>
<td>Verbal Resistance</td>
<td>92%</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>85%</td>
</tr>
<tr>
<td>Muscular Rigidity</td>
<td>94%</td>
</tr>
<tr>
<td>Verbal Fear</td>
<td>100%</td>
</tr>
<tr>
<td>Verbal Pain</td>
<td>86%</td>
</tr>
<tr>
<td>Flail</td>
<td>75%</td>
</tr>
</tbody>
</table>

*Overall* 91%

**Note.** * = reliability for all categories.
upset controlled by verbal restraint versus upset requiring physical restraint). A rating of 1 indicated little or no fear or anxiety; a rating of 3, a moderate amount of anxiety; and a rating of 5 indicated extreme emotional distress (See Appendix D).

**Cooperation Scale:** The physician and nurse were also asked to rate the child on a five point scale indicating the degree to which he/she cooperated with the procedure (Visintainer and Wolfer, 1975). Cooperation was defined by those behaviors which facilitated the procedure. Lack of cooperation was defined by those behaviors which disrupted or hampered the examination. A rating of 1 indicated complete cooperation; a rating of 3 indicated mild or initial resistance; and a rating of 5 indicated extreme resistance (See Appendix D). The scale was also completed immediately following the examination.

**Physiological Measure:** The child's pulse rate was used as a physiological measure of anxiety. The pulse rate was noted by the nurse immediately after the child had viewed the preparation videotape. It was taken again during the examination, and after the examination was concluded and the child had dressed and was preparing to leave the procedure room.

**Child Self Report of Pain:** Following the examination, the children were asked to indicate how painful the proctoscopy procedure had been. In order to use the same self report measure for both age groups, a series of pictures
was used which allowed the child to rate the pain on a scale from 1 to 5, with 1 representing "almost no pain" and 5 representing "excruciating pain" (see Appendix E).

The measure was made in an effort to control for the differing amounts of pain associated with the procedure. The physicians report that the procedure is generally not painful. However, with certain diagnoses (e.g., ulcerative colitis) the procedure may be somewhat painful, at least moreso than with other diagnoses (e.g., juvenile polyps). It was assumed that if the procedure was painful, the child may be less cooperative and more anxious, regardless of the preparation technique. Also of interest was the relationship of the self report of pain and the observable distress score. The diagnosis made following the examination was noted by the physician.

"Illness History" Questionnaire: The children's parents were asked to complete a 6 item questionnaire which reflected the parent's perception of their child's previous responses to medical visits, as well as their perceptions of their own responses to medical visits. Other questions accessed information about the preparation the parents had given their child prior to arrival at the gastroenterology clinic and their beliefs about how their child should respond to a fearful situation (see Appendix F).

E. Procedure

When the child and parent(s) arrived at the Gastroenterology Procedure Room, they were greeted by the
nursing staff and the author. The research project was explained to the parents. A letter detailing the purpose of the investigation and the procedure was given to the parents. Permission was obtained from those parents who agreed to the participate in the project (see Appendix G). No children who met the criteria for inclusion in the project were refused permission to participate by their parents. The parent was then asked to complete the "Illness History" questionnaire.

When the questionnaire was completed, both parent(s) and child were escorted to a private viewing room to watch the preparation videotape describing the proctoscopy examination; the videotape shown depended on group assignment. The nurse, the physician, and the observer did not view the videotape, thus remaining blind to the group assignment of the child. Following the videotape preparation, the child and parent(s) were escorted to the procedure room where the examination was conducted.

The observer stood inconspicuously in a corner of the room maintaining a good view of the child's face. A tape recorder with earphone was used to cue the observer to observation and scoring intervals. Observational recording began at the time of insertion of the scope and continued until the scope was removed. Following completion of the examination, the physician and nurse rated the child on the two scales previously described. After the child had dressed and returned to the examining room, the observer presented the pictures and acquired the child's self report of pain.
Chapter 4

Results

Multivariate Analyses of Anxiety Measures

A 3 (treatment group) x 2 (age group) multivariate analysis of variance (MANOVA) was performed. This design was employed to assess overall effects and to control for inflations in alpha level which can result from multiple tests (Bock and Haggard, 1968). Thus, the scores from children at two age levels (preoperational children and concrete operational children) who viewed either the developmentally appropriate videotape, the control videotape, or the developmentally advanced videotape were compared. Scores on five measures of anxiety, the nurse rating of upset (NRU), nurse rating of cooperation (NRC), doctor rating of upset (DRU), doctor rating of cooperation (DRC), and the summary behavioral observation score (BOS) were included in the analysis. Wilk's F approximations are reported. Following significant multivariate results, univariate analyses of variance (ANOVA) were performed.

There were significant multivariate main effects for age (Wilk's lambda = 0.517, F(5,38) = 7.09, p < .0001) and for group (Wilk's lambda = 0.603, F(10,76) = 2.19, p < .03). Additionally, a significant interaction between age and group was found (Wilk's lambda = 0.566, F(10,76) = 2.51, p < .01).
Mean scores for each of the five dependent variables by age group and treatment condition are presented in Table 3.

