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THE EFFECT OF MODELING AND PLAY THERAPY TECHNIQUES  
ON CHILDREN'S ADJUSTMENT TO BRIEF  
HOSPITALIZATION AND SURGERY

By

Rochelle L. Winnett

B.A., University of Michigan, 1975

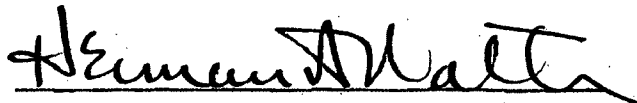
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1979

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Winnett, Rochelle L., M.A., Spring, 1979

Psychology

The Effect of Modeling and Play Therapy Techniques on Children's Adjustment to Brief Hospitalization and Surgery (133 pp.)

Director: Dr. Herman A. Walters *HW*

The purpose of this study was to investigate the comparative efficacy of a modeling film and play therapy techniques for preparation of children undergoing hospitalization for brief, minor surgery.

Eighteen children, aged four to twelve, about to be admitted to a local hospital for surgery were randomly assigned to one of three treatments. These were viewing a modeling film (F), play therapy (P), or a combination of these two (F+P). A multidimensional assessment approach to anxiety and problem behavior reduction was employed. Based, in part, on previous research it was hypothesized that (a) F+P would be the most effective treatment followed by F, (b) there would be a negative relation between defensiveness and medical-play involvement, and (c) there would be a negative relation between defensiveness and anxiety reduction.

Results indicated that all treatments led to significant anxiety reduction with only marginal evidence for F+P to be superior to either the F-only or P-only groups. As predicted, there was a significant negative relation between defensiveness and medical-play involvement but only a small negative relation between defensiveness and anxiety reduction. It was concluded that some type of hospital preparation for children is valuable but that a modeling procedure may not necessarily be the only effective treatment.

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## CHAPTER I

### INTRODUCTION

The fact that hospitalization and surgery can be particularly stressful events for the patient involved is evident from even a cursory examination of the wealth of clinical and theoretical literature on this topic. Given the increased sophistication and diligence of current medical procedures in this country, it is not at all unusual for children to come into contact with hospitals in some capacity. For this population of patients, the intensity of this potential stress is probably greater than for adults, given the limited amount of resources and experience available to the child for effectively coping with the prospective event. The purpose of this study, then, was to investigate the efficacy of the relatively new approach of modeling for preparation of children for hospitalization and surgery as compared with a more traditional method, that of play therapy. Therefore, this study was relevant to the general issue of medical preparation for children and, more specifically, to the use of modeling as an important additional method of treatment.

The literature on hospitalized children suggested that there is a consensus that all children need some kind of psychological preparation for surgery. The need for such



preparation is predicated on the belief that hospitalization and surgery are stressful, anxiety-producing experiences that can lead to transient or long-term psychological disturbances in most children. With respect to the manifestations of psychological upset which have been noted during hospitalization, Gellert (1958) stated:

"The stress of hospitalization for children is manifested in a number of ways. Children cry, whine or scream; they cling tenaciously to their parents; they eat or sleep poorly; they struggle against treatment and resist taking medications; they are tense and fearful; they become silent, sad and withdrawn. They may show an increase in regressive or compulsive behavior; they may become destructive of their environment or even themselves." (p. 125)

A similarly comprehensive list was provided by Chapman, Loeb, and Gibbons (1956) with respect to posthospital upset. They stated that emotional disturbances included such behaviors as eating problems, sleep disturbances, such as insomnia, nightmares or phobias of the dark, tics, regression in toilet training, including enuresis and encopresis, overdependency as well as hostility directed primarily at the mother, depression, restlessness and anxiety, and finally, terror of hospitals, medical personnel and hypodermic needles. Estimates of these behavior problems ranged from about 10 percent all the way up to 92 percent of the hospitalized children studied (Jessner, Blom and Waldfogel, 1952; Prugh, Staub, Sands, Kirschbaum & Linihan, 1953; Vaughan, 1957; Schaffer and Callender, 1959; and Cassell, 1963).

One of the most commonly mentioned stresses of hospitalization on children has been the issue of separation from

parents and the home environment during illness (Bowlby, 1961; Gellert, 1958; Robertson, 1958; Heller, 1967). It has also frequently been suggested that psychological upset is, in part, a product of the fact that, during hospitalization, a child is exposed to a variety of routines, procedures, people and equipment with which he is unfamiliar, which may be largely unanticipated, and the purpose of which he does not grasp. (Gellert, 1958; Heller, 1967).

The hospital experience itself may produce anxiety for the child irrespective of the reason for the hospitalization. In addition to its role in the development of physical and emotional problems, anxiety is of particular interest to the hospital staff because of its influence on the patient's reactions to surgery and its adverse effects on postsurgery recovery. Several authors have suggested that preoperative anxiety is a significant factor in impeding recovery from surgery (Duman, 1963; Gellert, 1963; Janis, 1958; Janis & Leventhal, 1965).

In an attempt to alleviate the stressful effects of hospitalization, several methods of psychological preparation have been utilized. Vernon, Foley, Sipowicz and Shulman (1965) have suggested that the major purpose of preoperative preparation is to (a) provide information to the child; (b) encourage emotional expression, and (c) establish a trusting relationship by the child with the hospital staff.

Recommendations concerning the particular information

to be included in the psychological preparation vary from author to author, depending, in part, on such factors as age, who is preparing the child, when the preparation is done, and for what reason. However, in general, the authors discussed below suggested that the child about to be hospitalized (or given some medical procedure) be told what will happen, why it will happen, and what he will experience. They also suggested that this be done simply, candidly, reassuringly, and at a level appropriate to the child's general development.

One frequently mentioned response on the part of hospitalized children in the event of inadequate preparation (particularly distortion of fact) was the development of distrust of the child's parents, or of people who were connected with the hospitals, or of adults in general. This has been noted by Sexton (1960), Heller (1967) and many others.

In accounting for the supposed beneficial effects of information, two related emphases were apparent. These were: (1) that vague, undefined threats are more upsetting than threats which are known and understood, and (2) that unexpected stress is more upsetting than expected stress. It was frequently hypothesized that, in the absence of accurate information (and sometimes with the aid of misinformation) children who know they are going to the hospital or are going to have surgery often develop fantastic and dis-

torted ideas about various aspects of hospitalization. Gellert (1958), for example, stated that the unfamiliar instruments and equipment used in the hospital can stimulate diverse fears if their purpose is not understood. For this reason, she thought that procedures such as injections, laboratory tests, enemas, and X-Rays be explained before they are done. Robertson (1958) recommended that children be told why they are going to the hospital. He stated that Young children often get strange notions about the reasons for many things. Not uncommonly when they go to a hospital they might feel they are being punished or sent away forever because they have misbehaved. This is especially true if they are not told the true reason for going.

The second major emphasis employed to explain the supposed beneficial effects of accurate information involved the hypothesis that unexpected stress is more upsetting than expected or anticipated stress. This position is implicit in the recommendations made by many to the effect that children should be forewarned about the pain that will accompany medical procedures (Dimock, 1960; cited in Vernon et al., 1965). In discussing the aims of puppet therapy as a means of preparing children for surgery, Cassell (1963) noted that the primary aim of puppetry was to assist children in mastering these situations which are almost universally agreed to be fearsome to them. For Cassell, mastery was construed to mean an understanding of the situation, an ability to anti-

cipate the overall sequence of events, and to comprehend the general meaning and techniques of these events. The first aim was thus essentially one of imparting information in such a way that the child can utilize it on his own level to deal with an otherwise unknown situation which causes great fear.

The two additional rationales used to explain the benefits inherent in psychological preparation are: (1) the encouragement of emotional expression and (2) the development of trust and confidence in the hospital staff. Several authors have suggested that psychological preparation for hospitalization and surgery include means to involve the child in an active way by encouraging the child to act out, draw, or describe the situations to be experienced. One possible advantage to such active involvement of the child in the process may lie in the fact that it permits the child to express his fears and concerns and thereby controls or reduces them. This point is either explicit or implied in Cassell (1963), Vaughan (1957), Janis & Leventhal (1965), Weinick (1958), and Lende (1971).