Univariate Analyses of Anxiety Measures

Separate univariate analyses were computed on each of the five measures of anxiety, nurse rating of upset (NRU), nurse rating of cooperation (NRC), doctor rating of upset (DRU), doctor rating of cooperation (DRC), and the behavioral observation score (BOS).

Nurse/Physician Ratings of Upset and Cooperation: There was a significant effect for age on the NRU ($F(1,47) = 22.26, p < .0001$), with the younger group ($\bar{X} = 3.20$) rated as more upset than the older group ($\bar{X} = 1.63$). There was no effect for group ($p > .62$) and the age by group interaction did not reach significance ($p > .57$) (see Table 4). Similarly, a significant effect for age was found with NRC ($F(1,47) = 15.22, p < .0003$), with the younger group ($\bar{X} = 2.88$) demonstrating less cooperation than the older group ($\bar{X} = 1.38$). There was also no effect for group ($p > .73$) and no significant age by group interaction ($p > .48$) (see Table 4).

A significant effect for age was found with DRU ($F(1,47) = 13.60, p < .0006$); the younger group ($\bar{X} = 3.04$) was rated as more upset than the older group ($\bar{X} = 1.83$). Again, no effect for group was found ($p > .71$) and no significant age by group interaction was noted ($p > .14$) (see Table 5). Again, this same pattern was found with a significant effect for age on DRC ($F(1,47) = 17.94, p < .0001$); the younger group ($\bar{X} = 2.71$) rated as less cooperative than the older
Table 3

Mean Scores of Five Dependent Variables by Age and Treatment Condition

<table>
<thead>
<tr>
<th>Treatment Condition</th>
<th>Preoperational Age Group</th>
<th>Concrete Operational Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>NRU</td>
<td>3.5</td>
<td>2.75</td>
</tr>
<tr>
<td>NRC</td>
<td>3.78</td>
<td>2.63</td>
</tr>
<tr>
<td>DRU</td>
<td>3.50</td>
<td>2.88</td>
</tr>
<tr>
<td>DRC</td>
<td>2.75</td>
<td>2.13</td>
</tr>
<tr>
<td>BOS</td>
<td>76.25</td>
<td>92.75</td>
</tr>
</tbody>
</table>

Note. Treatment Condition 1 = developmentally appropriate condition, 2 = control condition, 3 = developmentally advanced condition.
Table 4

ANOVA Summary Tables

Dependent Variable: Nurse Rating of Upset

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>30.08</td>
<td>1</td>
<td>30.08</td>
<td>22.26*</td>
</tr>
<tr>
<td>Group</td>
<td>1.29</td>
<td>2</td>
<td>0.65</td>
<td>0.48</td>
</tr>
<tr>
<td>Age x Group</td>
<td>1.54</td>
<td>2</td>
<td>0.77</td>
<td>0.57</td>
</tr>
<tr>
<td>Error</td>
<td>56.75</td>
<td>42</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>89.66</td>
<td>47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .0001

Dependent Variable: Nurse Rating of Cooperation

<table>
<thead>
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<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>27.00</td>
<td>1</td>
<td>27.00</td>
<td>15.22*</td>
</tr>
<tr>
<td>Group</td>
<td>1.13</td>
<td>2</td>
<td>0.57</td>
<td>0.32</td>
</tr>
<tr>
<td>Age x Group</td>
<td>2.63</td>
<td>2</td>
<td>1.32</td>
<td>0.74</td>
</tr>
<tr>
<td>Error</td>
<td>74.50</td>
<td>42</td>
<td>1.77</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>105.26</td>
<td>47</td>
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<td></td>
</tr>
</tbody>
</table>

*p < .0003
Table 5

ANOVA Summary Tables

<table>
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<tr>
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<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17.52</td>
<td>1</td>
<td>17.52</td>
<td>13.60*</td>
</tr>
<tr>
<td>Group</td>
<td>0.88</td>
<td>2</td>
<td>0.44</td>
<td>0.34</td>
</tr>
<tr>
<td>Age x Group</td>
<td>5.29</td>
<td>2</td>
<td>2.65</td>
<td>2.05</td>
</tr>
<tr>
<td>Error</td>
<td>54.13</td>
<td>42</td>
<td>1.29</td>
<td></td>
</tr>
</tbody>
</table>

Total 77.82 47

* p < .0006

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>22.69</td>
<td>1</td>
<td>22.69</td>
<td>17.94*</td>
</tr>
<tr>
<td>Group</td>
<td>3.17</td>
<td>2</td>
<td>1.59</td>
<td>1.25</td>
</tr>
<tr>
<td>Age x Group</td>
<td>2.00</td>
<td>2</td>
<td>1.00</td>
<td>0.79</td>
</tr>
<tr>
<td>Error</td>
<td>53.13</td>
<td>42</td>
<td>1.26</td>
<td></td>
</tr>
</tbody>
</table>

Total 88.99 47

* p < .0001
group ($\bar{X} = 1.33$). No effect for group ($p > .30$), and no significant age by group interaction ($p > .46$) was found (see Table 5).

**Behavioral Observation Score:** On the BOS there was a significant effect for age ($F(1,47) = 29.31, p < .0001$); the younger group ($\bar{X} = 88.13$) demonstrating greater behavioral display of anxiety than the older group ($\bar{X} = 47.29$). Additionally, there was a significant effect for group ($F(2, 47) = 5.45, p < .008$), but no significant age by group interaction ($p > .45$) (see Table 6). Since only a limited number of planned comparisons based on a priori hypotheses were conducted, no special procedures were used to control for inflated alpha levels (Keppel, 1982). Mean comparisons for the three treatment groups for the full sample showed that the developmentally appropriate condition ($\bar{X} = 51.44$) differed significantly from the control condition ($\bar{X} = 70.00$) ($p < .05$) and from the developmentally advanced condition ($\bar{X} = 81.69$) ($p < .002$). The children in the developmentally appropriate condition demonstrated lower behavioral manifestations of anxiety than the children in the control condition and the children in the developmentally advanced condition.

**Univariate Analysis of Pulse Rate**

A separate univariate analysis of variance was computed using the repeated measure of pulse rate (measured before the procedure, during the procedure, and after the procedure) as the dependent variable (see Table 7). On pulse rate there
Table 6

ANOVA Summary Table

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20008.33</td>
<td>1</td>
<td>20008.33</td>
<td>29.31**</td>
</tr>
<tr>
<td>Group</td>
<td>7446.54</td>
<td>2</td>
<td>3723.27</td>
<td>5.45*</td>
</tr>
<tr>
<td>Age x Group</td>
<td>1120.79</td>
<td>2</td>
<td>560.40</td>
<td>0.82</td>
</tr>
<tr>
<td>Error</td>
<td>28670.25</td>
<td>42</td>
<td>682.63</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57245.91</td>
<td>47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p < .0001, * p < .008
Table 7

ANOVA Summary Table

Dependent Variable: Pulse Rates: Before, During, After

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>6938.57</td>
<td>1</td>
<td>6938.57</td>
<td>9.9**</td>
</tr>
<tr>
<td>Group</td>
<td>331.54</td>
<td>2</td>
<td>165.77</td>
<td>0.2</td>
</tr>
<tr>
<td>Age x Group</td>
<td>1515.43</td>
<td>2</td>
<td>757.72</td>
<td>1.0</td>
</tr>
<tr>
<td>Error</td>
<td>19462.68</td>
<td>28</td>
<td>695.09</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>1669.19</td>
<td>2</td>
<td>834.60</td>
<td>9.6***</td>
</tr>
<tr>
<td>Time x Age</td>
<td>755.15</td>
<td>2</td>
<td>377.57</td>
<td>4.3*</td>
</tr>
<tr>
<td>Time x Age x Group</td>
<td>677.82</td>
<td>4</td>
<td>169.45</td>
<td>1.9</td>
</tr>
<tr>
<td>Error</td>
<td>4870.22</td>
<td>56</td>
<td>86.97</td>
<td></td>
</tr>
</tbody>
</table>

Note. Time = time of measurement (before, during after).

* p < .05, ** p < .01, *** p < .001
was a significant effect of age ($F(1,28) = 9.9, p < .004$) with the younger children exhibiting higher pulse rates ($\bar{X} = 109$) than the older children ($\bar{X} = 92.3$). No main effect for group or for age by group was found. A significant main effect was found for time of measurement ($F(2,56) = 9.6, p < .0003$) and a significant interaction for time of measurement by age ($F(2,56) = 4.3, p < .05$). No significant interaction was demonstrated with time of measurement by group or time of measurement by group by age. For the full sample, the pulse rate during the procedure ($\bar{X} = 104.5$) was higher than the rate before the procedure ($\bar{X} = 99$) and after the procedure ($\bar{X} = 96.5$). Examining the two age groups separately revealed that this pattern held for the younger group with pulse rate during the procedure ($\bar{X} = 118$) being higher than before the procedure ($\bar{X} = 105$) and after the procedure ($\bar{X} = 104$), but for the older group there were no significant differences between pulse rate before the procedure ($\bar{X} = 93$), during the procedure ($\bar{X} = 93$), and after the procedure ($\bar{X} = 91$).

Correlational Analyses of Anxiety Measures

**Nurse/Physician Ratings:** Independent nurse and physician ratings of upset and cooperation correlated significantly with each other for the full sample and also for the two age groups (preoperational and concrete operation) (see Table 8). Interestingly, in all cases except one (the correlation between NRC and DRC) there was a decline in the strength of the correlation for the older (concrete
Table 8

**Correlation Matrices of Nurse and Physician Ratings of Upset and Cooperation**

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Preoperational Age Group</th>
<th>Concrete Operational Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. NRU</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. NRC</td>
<td>0.88</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>3. DRU</td>
<td>0.78</td>
<td>0.71</td>
<td>1.00</td>
</tr>
<tr>
<td>4. DRC</td>
<td>0.84</td>
<td>0.88</td>
<td>0.65</td>
</tr>
</tbody>
</table>

* p < .05, all others p < .01.
operational) group as compared with the younger (preoperational) group. Nurse and physician ratings correlated significantly with BOS for the full sample (see Table 9). However, when the correlations were computed by age groups, different findings resulted (see Table 9). Significant correlations were found between all global ratings by the nurses and physicians and BOS for the preoperational age group. For the concrete operational age group, only DRU correlated significantly with BOS.