Finally, it has been suggested that psychological preparation by the hospital staff may be effective by virtue of the fact that it provides an opportunity for the child to establish trust and confidence in his treatment (Cassell, 1963; Fineman, 1958; Jackson, Winkley, Faust & Cermack, 1952; Jackson, Winkley, Faust, Cermack & Burtt, 1953). Weinick

(1958) gave particular emphasis to this notion, describing the establishment of trust in the surgeon as 'the essential part' of psychological preparation for tonsillectomy.

There have been differences of opinion with respect to issues of preparation strategy, particularly with timing of preparation and which persons are most effective in preparing children. Virtually all who have considered the timing of preparation believed that there is an optimal time for psychological preparation to begin. Freud (1952) indicated that if preparation begins too soon it allows too much time for the spreading out of id fantasies and if it begins too late the ego has insufficient time for preparing defenses. While most authors agreed with the implications of this statement, differences of opinion exist with respect to its translation into practice. Dimock (1960), for example, in noting that preparation which occurs too early may lead to undue fear, recommended that preparation begin one to three weeks prior to admission. Robertson (1958) suggested that it begin not earlier than one week prior to admission. On the other hand, Coleman (1952) and Schuster (1951) suggested that children be prepared for tonsillectomy only a day or two prior to admission.

Differences of opinion (or emphasis) also exist with respect to who should prepare children for hospitalization or surgery. Robertson (1958) proposed that preparation is most effective when the informant is the child's mother,

presumably because the child trusts her and because she is well acquainted with the means of communicating with her child and with the child's particular needs. However, others expressed reservations about this. The child's parents may not have enough information to prepare the child properly for what he is likely to face during hospitalization (Jackson, 1951). The parents' attitudes or their anxiety about the situation may distort or attenuate preparation (Fineman, 1958). Plank (1962; cited in Vernon et al., 1965) advocated an approach which combines the efforts of a variety of people. In essence, she suggested that preparation for surgery begin with the parents and the family doctor prior to admission, that it continue with the surgeon and anesthesiologist, and that it conclude with the hospital staff (i.e., nurses, play workers, etc.) who have more contact with the child and who see more of the apprehension and anxiety which children experience prior to surgery. She noted that, frequently, facts must be repeated many times to a child before he can assimilate them and that children feel freer about expressing their fears in non-threatening playroom settings.

It is often recognized that psychological preparation for hospitalization or surgery may not be equally effective for all children. Several factors which influence the extent to which preparation is possible have been discussed in the literature, including age, intelligence, type of disability, and personality. Although there is general

agreement that age influences the extent to which communication and preparation are possible, some differences of opinion exist. Robertson (1958) believed that as early as two years children can get reassurance from the way they are talked to. The lower limit, below which anything other than rudimentary form of preparation is useless, has been set at three years by Smith (1961), at four years by Schuster (1951) and Jackson et al. (1952), and five years by Robertson (1958). A study by Gofman, Buckman and Schade (1957b) presented data relevant to this issue. The quantitative findings of this study suggested a positive relationship between age and adequacy of preparation in unselected samples of hospitalized children. These authors concluded, however, that children as young as three or four can gain some understanding of their illness provided the explanations are made in simple terms.

The type of disability may also influence the extent to which effective psychological preparation is possible. Sudden onset may prevent effective preparation. In addition, some illnesses and medical procedures may be inherently more difficult for children to understand than others.

Factors related to the child's personality and previous experience may also preclude psychological preparation. Jackson (1951) emphasized that effective psychological preparation for surgery depends, in part, on the child's ability to develop trust and confidence in the persons who prepare him. She stated further that some children, particu-



larly those who have developed a general distrust of adults or those who have had unpleasant experiences in hospitals in the past, seem especially difficult to prepare.

#### Non-Behavioral Treatment Approaches

Several studies have investigated the effectiveness of various methods of preoperative preparation with children and will be summarized below. However, there were a number of methodological shortcomings with some, while others were quite equivocal in demonstrating differences between prepared and unprepared subjects. In addition, many were not of the type which could allow one to systematically and thoroughly evaluate the adequacy of different theoretical conceptions of the psychological processes and techniques involved in the successful preparation of children.

The study by Prugh, Staub, Sands, Kirschbaum and Lenihan (1953) used two groups of children, an experimental and control group, both hospitalized for a variety of acute conditions. Each group consisted of fifty children ranging in age from 2 to 12 years. The groups were roughly matched for age, sex, length of stay, number of prior hospitalizations, and diagnosis. The control group was described as differing from the experimental group in that it contained a great number of previously well-adjusted children and experienced a slightly longer average length of stay in the hospital (8.08 vs. 6.01 days). The experimental group was exposed to a program of ward management which included psy-

chological preparation for and support during emotionally traumatic diagnostic and therapeutic procedures. The experimental group also differed in other ways, including more liberal visiting hours, earlier ambulation, a special play program and greater participation of the parents in the care of the child. The two groups were compared with respect to "disturbing immediate reactions" to a variety of treatment procedures (e.g., cardiac catheterization, pneumoencephalogram) and with respect to "adjustment to the hospital situation". On the latter variable, each subject was rated as "adequate", "difficult", or "inadequate", on the basis of the overall capacity of the child to relate successfully to peer and adult members of the ward group, together with his capacity for reality testing and his ability to master anxiety successfully in accordance with his age level, through verbalization or play. All of the children in both groups showed at least minimal reactions to the experiences of hospitalization. Arbitrarily excluding the minimal category, 92 percent of the children in the control group exhibited reactions of a degree indicating significant difficulties in adaptation (moderate to severe categories). In the experimental group, this figure totalled 68 percent. In a further breakdown of these categories, the experimental group showed significantly fewer percentage of immediate reactions to hospitalization (14 percent as compared to 36 percent in the control group), with a much higher percentage

of minimal reactions (32 percent as opposed to 8 percent in the control group). After three months had passed, 58 percent of children in the control group and 44 percent in the experimental group exhibited what was regarded as disturbing reactions of at least moderate degree. However, no statistical data were presented, although the authors stated that they showed confirmatory trends for the efficacy of the experimental group.

In a somewhat more definitive study, with respect to the influence of psychological preparation per se, Vaughan (1957) compared two groups of children, all of whom were hospitalized for five days for surgical correction of strabismus. In this study, the experimental group received psychological preparation from a psychiatrist after admission to the hospital and prior to surgery, while the control group did not. In addition, the experimental subjects were visited very briefly by the psychiatrist twice following surgery. At each visit, he encouraged the children to express themselves freely. The twenty children in each of these two groups ranged in age from two to nine years. The groups were matched for age, sex, and intelligence. The two groups were compared with respect to the incidence of 'disturbance on the ward' following surgery as estimated from nurses' behavioral reports. The data suggested that the two groups did not differ to a statistically significant degree. Further, the differences noted with respect to

immediate psychological upset were in an unanticipated direction. That is, disturbances were more common in the prepared rather than in the unprepared children.

Cassell (1963) compared twenty children who ranged in age from three to eleven years and who received special psychological preparation prior to cardiac catheterization with a group of twenty children who did not receive such preparation. All subjects were hospitalized for approximately two days. The children in the experimental group were prepared for surgery by means of structured puppet play. In addition, they participated in a puppet therapy session following surgery. This latter arrangement confounded the implications of this study with respect to the post-surgical effects of psychological preparation. Behavior ratings were made both during and following the catheterization. Verbal comments about the operation were also analyzed. In general, these evaluations were made by persons who did not know which children had received preparation. Analyses of the data provided partial support for the idea that preparation was psychologically beneficial. Children who received preparation were found to be lower in mean rated upset during catheterization than were children who did not receive preparation ( $t=2.60$ ,  $p < .02$ ). In addition, the effect of the postsurgery comments of the prepared children tended to be more positive than that of the unprepared children (Chi square = 6.98,  $p < .05$ ). However, the two groups did not

differ significantly with respect to rated upset on the ward following catheterization or with respect to the content of post-surgery comments.

The three investigators cited above also compared their experimental and control groups with respect to the incidence of posthospital psychological upset. Vaughan compared them the week after discharge and again at twenty-six weeks. The posthospital assessments were made on the basis of material derived from interviews with mothers and classified under diagnostic headings. Children who showed upset in one or more aspects of their behavior were judged to be "disturbed". On both comparisons the proportion of children showing psychological disturbances was significantly higher for the group which did not receive special preoperative psychological preparation ( $p < .05$ ).