**Behavioral Observation Score:** Correlational analyses indicated that there was a significant inverse relationship between behavior category use and age for 5 of the 10 behavior categories (see Table 10). The younger children tended to exhibit a greater variety of anxious behaviors than the older children. When high-rate behaviors were examined (those behaviors occurring on the average in more than 50% of the scored intervals), the preoperational children were found to most likely express their anxiety through crying and screaming and requiring physical restraint. Although no single behavior category was scored on the average for 50% of the possible intervals for the concrete operational children, anxiety was expressed most often by the older children through requests for emotional support and muscular rigidity.

**Influence of "Illness History" Ratings and Self Report of Pain**

None of the conclusions regarding statistical significance was altered by multivariate analyses of
Table 9

Correlation of Nurse/Physician Ratings with Behavioral Observation Score

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Full Sample</th>
<th>Pre-Operational</th>
<th>Concrete Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRU</td>
<td>.59**</td>
<td>.65**</td>
<td>.18</td>
</tr>
<tr>
<td>NRC</td>
<td>.53**</td>
<td>.59**</td>
<td>.12</td>
</tr>
<tr>
<td>DRU</td>
<td>.63**</td>
<td>.54**</td>
<td>.53**</td>
</tr>
<tr>
<td>DRC</td>
<td>.53**</td>
<td>.58**</td>
<td>.07</td>
</tr>
</tbody>
</table>

** p < .01.
Table 10

Mean Percent of Intervals Scored for Each Behavior Category in the Behavioral Observation Scale

<table>
<thead>
<tr>
<th>Behavior Categories</th>
<th>Full Sample</th>
<th>Pre-Operational</th>
<th>Concrete Operational</th>
<th>Pearson r (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restraint</td>
<td>35%</td>
<td>66%</td>
<td>4%</td>
<td>-.63**</td>
</tr>
<tr>
<td>Cry/Scream</td>
<td>31%</td>
<td>53%</td>
<td>8%</td>
<td>-.58**</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>25%</td>
<td>33%</td>
<td>16%</td>
<td>-.29*</td>
</tr>
<tr>
<td>Muscular Rigidity</td>
<td>25%</td>
<td>34%</td>
<td>16%</td>
<td>-.29*</td>
</tr>
<tr>
<td>Verbal Resistance</td>
<td>8%</td>
<td>16%</td>
<td>1%</td>
<td>-.38**</td>
</tr>
<tr>
<td>Nervous Behavior</td>
<td>18%</td>
<td>26%</td>
<td>11%</td>
<td>-.23</td>
</tr>
<tr>
<td>Verbal Pain</td>
<td>9%</td>
<td>9%</td>
<td>10%</td>
<td>-.01</td>
</tr>
<tr>
<td>Flail</td>
<td>4%</td>
<td>7%</td>
<td>.3%</td>
<td>-.24</td>
</tr>
<tr>
<td>Information Seeking</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>.04</td>
</tr>
<tr>
<td>Verbal Fear</td>
<td>.4%</td>
<td>.6%</td>
<td>.1%</td>
<td>-.06</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01

Note. (a) Pearson r computed between age and mean percent of intervals in which behavior was exhibited.
covariance (MANCOVA) using "Illness History" ratings of the children's past responses to medical experiences, parental ratings of their own reactions to medical experiences, the amount of prior preparation provided by the parents, and the child's self report of how painful the procedure was. No significant correlations were noted between the behavioral observation score and parental ratings of the child's past reactions, their own reactions, and the reported amount of preparation provided by the parents (see Table 11). A significant positive relationship was found between BOS and older children's self report of pain; however, no significant correlation was found between BOS and the younger children's self report of pain. Children's self report of pain was significantly correlated with parental ratings of their own responses to medical visits for the younger children (r = .41, p < .05), but not for the older children (see Table 12).

For the full sample, only one significant correlation was identified between the 3 "Illness History" ratings; there was a significant inverse relationship (r = -.33, p < .05) between parental ratings of the children's typical responses to medical care and the amount of information they reported giving the children about the medical procedure they were to undergo (see Table 12). When the correlational analysis was computed by age groups, the inverse relationship between parental perceptions of children's past reactions and amount of preparation provided was evident only with the younger children (r = -.43, p < .05). Thus, parents who perceived
Table 11

Correlations Between "Illness History" Ratings and Child Self Report with Behavioral Observation Score