Similarly, Prugh et al. (1953) found that the incidence of psychological upset after discharge was more common and lasted longer among patients who had not been exposed to the experimental program. In contrast, Cassell (1963) found only slight support for the value of psychological preparation in her analyses of posthospital responses. Posthospital psychological upset was measured by means of a questionnaire sent to parents three days after discharge and again one month later. The questionnaire concerned changes in the child's behavior (from pre-to-post hospitalization) in a variety of areas of functioning (e.g., eating habits, interest in surroundings, and fear of strangers).

The parents' responses to the items were combined into a single, global index of change. In addition, on both administrations of the posthospital questionnaire the parents were asked to note whatever comments the child might have made concerning (a) the hospital in general and (b) returning to the hospital in the future. Analysis of this data revealed that the children who had been prepared were more positive in their attitudes toward returning in the future (Chi square = 23.97,  $p < .001$ ). This was true for data from the second posthospital questionnaire only. All other comparisons between the two groups, including those involving the global index of change, revealed no significant differences.

The data of Jackson et al. (1953) are also helpful to evaluate. In this study, patients receiving special preoperative preparation for tonsillectomy and a control group receiving no special preparation were compared with respect to a global measure of behavior change in the direction of trauma. Behavior changes in the following areas were included in the global measures: eating habits, dependency, overt hostility, sleep disturbances, and mannerisms. Behavioral data were generated by means of interviews with parents three months after surgery. The experimental group, which received psychological preparation, was selected from patients entering Albany Hospital. Two control groups, one from the same hospital and one from another one in the area,

were also used. The size of these three groups was not specified. Altogether, 140 children ranging in age from three to eight years were studied. The findings indicated that change in the direction of psychological upset was more common among children who had not been given special psychological preparation prior to surgery. Like the Prugh et al. (1953) study, the implications of these findings were confounded by differences between these groups unrelated to preparation. For example, children in the experimental group were apparently encouraged to bring favorite toys with them to the hospital. In addition, it appears that the mothers of these children were encouraged to stay with their children during the full course of hospitalization.

The study of Jessner et al. (1952) is also relevant here. The subjects were 143 children undergoing tonsillectomy. They ranged in age from three to fourteen years. Each child was hospitalized for two days. Preparation was not actively controlled. Rather, the parents of the children were urged to prepare their children with the aid of a booklet which was provided. The data suggested that psychological preparation had no effect on the incidence of upset. That is, it was found that subjects with "severe" post-operative reactions and subjects who were classified as "mild or improved" did not differ with respect to the proportion of patients who had been given adequate, inadequate or misleading preparation. The subjects with severe post-operative reactions were those who were described as

having a "marked" or "persisting" disturbance in any of the following areas: sleeping, speech, tics, mannerisms, fears, and regressive behaviors. The time of measurement of post-operative reactions could not be ascertained from the descriptions provided.

Weinick (1958) considered prehospital to posthospital change in two groups of children who underwent tonsillectomy. The subjects ranged from five to nine years. Twenty (one-half) of them received special psychological preparation three days prior to surgery in the manner suggested by Coleman (1952). The remaining children did not receive such preparation. The two groups were randomly constituted. Both groups of children were given a battery of psychological tests and their parents were interviewed on three different occasions: before surgery preparation, seven to ten days following surgery, and one month following surgery. The psychological tests used were the Vocabulary Subtest of the Revised Stanford-Binet, selected backgrounds from the Make a Picture Story, the Human Figures Drawing Test, selected pictures of the Blacky Test, and a specially constructed Story Completion Test. On the basis of the test and interview material, three judges characterized the children's attitudes in fourteen areas for each occasion and, in addition, rated the intensity of the attitudes. The areas included such things as attitude toward mother, father, independence, and separation. The attitudes were then classified



fied as either "healthy" or "unhealthy". The change (from presurgery to initial postsurgery and from presurgery to final postsurgery) was then evaluated for each of the two groups of subjects. In all areas, the attitudes of the unprepared children were either unhealthy both before and after surgery or changed from healthy to unhealthy. Evaluations of changes in attitudes in the unprepared children were, by and large, not statistically significant, primarily because relatively few children in this group changed. However, in virtually all areas, the children who were not prepared and who had unhealthy attitudes both before and after surgery showed a significant increase in the intensity of their attitudes. The children who received preparation showed a much different pattern of responses. With few exceptions, these children either had healthy attitudes both before and after surgery or changed from unhealthy to healthy. Evaluations of changes in attitudes for this group reached significance in all of the areas examined, although no data were presented.

In a more recent study on methods of preparation for children undergoing tonsillectomy and adenoidectomy surgery (T & A), Lende (1971) matched four groups in terms of age, sex and surgeon for evaluating three different techniques of psychological preparation. These were: (1) reading the child a book about tonsillectomies, (2) discussing the T & A procedure with him, and (3) letting him act out the experi-

ence through play. Subjects in a fourth group served as a control and spent the same amount of time with the investigator as did subjects in the other groups but were not offered any preparatory information. It was hypothesized that subjects who underwent one of the three types of preparation would show significantly few indications of emotional upset while undergoing the hospital procedures and after discharge, as compared to the control group. Furthermore, it was also postulated that subjects who more actively participated in the preparatory procedure would show significantly fewer indications of emotional upset than subjects who less actively participated in the preparatory study.

The subjects were seventy-two children aged four through six. The investigator interviewed the subjects on three occasions, one to two days before surgery, ten to fourteen days after, and six to eight weeks after surgery. Also, the subjects were observed in the hospital during a blood test medical procedure immediately prior to surgery. Two measures were used to assess the subject's behavior, the Behavior Questionnaire (a measure of behavior both before and after hospitalization) and the Blood Test Rating Scale (a measure of behavior during hospitalization). In addition, the subject's fund of information about tonsillectomies was assessed by a T&A questionnaire. The results indicated that there were no statistically significant differences between the groups in their performance on the

Behavior Questionnaire. Thus, the hypothesis was not supported. Likewise, children who were more actively involved in the preparatory procedure did not behave differently after the surgery than children who were less actively involved in the preparatory procedure. The majority of the children showed brief and transient signs of emotional upset ten days to two weeks after surgery. However, the investigator concluded that the value of preparation per se was not negated by this study because it was found that the majority of the subjects in all groups received appropriate preparation from their parents. Also, a significant correlation, unfortunately unreported, was found for the total group of subjects between a high level of upset behavior and low level of tonsillectomy knowledge.

Further data on the role of anxiety in children's play behavior as a function of hospitalization comes from two additional studies, observational in scope. In a series of experiments done by Gilmore (1966) designed to examine two different theories (Piaget vs. the psychoanalysts) of play behavior and the variables each postulated as important determinants of it, it was found that the presence of anxiety in a child had important influence on the child's choice of toys for play. This seemed most consistent with the psychoanalytic theory which holds play to be cathartic response, one which reduces psychic tension and affords the child mastery over those experiences which have previously been

overwhelming (Erickson, 1959, Freud, 1959). According to this theory, then, when a child experiences strong affects he will play with objects relevant to the perceived source of his anxiety. Only the study by Gilmore relevant for hospitalized children is summarized below.

Gilmore used two groups of subjects in this study, a group of eighteen children, aged five to nine, hospitalized for tonsillectomy and an identical number of children as controls selected from the lowest four grades of a public elementary school in the nearby area. The groups were matched on the basis of their sex, birth date and grade in school. There were equal numbers of boys and girls. Each subject played with three different sets of toys, one set at a time. Each set of toys was composed of four individual toys chosen to represent the dimension of novelty and relevance to hospitalization. Thus, in each set of toys there were four toy items which were designated as "novel-relevant", "novel-irrelevant", "simple-relevant", and "simple-irrelevant" toys. Toys were assigned to these categories on the basis of agreement among three independent judges. Toys were then assigned to a set on the basis of pilot work which indicated the interest of all the toys for children of both sexes. Three sets of toys were used in this study so that the findings might reasonably be attributed to the variables of novelty and hospital relevance rather than to characteristics specific to one certain set of toys. For

toy sets "A", "B", and "C", respectively, the following toys were classified as novel-relevant: one brand of a doctor's kit, a toy syringe and stethoscope, and a second brand of a doctor's kit. Classified as novel-irrelevant were a magic slate, a small pinball game, and a three-dimensional maze puzzle. Classified as simple-relevant were a pair of scissors and a cutout figure, a toy thermometer, and a toy ambulance. Finally, toys classified as simple-relevant were a plastic pig, a pipe cleaner, and a pencil and pad of paper.