<table>
<thead>
<tr>
<th>Ratings</th>
<th>Age Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Sample</td>
</tr>
<tr>
<td>&quot;Illness History&quot; Ratings</td>
<td></td>
</tr>
<tr>
<td>Parental perceptions of child's past reactions to medical visits</td>
<td>.23</td>
</tr>
<tr>
<td>Preparation provided by parents</td>
<td>-.17</td>
</tr>
<tr>
<td>Parental perceptions of their own reactions to medical visits</td>
<td>-.11</td>
</tr>
<tr>
<td>Child's Self Report of Pain</td>
<td>.39**</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01
Table 12

Correlation Matrices of "Illness History" Ratings and Child Self Report of Pain

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Preoperational Group</th>
<th>Concrete Operational Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. Child's past reactions</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Parent's past reactions</td>
<td>.07</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>3. Preparation provided by parent</td>
<td>-.33*</td>
<td>-.15</td>
<td>1.00</td>
</tr>
<tr>
<td>4. Self report of pain</td>
<td>.21</td>
<td>.28</td>
<td>.27</td>
</tr>
</tbody>
</table>

Preoperational Group

|                      | 1           | 2             | 3                         | 4             |
|----------------------|-------------|---------------|---------------------------|
| 1. Child's past reactions | 1.00       |               |                           |
| 2. Parent's past reactions | .12        | 1.00          |                           |
| 3. Preparation provided by parent | -.43*      | -.09          | 1.00                      |
| 4. Self report of pain | .30         | .41*          | -.24                      | 1.00          |

Concrete Operational Group

|                      | 1           | 2             | 3                         | 4             |
|----------------------|-------------|---------------|---------------------------|
| 1. Child's past reactions | 1.00       |               |                           |
| 2. Parent's past reactions | .03        | 1.00          |                           |
| 3. Preparation provided by parents | -.19       | -.21          | 1.00                      |
| 4. Self report of pain | .00         | .19           | -.28                      | 1.00          |

* p < .05
their children as typically being fearful during medical visits reported giving their children less information about this medical procedure.

Influence of Medical Diagnosis

Qualitative analysis of tentative medical diagnoses given by the physician following the examination revealed that an overwhelming majority (88%) of subjects were diagnosed as having no clinical findings or benign juvenile polyps. Only six subjects (2 younger, 4 older) were diagnosed as possibly having colitis, a disorder which could potentially cause the procedure to be more painful. This diagnosis was to be confirmed with laboratory tests. Those six subjects were distributed among the three treatment conditions. Thus, no formal statistical analysis using medical diagnosis as a covariant was performed.
Chapter 5

Discussion

Significant attention has been given to preparing children for medical experiences in order to reduce their anxieties and fears and to decrease the potential for more long lasting negative effects associated with hospitalization and/or medical treatment. Abundant empirical evidence exists demonstrating that children's conceptions of illness follow a developmental progression similar to the progression of cognitive processes in general identified by Piaget (e.g., Bibace and Walsh, 1981). Assumptions have been made suggesting that consideration of conceptual abilities related to health and illness when preparing children for medical experiences will facilitate communication efforts. The present results provide strong preliminary evidence for the necessity of considering conceptual abilities of children at differing levels of cognitive development when designing preparation techniques for hospitalization and medical procedures. Using behavioral observation techniques to assess anxiety, children prepared for an upcoming medical procedure with videotaped information considered to match their cognitive developmental abilities demonstrated less distress and anxiety during the examination than children prepared with videotaped information which did not match their level of
cognitive development. Given these findings, the practice of administering one preparation technique to children between the age ranges of 4 years to 12 years, which is commonly found in the literature (Melamed & Siegel, 1975; Peterson et al., 1984; Peterson & Shigetome, 1981; Wolfer & Visintainer, 1975), becomes questionable. Although clinicians and educators (e.g., Bibace and Walsh, 1981; Brewster, 1982) have argued that patient education which is designed to fit the individual's level of cognitive development is more effective and reassuring, this is an issue that has been largely ignored in the research on preparation techniques. It seems reasonable to conclude that this lack of consideration for cognitive developmental level has contributed to the reduced effectiveness of preparation techniques with younger children (Ferguson, 1979; Melamed and Siegel, 1975) and perhaps also to the inconsistent results found in the comparative analysis of different techniques (e.g., Peterson et al., 1984).

Compared to the time involvement of most preparation techniques, the technique presented here was minimal, lasting approximately 3 minutes. Yet, significant differences were noted, with children who received information that fit their level of cognitive development demonstrating less anxiety than those receiving information which did not fit their cognitive developmental level. Thus, empirical support is now available for the argument that professionals designing and delivering preparation and patient education materials
must give consideration to the conceptual abilities of the recipient if ultimate benefit is to be obtained.

Considering the multidimensional nature of anxiety, multiple measures were used to assess the phenomenon, including nurse and physician ratings and behavioral observations. Global, one-time ratings made by the nurses and physicians of the children's display of upset and cooperative behavior following the examination were not affected by the three treatment conditions; developmentally appropriate preparation, control preparation, developmentally advanced preparation. A plausible explanation for the fact that the global ratings were not affected by the three treatment groups lies in the nature of the measurement. All children displayed a significant amount of anxiety and behavioral distress. The medical staff was asked to make an overall rating of the child's behavior during the 10-15 minute examination period. It is likely that this rating was influenced more by the intensity of behaviors, rather than by the actual amount of distress displayed over the total period as well as the intensity. The behavioral observation measurement involved ongoing, continuous assessment, and thus, was perhaps less influenced by absolute intensity of behaviors at a single point in time. The behavioral observation score was potentially more sensitive to the behavior displayed over the total time period, tapping episodes of calm and quiet as well as episodes of upset and distress. Provision of information about the medical
examination which matched the cognitive level did not completely eliminate the occurrence of behavioral displays of anxiety and distress during the procedure; however, the total amount of distress was less for those children who were prepared with developmentally appropriate information.

The preceding explanation is supported when correlations between the medical staff ratings and the behavioral observation scores are examined. Significant correlations are found between all four nurse and physician ratings and the behavioral observation scores for the younger children. However, for the older children, only the physician rating of upset correlated significantly with the behavioral observation score. Overall, the younger children scored higher on anxiety measures. Thus, the global scores and observational scores were more likely to correlate as the total amount of anxiety increased. For the older children, it appears that the global ratings by the medical staff were influenced by whether anxiety was present or not, rather than by the amount of anxiety displayed over the total time of the examination.

The significant multivariate interaction for age and group, which was not found when each of the five dependent variables were examined via univariate analyses, is most likely due to the lack of a consistent relationship between the medical staff ratings and the behavioral observation scores across the two age groups. The only exception was with the doctor rating of upset. A consistent
relationship was found, with the older children who demonstrated fewer distress intervals on the behavioral observation also being rated as more upset by the physician.

Although differences between the three preparation conditions were statistically evident, with the children receiving the developmentally appropriate preparation demonstrating less behavioral distress statistically than the children receiving the other preparations, the clinical or functional significance of the findings must be considered. Since the global ratings made by the nurse and physician were not affected by the treatment conditions, one might conclude that the difference was not clinically significant. However, considering the subjective nature of the ratings, it does not seem reasonable to make such a conclusion. Stress reduction, in any amount, is generally recognized as clinically beneficial. Thus, it is argued that the significance of the findings is not simply statistical but also clinical. Total elimination of behavioral distress is not likely. Therefore, a goal of anxiety reduction, to any degree, is justified and important.

Consistent with previous findings, on all measures, the younger children were scored as being more anxious and distressed than the older children (Katz et al., 1980). Nurses and physicians rated the children in the younger age group as more upset and less cooperative than the older age group. On the behavioral observation measure, younger
children were found to demonstrate anxiety in a greater percent of intervals than the older children. Considering the specific behavior categories used, there were qualitative differences with regard to age and type of behavior exhibited. The findings are consistent with those noted by Katz et al. (1980), suggesting a developmental trend toward less vocal protest, less active motoric resistance, and increased muscular tension.

Investigators have frequently used pulse rate as a physiological indicator of anxiety. Inconsistent results have been reported based on this measure. There are reports of the measure correlating with other measures of anxiety (e.g., behavioral observations), and other reports noting a lack of correlation between pulse rate and other measures. Wolfer and Visintainer (1975) and Johnson et al. (1975) reported significant effects for group using pulse rate measures, with the experimental preparation groups evidencing lower rates than control groups. No group effects were found using the pulse rate measure in this study. This is consistent with the results reported by Peterson and Shigetome (1981) and Twardosz et al. (1986). In this study, the older children's lack of increase in pulse rate during the procedure, regardless of treatment condition, is difficult to understand. Johnson et al. (1975) found a significant increase in pulse rate during the cast removal procedure for the control group children (ages 6-11 years), but no increase in pulse rates for the experimental group.
subjects. Although physiological arousal is assumed to be an indicator of anxiety, the inconsistency found in the correlations between the pulse rate and other measures (e.g., self report, behavioral observation) makes interpretation difficult.

Assuming that accurate information can help reduce the behavioral distress demonstrated by children undergoing medical examination, the finding that parents of younger children reported giving less information about medical examinations if they perceived their children as typically being afraid during medical visits is of interest. It is impossible to determine the direction of this influence, that is whether the child's anxiety led the parent to withhold information or whether the lack of information led to anxiety or fearfulness. However, considering the findings of this investigation and those of previous investigations, it is likely that greater attention to explanation and information sharing concerning medical experiences may lead to less anxiety and fearfulness.