Hospital subjects were seen on their ward and testing took place on the subject's bed. The subjects were allowed six minutes of playing time with each set of toys. The formal criterion for "play" was the touching of a toy or its parts. All subjects used the toys in what the author considered a playful manner. After the subject had spent six minutes with the first set of toys, the experimenter assessed toy preferences in the set. Then he removed the first set of toys and introduced the second set of toys in same manner as the first. The subject was again given six minutes of playing time after which toy preferences was assessed. This procedure was repeated one more time with the third group of toys. At the school, the experimenter was introduced by the principal to each class from which control subjects were drawn as a person whose job involves working with toys. After he "chose" the control subject from the class, seemingly at random, he led the subject to

a familiar vacant classroom and seated them at a small table. The procedure then continued exactly as with the hospitalized subjects.

The results showed that hospital subjects played more with novel toys and less with simple toys than did school subjects. Secondly, hospital subjects showed a greater preference for hospital-relevant toys and a lesser preference for hospital-irrelevant toys, as compared with their school-subject counterparts ( $F=26.66$ ,  $p .001$ ;  $df=1,32$ ). There was a significant interaction between subject condition, toy relevance and toy set ( $F=3.65$ ,  $p .05$ ) such that for every set of toys, the data obtained were congruent with the prediction that play reflects the presence of anxiety. No significant sex differences were found. These findings were supportive of the hypothesis that anxious children would play more with toys relevant to the source of their anxiety than would nonanxious children. However, there remained a compelling alternative explanation for the data. It was possible that the anxiety-relevant play of hospitalized children arose not out of the obvious anxiety in these children but rather out of the salience or interest of hospital routine for these children, independent of the anxiety that they experienced. This alternative hypothesis was eliminated in Gilmore's subsequent studies where membership in the anxious condition was controlled and conditions were made similar for both anxious and nonanxious children;

Meichenbaum and Burstein (1973) directed a study of children's play behavior and hospitalization through a consideration of the applicability of Janis' (1958) conceptualizations of the role of cognitive preparation for effective coping with stressful situations. The study by Janis of surgery patients was illustrative of this approach. He reported that a moderate level of anxiety prior to surgery was predictive of satisfactory post-surgical adjustment. He found that a moderate level of anxiety would stimulate thought and fantasy about the forthcoming operation. In experiencing these surgery-related thoughts and images, the patient would begin to develop a more differentiated view of the stressors he would later encounter and also develop self-reassurance mechanisms that could be invoked during the periods of stress. Janis also noted that patients with a highly defensive disposition tended not to experience pre-surgical anxiety. This absence of anxiety failed to elicit any stress-related thoughts and fantasies. Thus, the defensive patient was left unprepared for the distress of surgery, with consequent poorer postsurgical adjustment.

In studies with adults, the processes of preparation and resolution are inferred from the content of the person's thoughts, fantasies and behavioral and psychophysiological reactions. A child, however, has more limited abilities of verbal communication, so that it becomes necessary to use another medium of communication. Since a child expresses

much of what he thinks in his symbolic play (Erikson, 1940; Gilmore, 1966; Piaget, 1962; Axline, 1947), the child's thoughts and fantasies are believed to be reflected in the thematic content of his play. Thus, a child's preferences for playing with a specific toy is viewed as an indication of his willingness, at that time, to engage in thought and fantasy related to the theme of that toy.

Meichenbaum & Burstein's study predicted that a curvilinear relationship between level of anxiety and preference for fear-related toys would be found and the more highly defensive child would show less preference for stress related toys. The major objective of the study was to compare children's relative preference for toys that were either relevant or not relevant to the stressful minor surgery and hospitalization they experienced. There were two pairs of toys, and the toys within each pair were matched for attractiveness in a pilot study. The hospital-relevant toys were a doctor's kit and a game called "Operation". Paired with each of these toys was a maze and a level of aspiration board, respectively. The subjects were presented with each of these two pairs of toys for a six-minute period while the experimenter recorded the sequencing and amount of play with each of the toys. Play was defined as touching or manipulating a toy. The major determinant of toy preference was the amount of time spent with a toy during the two six-minute periods. The investigators used twenty sub-



jects, with equal numbers of both sexes, ranging in age from four to nine and who were scheduled for minor surgery. They were tested on three occasions: at home one week prior to surgery, the night before surgery in the hospital, and at home one week following surgery. In order to control for the possibility that the hospitalized children's play behavior might vary as a function of repeated exposure or differential attractiveness of the respective toys over time, a control group of five boys and five girls (ages five to eight) were individually assessed on the pairs of toys at their school on three separate occasions spaced one week apart.

The subjects who underwent surgery were given a defensiveness questionnaire (Wallach & Kogan, 1965) one week prior to surgery and were also assessed for their level of anxiety at all three test times. The subjects' coping styles were inferred from their pattern of play on these same three occasions.

Analysis of the control subjects play behavior indicated no significant differences on the amount of pattern of play at the three time periods, substantiating that in the unchanging school environment, the toys were equally attractive and play patterns did not change merely as a function of repeated measurements. With the hospitalized children no significant differences were found between male and female subjects in age, anxiety levels, defensiveness scores, (C)

or preference for stress-relevant toys at any of the three observations, thus these two groups were combined for all analyses.

Analyses of the subjects' anxiety levels at the three observation periods indicated that the hospitalization was indeed anxiety arousing ( $F=10.49$ ,  $p<.005$ ). There was significantly greater amount of play disruption (i.e., time spent not playing while the toys were available) during the inhospital observation ( $F=9.95$ ,  $p<.01$ ). This play disruption behavior appeared to be due to a disposition not to play rather than merely a distraction to novel stimuli in the hospital environment. This observed inability to play during the anxiety-arousing phase of hospitalization has also been reported by Peller (1954) and Tisza, Hurwitz and Angoff (1970). Correlations between the anxiety scores at the three observation periods yielded a near-significant negative correlation between anxiety levels prior to and following hospitalization ( $r= -.38$ ,  $p<.10$ ). This relationship suggests that a low level of anxiety prior to hospitalization is associated with a higher level of anxiety following hospitalization, thus paralleling Janis' (1958) finding. Correlations between levels of defensiveness and the total time spent in play with the two stress-relevant toys were calculated for each of the three observations. A significant negative correlation ( $r= -.46$ ,  $p<.05$ ) emerged for the pre-hospital observation, thus providing support for the prediction that increased defensiveness was associated with

a tendency to avoid play with stress-relevant toys prior to exposure to the stressful situation. In light of Janis' contention that heightened postsurgical emotional disturbance results from defensiveness which inhibits adaptive worrying, the authors examined the relationship between defensiveness and anxiety. Although the correlations between the defensiveness score and level of anxiety were negligible prior to and during hospitalization, a positive correlation ( $r = .52$ ,  $p = .02$ ) was found for the post-hospital observation. That is, the more highly defensive child tended to remain more anxious following discharge from the hospital. A discrepancy between this study and Janis' finding was that no curvilinear relationship was found between pre-hospital anxiety level and post-hospital distress. The absence of this relationship was found regardless of which pre- and post-hospitalization measures were correlated. In summary, what seemed to emerge from this study was a group of children who were low in defensiveness prior to hospitalization and who report minimal distress and anxiety following surgery. In contrast, there was a group of children who were high in defensiveness prior to surgery and who avoided playing with stress-related toys prior to surgery, but who reported the most anxiety after discharge.

In general, the findings described above provided only fair support for the hypothesis that the unfamiliarity of

the hospital setting is a determinant of the level of psychological upset experienced by children following hospitalization. Of the studies reviewed intensively here, only five showed positive findings to the effect that some form of psychological preparation either reduced the incidence of posthospital upset or increased the incidence of benefit. The findings of Cassell (1963) were mixed in this respect. Lende (1971) and Jessner et al. (1952) provided no support. However, the latter failure may have been due to the fact that this study relied exclusively on parents to provide the preparatory information. In addition, the implications of the findings of Prugh et al. (1953) and Jackson et al. (1953) for psychological preparation per se were seriously confounded by other differences between the two groups, such as more liberal visiting hours for children and encouragement to bring favorite toys from home.