Although no measure of information acquisition was made, it is assumed that explanations matching the child's cognitive developmental level resulted in more accurate information acquisition allowing for accurate expectations of what was to happen. One might argue that the videotaped information which fit conceptual abilities was simply more distracting, thus leading to increased anxiety reduction. Since there was no treatment condition consisting of a
nonrelevant, distracting videotape, this cannot be ruled out. However, previous investigations have demonstrated that children viewing nonrelevant films consistently exhibit greater levels of anxiety than children viewing relevant films. If the assumption that explanations matching conceptual abilities lead to more accurate information acquisition is accepted, one must consider the possibility that more advanced explanations lead to misinformation, misconceptions producing higher levels of anxiety. Again, since there was no "no preparation" control group, this cannot be empirically examined. However, the findings of this investigation are consistent with those noted previously with adult patients and suggest that accurate information has positive effects on the way in which stress is handled (Andrew, 1970; Vernon and Bigelow, 1974). For children, whose conceptual abilities and thinking processes differ from those of adults, accuracy is at least partially determined by the match of the information with the conceptual abilities of the child receiving it. The results of this study suggest that information designed to fit the cognitive abilities of the individual child is indeed likely to more effectively reassure the child and reduce anxiety associated with medical care.
Appendix A

Videotape Preparations

Preoperational Preparation

Control Videotape:  
Informational pieces - 17  
Mean length of utterance - 16  
Total number of words - 282

Example:

"Now I'm going to turn on the machine and I'm going to show you the sound of the machine so you know what it's going to sound like. OK, that's the machine. It's kind of loud and funny sounding, and the bright light you saw helps us look inside your bottom."

Developmentally Appropriate Informational pieces - 17  
Mean length of utterance - 7.5  
Total number of words - 279

Example:

"Let's listen to a noise. The doctor will flip this switch. It turns on the noise. This is the noise you will hear while the doctor is looking at you. The noise is kind of loud. Did you see the light at the end of the tube? The light helps the doctor to see."

Concrete Operational Preparation

Control Videotape:  
Informational pieces - 21  
Mean length of utterance - 16  
Total number of words - 397

Example:

"We'll put alot of grease on the end of it and we'll just slide it in your bottom. When we turn on the machine it will sound something like this."
"Appendix A (continued)"

Developmentally Appropriate Informational pieces - 21
Videotape: Mean length of utterance - 9
Total number of words - 394.
Example:

"I will put lots of greasy stuff on the tube. That will make it slippery. The doctor will put it in your bottom. Kind of like when your mom gave you the enema last night. You will hear a noise. It will sound like this."

Formal Operational Preparation

Control Videotape: Informational pieces - 25
Mean length of utterance - 16
Total number of words - 408
Example:

"And what this test will do is we can actually look inside and see if there's any redness or swelling or sores or ulcers, that kind of thing. And we'll actually be looking right at your intestines, OK. I'm going to turn on the machine so that you can see what it's going to sound like and I'll also show you the light that we use to look inside.

Developmentally Appropriate Informational pieces - 25
Videotape: Mean length of utterance - 10
Total number of words - 403
Example:

"With the tube we can actually look inside at your intestines. We can look for redness, for swelling, for sores, or for ulcers and other things. The tube is connected to a machine which makes a noise. Also there is a light on the end of the tube which is turned on by the machine. I will turn on the machine so you can hear what it will sound like."
Appendix B

Behavioral Observation Scale

<table>
<thead>
<tr>
<th>Observation Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>Nervous Behavior</td>
</tr>
<tr>
<td>Information Seeking</td>
</tr>
<tr>
<td>Cry/Scream</td>
</tr>
<tr>
<td>Restraint</td>
</tr>
<tr>
<td>Verbal Resistance</td>
</tr>
<tr>
<td>Emotional Support</td>
</tr>
<tr>
<td>Muscular Rigidity</td>
</tr>
<tr>
<td>Verbal Fear</td>
</tr>
<tr>
<td>Verbal Pain</td>
</tr>
<tr>
<td>Flail</td>
</tr>
</tbody>
</table>
Appendix C

Definitions for Behavioral Observation Categories

**Nervous Behavior**
Definition: Any physical sign of nervousness.
Examples: Nail biting, lip chewing, finger or feet fidgeting, sucking finger or thumb.

**Information Seeking**
Definition: Any questions about the procedure.
Examples: "When will you be through?"
"What are you doing now?"

**Cry/Scream**
Definition: Crying sounds and/or tears; high intensity vocalizations.
Examples: Sobbing, crying sounds, shrieks.

**Restraint**
Definition: Child must be physically held down (by staff or parent) with at least one hand on the legs or midbody.

**Verbal Resistance**
Definition: Any intelligible verbal expression of termination or resistance.
Examples: "Stop" "No More" "I don't want it"

**Emotional Support**
Definition: Verbal or nonverbal solicitation of comfort.
Examples: "Hold me" "Mommy" "Daddy"
Reaching out to be held.

**Muscular Rigidity**
Definition: Obvious tensing of muscles.
Examples: Gritting teeth, facial grimacing, clenched fists, whole body tightening.