The studies presented above are subject to a variety of criticisms. There was generally an inadequate description of the procedure used, both for preparation and for classification of the data. Most of the measures used that purported to measure the child's anxiety and subsequent behavior were interview questionnaires by the parents or global ratings of the child's response to the treatment procedures. Some conclusions were based on impressionistic opinions with little statistical evidence presented. There was a decided lack of psychometric sophistication. For

example, reliability and validity data on the use of the rating scales and other dependent measures were not reported. In addition, many of the investigations suffered from a number of methodological problems that made interpretation of the data difficult. There was a failure to control for observer bias, time with the experimenter, and some studies showed a confounding of the theoretical implications. Such factors as previous hospitalizations, age of the child, and prehospital personality, which were cited (Vernon et al., 1965) as major determinants of psychological upset, were often uncontrolled.

It is proposed that the recent demonstrations of the therapeutic efficacy of modeling techniques in effectively reducing anxiety-mediated avoidance behaviors in children has potential promise for establishing both a comprehensive theoretical framework and powerful treatment tool for children's hospital preparation and concomitant reduction in fears associated with it. Therefore, the bulk of the remaining part of the review focuses on reviewing the theoretical, developmental and clinical research utilizing modeling procedures, so that a heuristic model and clinical research application can be developed employing this strategy.

## REVIEW OF MODELING LITERATURE

Although psychology has given a great deal of attention to learning phenomenon involving classical and operant conditioning, and has informally studied emotional and social development since the 1800's, it is only in the last thirty years that it has begun to give serious attention to another dominant form of human learning, the acquisition of behaviors by observation and imitation. The most comprehensive theory to date has been assembled by Bandura under the title of social learning theory. Although his work is proliferate in the area of observational learning and related phenomena, his most compact and succinct statement of social learning theory is contained in his book (1971) entitled Psychological Modeling: Conflicting Theories. In this book Bandura presented a four process model of observational learning where acquisition of modeled responses occurs by contiguity of the modeled stimulus with the observer's perceptual and cognitive responses, which are mediated by several variables. The four processes discussed were attention, retention, motoric reproduction and motivation.

Attention is not simply the orienting response on the part of the observers, although this measure must be used in most studies. As well as orienting to a modeled event, the observer must attend to it in the sense of discriminating the events which are personally relevant to him and

separating the performance cues from the rest of the display. Also, observers must be able to analyze the component responses provided by the modeled sequences that are necessary for its performance. Without being able to perceive the discreet component responses necessary to perform a sequence of behavior, the observer will not be able to replicate that behavior.

Clearly, this discrimination is a developmental process. As the result of different experiences in the biological/psychological maturation process, children may become differentially affected in two ways. First, different models and situations become conditioned cues for attending. Second, other cues are utilized by the child in discriminating the component responses. The incentives given for attending, either explicitly by the experimenter prior to observation or implicitly by the nature of the task, play a role in this process. Several characteristics of the model will influence both attention and performance of observed responses, presumably as a result of the interactions the observer has with similar models in the past. Consequence cues provided by the task itself also play a role in attention and performance. Finally, the arousal state of the observer has an influence on the amount of attention an observer pays to a model.

After attending to a response, the observer must be able to encode the information provided by his discrimina-

tions. Unless the observer can perform the observed responses while they are being modeled, he must acquire the responses using some type of representational system. The effectiveness of these systems are important in determining how much of the modeled behavior can be acquired and how long it can be maintained in memory before it is activated into performance.

Two encoding systems have been identified to date. One is a visual, imaginal system. It is assumed that modeling stimuli produce images of modeled sequences through a process of sensory conditioning which are retrievable and lasting. As a developmental process, this system would probably reach a ceiling of effectiveness early and be little controlled by environmental events. Another system, however, is continuously developing. This is the verbal system. As children mature, the verbal system is responsible for both the increasing speed of observational acquisition and retention capabilities. Several experimental studies have demonstrated that verbal coding, and other higher order symbolic systems can increase both speed of acquisition and amount and length of retention. Symbolic coding is only one aspect of the encoding process, however, Rehearsal also plays a part. Rehearsal may be provided by the stimulus itself, in the form of repetitions of the display, or by the observer. Rehearsal by the observer is either overt or covert, and the use of covert rehearsals is



considered a developmental process.

Once the observer has attended to and discriminated a modeled sequence and coded and stored the results of this attention, behavioral reproduction of the behaviors learned so far is mediated by one further variable, motoric reproduction. The symbolic representations must be retrieved (considered another developmental process) and performed. This requires effective retrieval strategies, a point Bandura seems to have missed, and some form of guidance for the performance of the retrieval representation. This guidance process could be compared to the learning/performance of a response when an external guide is present, either in the form of a visual display or directions given by some real or symbolic agent. The retrieval representation must be able to provide the information that the original external model provided. Other performance information will be furnished by the immediate environment, in the form of accuracy feedback and self-observation.

Two other variables act as presetting conditions for the motoric reproduction process. These are the availability of component responses and the physical capacities of the observer. It has been postulated by Bandura that the more complex behaviors must be produced by combining previously learned component responses and compounds. This would probably be a developmental ability.

Observers may be capable of attending to and discrim-

inating a modeled event, encoding and retrieving the resulting representation, assembling the necessary component response compounds and still may not perform the observationally learned response. The final and necessary process involves motivation and reinforcement. These are two interlocking processes that operate throughout the other three processes, yet, also operate after they have been engaged in effectively.

Past experience and factors present in the modeling sequence will determine the motivation for an observer to engage in all three processes and the degree to which he engages in them. These are called extrinsic and vicarious reinforcement, but attention must also be paid to the conditioned reinforcing aspect of certain models and situations which act as incentive cues in a motivational manner. Once a behavior has been acquired, however, past experience and current incentives will determine whether or not it will be performed.

Since the research on modeling has been quite prolific since Bandura's early formulations, this part of the review focuses on research after 1968. The reader is referred to Flander's (1968) review of the literature on imitative behavior for studies completed prior to this time. The studies reviewed here are divided roughly into those of a theoretical, developmental and clinical orientation, with a special section for medically related studies. While over-

lap was unavoidable, studies were discussed in that section that was most beneficial to the overall cohesiveness of the review.

### Theoretical

This literature seemed to indicate that certain model characteristics lend themselves to imitation over models which do not have these characteristics. Bolin and Jeffrey (1976) identified such factors as status, competence, sex, race, age, socioeconomic status, nurturance, and positive affect. The reader is directed to their review for a more thorough examination of all of these factors.

Status and competence are abstract concepts which may have no meaning for a child. Instead, the child probably must rely on much more concrete cues in utilizing the information provided by a modeled display in deciding whether or not to perform the observed behaviors.

Bandura (1969) reviewed a number of experiments which suggest that undergraduates were more likely to imitate a high status model and one whom they perceived as being more competent. However, a few experiments have been done with children on this factor. One study (Havelick & Vane, 1974; cited in Bolin & Jeffrey, 1976) found that a model which children perceived as being more competent was imitated more. However, this competence rating was closely correlated to the race of the model and the race of the observers,

suggesting that this may have been the basis for judging competence. Further research, relying heavily on the post-test interview measuring perception of competence, is needed to determine what factors children use in determining competence and how this process changes with age.

Sex is another important model variable determining whether or not a model will be imitated. Here too the results are unclear. It is possible that the nature of the sexual socialization process plays an important role in this phase of observational learning. Since society develops differential sex role behaviors and reinforces children for those behaviors acquired on the basis of their sex, attention to and facilitation of modeled responses by same sex models will occur when the task is sex typed. However, if the modeled behavior is sexually neutral with respect to role, this same sex effect will not occur.

Cook and Smothergill (1973) have found that boys will imitate a male model, but appear to counter imitate a female model, actually avoiding behaviors which were modeled by the female model but had been performed by the boys in a pre-test. This was not true for girls, however. Although the girls imitated a female model more than the boys did, they too imitated the male model more. The task was neutral with respect to sex role.

In general, children were more likely to perform behaviors modeled by an older person than by a peer (Miller

& Dollard, 1941; Flanders, 1968). However, this relationship was stronger with upper class children than with lower class children (McMannis, 1974). Younger age models were less likely to be imitated than same age models (Pfeifer, 1972).

Models which were perceived as more nurturant or similar were imitated more than models lacking these qualities (Grusec & Mischel, 1965; Yarrow & Scott, 1972). In the latter study using both a nurturant and nonnurturant model, it was found that nurturance had no effect on gross frequency of imitation but had an influence on the content of imitated acts. These investigators found that the children who were with the nurturant model displayed a higher frequency of both nurturant and nonnurturant behaviors.

The model's visual affective signal reaction to model consequences has been shown to have a significant effect. However, this affective effect interacts with the consequences. When the model was rewarded, the model was found to increase imitation if the consequence was positive (Dollinger & Thelen, 1975). Also, the negative affect model was perceived as being incompetent. However, if the model was punished, and gave a positive affective reaction, greater imitation resulted than if he gave a negative affective reaction (Slaby, 1971).

In addition to characteristics of the model, certain observer characteristics also play a role in determining

observational learning and imitation. Akamatsu & Thelen (1974), in a review of the literature on observer characteristics and imitation, attempted to delineate the role of these variables in the imitative process. They distinguished three general trends. First, it appeared that investigators who employed state manipulations found the most consistent effects on imitation. Relatively reliable relationships between observer competence and imitation and arousal and imitation have been found. Subjects low in competence or high in arousal were likely to imitate. Second, the effects of observer traits on imitation were ambiguous, and equivocal. While some experiments have found significant effects for traits, others have not always been replicated. Third, relationships between observer characteristics (both state and trait) often depended on the type of imitation task employed. These three trends are related, and provided the investigators with a formulation concerning the relationship between observer characteristics and imitation. It was proposed that observer states and traits have a maximal effect on imitation when little information is provided by the situation. As the amount of information increases, the effects of observer states and traits decreases. When a great deal of information is provided, the effects of observer characteristics have no effect on imitation or cannot be detected. Thus, the effects of observer characteristics can best be assessed in

situations in which the observer characteristic is the only manipulated variable or in which adequate control conditions for any additional independent variables are employed.

In the model and observer variables presented thus far, complex interrelationships have already begun to emerge. Isolating one variable and testing its effects is becoming less valuable as a research tool, in understanding social learning. This trend is illustrated when a third class of variables, vicarious consequences, is added. Their effects are interactive with all the variables mentioned so far, and although general trends may emerge, the number of exceptions is still great enough to prevent an absolute statement as to their effects. Vicarious reinforcement, if it had an effect, was found to increase imitation. However, this effect was mitigated by other variables, such as the nature of the task and expectancy to perform, when the phenomenon was not merely spontaneous imitation but recall of the modeled behaviors as well. There was also evidence for a developmental trend,

If the task was not intrinsically interesting, there were no instructions to attend or expectancy to perform and a peer model was used, vicarious reward increased both acquisition and performance of a response over a no consequence condition or punishment condition (Bolin & Jeffrey, 1976). Model reward also increased the performance of a

wide range of behaviors (Liebert & Fernandez, 1970; Thelen, Rennie, Fryrear & McGuire, 1972; Thenen, McGuire, Simmonds & Akamatsu, 1974). In the first study, girls aged six and seven, in a commodity preference model, subjects exposed to vicarious reward showed more spontaneous imitation than those who had seen the model perform without consequences. The Thelen et al. (1972) study essentially replicated these findings. In an extension of these studies, Thelen et al. (1974) assessed the influence of model reward on the observers' (first through third grade) recall of the modeled behavior, following three different conditions. One group was tested for high-incentive recall immediately after viewing the model, a second group was tested for spontaneous imitation prior to the high-incentive recall test, and a third group performed a simple interpolated task prior to the high-incentive recall test. Half of the subjects in each condition observed a rewarded model. The results indicated that reward to a model increased the spontaneous imitation of that model and increased high-incentive recall of subjects who carried out the simple interpolated task. However, model reward did not increase the high-incentive recall of subjects who were tested for spontaneous imitation prior to their test for high-incentive recall or subjects who were tested for the high-incentive recall immediately after observing the model. These findings were consistent with Bandura's theory that model reward does not directly



influence the acquisition of modeled behavior. It was inferred by the authors that model reward affected the retention of responses acquired via observation.

Research has also begun to focus on a fourth class of variables which relates to the information processing capacities of the observer and how they influence observational learning. Masters & Driscoll (1971) found that four year old children who heard descriptions of novel arrangements of toys "imitated" more than those in a control group, regardless of whether the model was present or absent or whether his instrumental behaviors were described. They concluded from this that the verbal description of a model's behavior was no more effective than the simple description of a situational arrangement for the instigation of "imitative behavior" in young children. They further indicated that the model may be dispensed with entirely. Although quite extreme, another study by Dubanoski & Parton (1971) seemed to confirm some of their suspicions. In two main conditions, subjects (kindergarten and first graders) either watched events performed by a model or performed in the absence of a model (via nylon strings). Although more imitation occurred in the model condition than in the model absent condition, considerable imitation was exhibited in the model absent condition. These results indicated that the presence of the model facilitated the performance of imitation and that in an experimental setting much imitation can be accounted for by mere observation of those events

which define the imitative responses.

It seems clear that the model may be an effective purveyor of information, but in instances where such information can be communicated without his presence, "imitative" behavior by children seems likely to occur. Although it seemed implicit in the early imitation literature that a model is an integral and perhaps necessary component of the imitative process, perhaps his live presence produces no greater imitation than his symbolic (filmed or verbal) presence. Perhaps the most important factor in studies of imitation had been that the experiments were conducted by an adult in an experimental situation which was divorced from the child's typical environment. The imitation experiment may have placed a strong demand upon the subject to attend to the situational cue values communicated by the modeling sequence. Studies of vicarious reinforcement, even when a model was included, may be interpreted in this light since the consequences to a model certainly had informative value to the observer who contemplated imitation in the same or similar situation. It seems premature to conclude, though, that this is true for imitation as it occurs in the child's natural environment as well. It has been pointed out elsewhere (Coates & Hartup, 1970) that there has been a severe deficit of naturalistic studies in the literature on children's modeling and imitation. It seems clear from the present experiments that studies of the importance of the

model in actual or symbolic imitation should investigate the question in more natural settings. Only then may we more reliably speak of the importance or lack of the model in imitative situations.

When responses in a commodity choice situation (modeled choices) had a common dimension, recall was greatest for the most number of presentations and a common dimension, leading Liebert & Swenson (1971) to postulate active abstraction as an information processing technique. Gerst (1971) found that the type of code used increased the recall of an observed behavior. Summary codes, abstracting some feature of a sequence and memorizing it, were most effective. Imaginal codes, visualizing with eyes closed, were of middle effectiveness and verbal labeling of the response as it occurred was of low effectiveness. Bandura (1971) found that codes which were retrievable and symbolic in the sense of abstracting a common rule were remembered more than codes possessing only one of these two qualities.

Another important variable involves rehearsal. Bandura & Jeffrey (1973), Bandura, Jeffrey & Bachicha (1974) and Jeffrey (1976) have shown that overt and covert rehearsal enhanced recall of modeled displays, while physical practice had no effect. The greater the degree of abstraction, reducing a verbal description to a numerical sequence or symbolic sequence, the greater the acquisition of responses. However, these experiments were only performed with

adults.

### Developmental

Traditional modeling theory, such as that of Bandura and his associates reviewed above, constitutes an attempt to understand observational learning primarily at the adult level. Hence, there is a lack of a comprehensive and well integrated theory utilizing the developmental perspective. This became more apparent when the more abstract and cognitive implications of social learning theory were discussed at the end of the previous section. Although some investigators have attempted some much needed pioneering conceptual frameworks (Liebert & Swenson, 1971; Zimmerman & Rosenthal, 1974) utilizing developmental findings, the paucity of systematic research in this area is conspicuous.

One trend that has been identified is that of decreasing imitation with age. Fein (1973) has termed this fear of the "copy-cat" phenomena. With increasing age, subjects were less likely to imitate the behaviors of an adult model. Fein ascribed this tendency to social pressure, particularly as it occurs in school. Also with age, the subjects made more task relevant rather than task irrelevant imitations. The effects of vicarious consequences on a commodity choice also seemed to be effected by age. On a gradient from pre-school to sixth grade and then a leap to college, the effects of vicarious reinforcement on imitation became significantly

less (Levy, McClintock, Rabinowitz & Walkin, 1974). College subjects were only minimally influenced by differential vicarious reinforcement. However, recall scores were quite high in all ages and weren't significantly influenced by differential vicarious reinforcement. Finally, there appears to be a trend toward task relevant behaviors with age, ignoring task irrelevant behaviors (Fein, 1973; Hawkins, 1973).