**Verbal Fear**
Definition: Statement of being in fear.
Examples: "I'm scared."

**Verbal Pain**
Definition: Intelligible statement of pain or hurting.
Examples: "That hurts" "It stings"
Flail
 Definition: Random gross movements of arms and legs.
 Examples: Pounding fists, kicking legs repeatedly.
Appendix D

Nurse/Physician Rating Scale

**Manifest Upset Scale**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or no</td>
<td>Moderate amount</td>
<td>Extreme upset</td>
<td>Extreme</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fear or anxiety</td>
<td>of fear</td>
<td>Agitated</td>
<td>upset resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calm</td>
<td>Temporary whimpering</td>
<td>Hard crying</td>
<td>resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No crying</td>
<td>Mild verbal protest</td>
<td>Screaming</td>
<td>Necessary to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No verbal protest</td>
<td></td>
<td>Strong verbal protest</td>
<td>restrain</td>
<td></td>
</tr>
</tbody>
</table>

**Cooperation Scale**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Complete cooperation</td>
<td>Mild resistance initially</td>
<td>Extreme resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active participation</td>
<td>initially</td>
<td>Strong avoidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active assistance</td>
<td>Passive participation</td>
<td>Necessary to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No assistance</td>
<td>restrain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Child Self Report of Pain

1  2  3  4  5
(Almost no pain) (Some pain) (Very, very painful)
Appendix F

Illness History Questionnaire

Child's Date of Birth: __________________

Relationship of Person Reporting: __________________________

1. How long has your child been troubled with the problem being evaluated today?

2. What has been your child's past reactions to medical visits?
   (Check One)  He/she ______NEVER
                ______RARELY
                ______OFTEN
                ______ALWAYS has been afraid.

3. When YOU visit a physician, you most often feel:
   (Check One) ______AFRAID
                ______ANXIOUS/NERVOUS
                ______RELAXED/CALM

4. You told your child that today she/he would be going:
   (Check One) ______Somewhere and that he/she would find out on arrival.
                ______To see the doctor.
                ______To see the doctor for treatment of his/her ailment.
                ______To see the doctor for treatment with certain instruments, which you described to your child.

5. When your child asked questions or showed concern about visiting the doctor today, you told your child:
   (Check One) ______Not to worry.
                ______Why the doctor was going to examine him/her.
                ______All the details of what the doctor was going to do, including a description of the instruments he would use.
                ______N/A, did not ask questions.

95
"Appendix F (continued)"

6. When your child is afraid or frightened, he/she:

(Check One)  _____Should be allowed to cry.
              _____Should not be allowed to cry.
Appendix G

FOR HUMAN SUBJECTS RESEARCH COMMITTEE USE ONLY

CONSENT TO RESEARCH TREATMENT OR PROCEDURES
CHILDREN'S HOSPITAL RESEARCH FOUNDATION
(USE CONTINUATION SHEETS AS NECESSARY)

I consent to enroll my child, (myself), into the research study entitled The Use of Cognitive Developmental Strategies for Reducing Anxiety and Increasing Cooperation in Children Undergoing Medical Procedures for the examination time under the direction of T. Linscheid, K. Rasnake, and M. J. McClung.

This study will involve the following experimental procedures:
A videotape explaining the procedure to you and your child prior to the examination. One of the nurses working with the investigator and the patient will be pictured on the videotape and will describe the examination, specifically to be used in the following manner: You and your child will spend approximately 5 minutes watching the videotape. You will then have time to ask the nurse any questions you may have about the procedure.

This study will involve the following approved or accepted product(s) and procedure(s):

1. Purpose of study: The study is being done to learn ways of reducing anxiety and upset in children who are receiving proctoscopy examinations. We are trying to determine
   if explaining the procedure to children in ways that they can better understand will help them to be less upset and more cooperative during the examination.

2. Alternative standard treatment(s): There are no standard preparation techniques that are widely used. The nurses in the gastroenterology clinic do have a general way in which they prepare you and your child for the examination. This is being used as one of the conditions of the study. If you decide to not participate, you will receive that
   preparation.

3. Possible risks to the patient: There is a slight chance that some children might feel anxious while viewing the videotape during the examination. However, there is no reason to expect that the videotape will make them more anxious than the preparation typically given by the nurses.

4. Possible benefits to the patient: No benefits can be guaranteed for your child. After the conclusion of the study we may be able to identify an important way to communicate with children, so as to help them feel less anxious during medical procedures.

5. Methods used to maintain confidentiality: Your child will be identified by a number only. All of the information collected will be stored in a locked cabinet. Any reports based on this study will report only group data and will contain no information that would allow identification of your child.

STATEMENT OF CONFIDENTIALITY: I understand that all records will be maintained in a confidential manner. The records will be available only to the investigators and, when appropriate, to the U.S. Food and Drug Administration. They will be revealed to other people only if personal identifiers have been removed.

CONSENT STATEMENT: In the unlikely event of physical injury resulting from participation in this study, I understand that immediate medical treatment is available at Children's Hospital. I also understand that costs of such treatment will be at my expense and that financial compensation is not available. If further explanations and for any questions concerning your rights or possible research-related injuries, please contact the Director of Adult Management at 461-3997.

The information above has been explained to me and I understand it. Any further questions I may have in regard to this study will be fully answered by K. Rasnake or T. Linscheid.

Principal investigator

Finally, I understand that I am free to withdraw my child from the project at any time without prejudice to his or her ongoing or future care. My signature represents a free and voluntary act. My consent does not prevent me from exercising my legal rights.

(Witness) 

Signed (Parent or person authorized to consent for patient) 

(Investigator) 

Signed (Patient) 

Date: 

(AF-1) 

(8/1/66)
Bibliography