Some of the recent literature of modeling with children indicated that cognitive capacities play a decisive role in imitation. Liefer, Collins, Gross, Andrews & Blackmer (1971) have shown that the ability to reconstruct a modeled sequence and the understanding of the feelings and motivations of a model increased with age. Some of the pioneering work on imitation from a cognitive perspective came from Kuhn (1972). Her experiments have shown a relationship between Piaget's stages of cognitive development and observational learning. Her findings showed that children were unable to benefit from exposure to stages beyond their development and thus did not imitate them. These findings were furthered by the work of Denney (1972) and Fouts and Liikanen (1975). The former study attempted to extend the principles of observational learning to the acquisition and performance of hypothesis-seeking and constraint-seeking conceptual strategies in children. Boys, aged six, eight, and ten were shown videotaped models who depicted hypothesis-seeking, constraint-seeking with con-

straints based on perceptual attributes (CS<sup>u</sup>-P), and constraint-seeking with constraints based on functional attributes (CS-F). The results lent support to the hypothesis that children at different stages in conceptual-strategy development were differentially responsive to various conceptual-strategy models. It was concluded that younger children were more responsive to less sophisticated conceptual-strategy models while the older children were more responsive to the more sophisticated ones. Although it was impossible to state with certainty what particular conceptual strategy was lacking in his repertoire, this study did allow a comparison between groups differing in the probability that their members possessed a developmentally more sophisticated conceptual strategy. For example, it was demonstrated that fewer of the six year-olds than of the eight to ten year-olds possessed the constraint-seeking strategy within their repertoires at the beginning of the experiment and thus the CS models were presenting a far more novel conceptual strategy to these six year-olds. In other words, imitation of the CS models by six year-olds constituted more of an instance of true observational learning, while imitation of these models by older subjects was more of an instance of elicitation effects (Bandura & Walters, 1963). Viewed in this fashion, failure of the younger children to show a significant change in response to either of the CS models raised some questions as to whether the mere

presentation of a model was sufficient for the acquisition of a new conceptual strategy. While this study provided ample evidence of the eliciting effects of models, there was little evidence of true learning effects following from observation of the models. The fact that changes in conceptual strategy effected by the models failed to persist through the follow-up period and the fact that changes in the efficiency with which subjects solved the problems did not accompany the change in frequencies of CS questions also argued against any true learning effects in response to those models.

The Fouts & Liikanen (1975) study attempted to rectify some of the uncertainties with respect to conceptual strategy in the above study by assessing both the effects of age and developmental level on the use of imitation in children aged five to eight. They predicted that these two factors would interact in influencing imitation in young children and that young children at a higher developmental level would imitate more than their less mature agemates, whereas older children with a higher developmental level would imitate less than their agemates. Developmental level was assessed by examining the schemata employed while subjects were playing with different sets of toys. Each subject was then presented a modeling stimulus on television, and later given an opportunity to play with the materials seen on television. The predicted interaction was found,

indicating that children differing in age and developmental level possessed different tendencies to imitate. These results suggested that age and developmental level may, in part, account for the considerable variability among children in their susceptibility to modeling influences, and may have implications for discovering the situations which optimize children's learning.

Cognitive structures and skills influence a child's readiness to acquire knowledge and to use the information he receives. They also delimit the range of thought and behavior he can utilize at any particular level of development. One important area for future research should be determination of the developmental levels at which learning through observation and learning through imitating models are optimal. Also, the generalizability of these results, which used televised presentation of possibly uninteresting manipulations of objects, should be considered. Although much of what children learn is uninteresting and trivial, the effects of age and developmental level on imitation may be more or less pronounced when live modeling and dramatic and/or socially significant behaviors are used, depending on the attention, motivation and behavioral repertoires of the children.

Another issue raised was how overt response affects observational learning in children. The evidence at present is fairly equivocal. For example, Bandura, Grusec & Menlove



(1966) showed that children six to eight years who actively described a model's responses displayed significantly better learning than children who watched passively. The latter group, in turn, showed a higher level of acquisition as compared to children in a competing symbolization group. Coates & Hartup (1969) showed that structured verbalization did not discernibly affect observational learning by seven year-olds, but it did enhance acquisition for four year-olds. They interpreted their findings according to Flavell's production deficiency hypothesis. Younger children failed to spontaneously produce relevant verbalizations in problem-solving situations, unlike older children. If younger children are helped to produce relevant verbalization, task performance is enhanced. In an attempted replication of this finding, Wolf (1976), using children of slightly higher SES, found that verbalization conditions did not promote observational learning in the younger children as anticipated. It was postulated by Wolf that the younger children, like the older ones, were engaged in the spontaneous production of covert verbalizations and that the instructions to produce relevant verbalizations in the experimental conditions interfered with whatever rehearsal was occurring. Again the cognitive level of these children might have contributed to these results.

As a tentative conclusion, it appears that overt responding, particularly if it is temporarily coincident

with the model's performance can interfere with an observer's ability to attend to the modeled display. Secondly, an observer's spontaneous description of the model's behavior need not assist coding, and may interfere, especially with older subjects. Instructions to spontaneously describe do not necessarily establish a more parsimonious, simpler organization of information. The facilitating or impeding effects of coding depend on the adequacy of the code in summarizing and retrieving information. Indeed, there is evidence that overt activity can cancel the facilitative effect of coding. Rosenbaum (1967) found that verbal learning by another child assisted learners' recall but self-produced labels did not. Third, if children are at an age such that they do not spontaneously mediate, or if the type of task does not readily elicit mediation in older subjects, then providing verbalizations about the model's behavior may augment learning. If the nature of the task or subject population involves impoverished repertoires, any additional rehearsal or verbalization which instates representation of task components may be expected to aid performance.

Zimmerman & Rosenthal (1974), summarizing an extensive amount of the literature on observational learning, suggested that given that the observer can discriminate the events displayed and hence organize and code them covertly, learning appears to occur in an integrated, gestaltlike fashion. This position, they believe, does not deny the importance

of association in the sense of familiarity and plausibility, but does question inferences that response probability is any simple function of prior pairings with a stimulus.

Further, research on how the social environment fosters and qualifies abstract behavior is needed. A particular contribution of the modeling literature was to call attention to the importance of social factors in all forms of learning and cognition. More research attention should be devoted to social variables and boundary conditions. In addition, further research is needed to delineate the strengths and limitations of vicarious procedures versus other extant and evolving methods of transmitting information and modulating behavior. Finally, a better grasp of the underlying processes involved in modeling operations is required.

### Clinical

Recent years have witnessed a vigorous growth in new treatment approaches that achieve psychological changes mainly through guided learning experiences (Bandura, 1969a). Modification programs based upon social-learning principles differ from interview approaches, among other ways, in the content, the locus, and the agents of treatment. With regard to content, therapeutic procedures were mainly applied to the actual problem behaviors requiring modification instead of to their verbal substitutes. Treatment was typ-

ically carried out in the natural settings in which the specific problems arise to increase the generalizability of therapeutic effectiveness.

A number of different treatment procedures have been derived from social-learning principles, each method being especially well suited to produce a particular type of psychological change. Research conducted within a social-learning framework demonstrated that virtually all learning phenomena that resulted from direct experiences can occur vicariously, as a function of observing other people's behavior and its consequences for them. Modeling procedures can, therefore, be employed to achieve diverse psychological changes.

There are four basic functions that modeling procedures can serve. By the observation of a model, a client may learn new appropriate behavior patterns, and modeling may thus serve an acquisition function. More likely, the observation of a model's behavior in various situations may provide social facilitation of appropriate behaviors by enticing the client to perform those behaviors of which he was previously capable of, but at more appropriate times, in more appropriate ways, or toward more appropriate people. Modeling can lead to the disinhibition of behaviors that the client has avoided because of fear or anxiety. And, while disinhibiting behaviors, modeling may promote the vicarious or direct extinction of the fear associated with the person,

animal, or object toward which the behavior was directed.

Most of the recent work with modeling procedures has been concerned with the elimination of phobias or fearful behaviors. Vicarious extinction of fears, inhibitions, and other avoidance behaviors is achieved by exposing fearful observers to modeled events in which performers were shown engaging in the threatening activity without experiencing any adverse response consequences. Repeated observation that feared performances engender no unfavorable outcomes would be expected to extinguish both fear-arousing cognitions and non-mediated emotional responses.

In one of the first studies utilizing modeling procedures, (Bandura, Grusec & Menlove, 1967) children were selected for treatment on the basis of a parental interview and an objective test in which the child was requested to engage in a series of fourteen tasks which brought him into increasingly more intimate contact with a dog. On the basis of the objective test, forty-eight children were chosen and divided into four different groups. Group 1, called a modeling-positive context, involved having the child watch a fearless model display progressively more approaches to the dog in the context of a birthday party. Group 2, the modeling-neutral context group, watched a fearless model approach the dog without that party atmosphere. Group 3, the dog positive context group, simply watched the dog in a party context but there was no modeling of approaches to

the dog by a peer. Group 4, the positive context group, experienced a party atmosphere without a dog or a model. Following the exposure to these various experiences, the children were then reassessed with the same fourteen-item approach test they had been given earlier to determine the effectiveness of the procedures in decreasing the dog phobia.

The results showed that the children who had been exposed to a model exhibiting fearless behavior with the dog reduced their fear regardless of whether the modeling was done in a positive or neutral context. At the follow-up assessment, obtained one month following the posttest, the two model groups were still exhibiting more approach behavior than the no model groups. The model plus positive context group, though slightly superior at follow-up, was not significantly different from the model plus neutral context group.

In a second study Bandura & Menlove (1968) assessed the value of multiple filmed models in reducing children's fears. Forty-eight, three to five year-olds were divided into three groups. The first group observed a single film model display progressively more intimate interactions with a single dog. The child observed essentially the same processes as depicted by the live model in the previous study. A second group of children observed a similar set of films depicting a variety of models interacting nonanxiously with

numerous dogs varying in size and fearsomeness. A control group was shown movies containing no animals. The same fourteen-item approach test was employed as in the earlier study. Both the multiple model and the single model groups showed many more approach responses than did the control group, but the multiple model group had a more lasting effect than the single model group.

Hill, Liebert & Mott (1968) also successfully eliminated persistent avoidance behavior in children and adults through brief, symbolic modeling. A decided advantage of treatment programs based upon modeling principles is that they can be readily applied on a group basis. Moreover, evidence that film-mediated procedures produced beneficial results indicated that therapeutic films could be developed for preventive programs to eliminate common fears before they become strongly established and widely generalized.

It is interesting to note that the influential role of modeling factors in the transmission of fears is widely acknowledged but their therapeutic value has sometimes been questioned on the grounds that fears persist even though modeling frequently occurs under ordinary conditions of life. The effectiveness of any principle of learning depends not only on its validity but also on the manner in which it is implemented. Inconsistent, haphazard, and inadequately sequenced learning experiences will probably produce disappointing outcomes regardless of the cogency of

the principles supposedly guiding the treatment.

In many instances weak fears are undoubtedly extinguished, or substantially reduced, through fortuitous naturalistic modeling. However, carefully planned modeling experiences are essential for the modification of more tenacious avoidance tendencies. There is some evidence (Bandura & Menlove, 1968) that parents of children who exhibit severe fearfulness make no attempts to overcome their children's fears because they suffer from similar apprehension.

Behaviorally oriented treatments were characteristically evaluated solely in terms of the response changes they produced. It was, therefore, commonly assumed that such methods may be appropriate for altering behavior, but other procedures, usually of a conversational type, must be employed to affect changes in attitudes, self-evaluations and affective dispositions. Results of an experiment conducted by Blanchard & Ritter (1969) using multiple outcome measures, revealed that the changes accompanying social learning approaches were by no means confined to motoric performances.

The aforementioned project employed an elaborate experimental design to assess the comparative efficacy of symbolic modeling, live modeling with guided participation, and desensitization modes of treatment for producing behavioral, affective and attitudinal changes. The participants were adolescents and adults who suffered from snake phobias.



Participant modeling included several factors designed to facilitate elimination of defensive behavior. The modeling component both exemplified how desired activities can be performed most effectively and helped to reduce fears and behavioral inhibitions. To further aid in eliciting potentially threatening performances, they were divided into a series of small graded steps, each of which was initially accomplished under circumstances affording ample protection against feared consequences. Whenever these favorable conditions failed to produce the desired behavior clients were physically guided in performing the responses and their efforts were socially reinforced. As treatment progressed, the amount of demonstration, protection, and guidance was progressively diminished.

Results showed that while symbolic modeling and desensitization produced substantial reductions in phobic behavior compared to a control group, the live modeling combined with guided participation proved to be an unusually powerful treatment that eliminated snake phobias in virtually all subjects (92%). The modeling procedures not only extinguished longstanding avoidance responses, but they also neutralized the anxiety-arousing properties of the phobic stimuli. Both of the modeling treatments achieved marked decrements in anticipatory and performance anxiety.

In discussions of treatment outcomes, the modification of attitudes is frequently considered an important

objective. Selection of attitude change as a therapeutic goal is primarily based on the assumption that attitudes are determinants of overt actions. In fact, most change agents who strive to alter people's attitudes are not interested in attitudes, per se. Rather, the attitude-change approach is resorted to as a means of influencing behavior. Although attitude change has been extensively studied, the research is based on a limited range of procedures. Surprisingly, the fundamental issue of whether attitudes control overt behavior has been almost totally ignored.

One can distinguish among three basic modes of attitude change. The cognitive-oriented approach attempts to modify persons' attitudes by altering their beliefs about the attitude object through various forms of persuasive communications. This method can produce changes in attitudes, but it often has little effect upon overt actions. A second general strategy has been the affect-oriented approach wherein both evaluations of, and behavior toward, particular attitude objects are modified by altering their emotion-arousing properties, usually through direct or vicarious conditioning procedures. The third approach, which is often used in social learning (Bandura, 1969a) and in experimental social psychology, relies upon a behavior-oriented strategy.

Results of the latter procedure provided considerable evidence that attitudinal changes can be successfully ac

achieved by getting a person to engage in new behavior in relation to the attitude object without untoward consequences. The relative superiority of the behavioral approach probably stemmed from the fact that a basic change in behavior and the resultant experiential feedback provided an objective and genuine basis for new evaluations. Findings from Blanchard and Ritter (1969) experiment revealed that applications of social learning procedures had important attitudinal consequences. Both symbolic modeling and desensitization, which primarily involve extinction of negative affect aroused by aversive stimuli, produced favorable changes in attitudes toward snakes. Consistent with expectation, the participant modeling treatment that reduced the fear-arousing properties of snakes and enabled subjects to engage in intimate interactions with snakes, resulted in the greatest attitudinal changes.

Numerous experiments have been reported on results achieved by modeling procedures and their relative efficacy compared to other behavioral approaches. Ritter (1968a) obtained uniform success with group modeling procedures administered to children who displayed fear of snakes. Groups of children participated in two thirty-five minute sessions in which they either merely observed several fearless children exhibit intimate interactions with a snake or they received the participant modeling form of treatment, during which the therapist displayed positive responses

toward the snake and then gradually eased the children into performing the feared behavior. Snake phobias were completely extinguished in 53% of the children by modeling alone, and in 80% of the children who received modeling combined with guided participation. None of the children in a control condition were able to perform the terminal approach behavior. In a related study (Ritter, 1969b), the latter method administered individually completely extinguished snake-phobic behavior in 83% of adolescent subjects, whereas only 17% of nontreated controls achieved terminal performances. The potency of participant modeling was further confirmed by Rimm & Mahoney (1969) who rapidly extinguished snake-avoidance behavior with this method in adults who were unable to achieve any behavioral improvement when offered increasing monetary rewards for performing a graduated series of approach responses.

It was previously shown (Bandura, Blanchard & Ritter, 1969) that modeling combined with guided participation was superior to symbolic desensitization in eliminating a circumscribed phobia. This finding was replicated in two other experiments. Litvak (1969) found that a single group session of participant modeling produced substantially greater reduction in phobic behavior than either group desensitization or no treatment. Perloff (1970, cited in Bandura, 1971a) examined the comparative effectiveness of participant modeling as part of a larger project assessing the

influence of muscular relaxation and positive imagery on extinction of avoidance behavior through systematic desensitization. The results showed that treatments employing positive and neutral imagery, which proved equally effective, were superior to muscular relaxation. On the other hand, control subjects who exhibited no significant change in avoidance behavior, matched or surpassed the desensitization treatments after a brief program of live modeling with guided participation.

Within the treatment combining modeling with guided participation, three major processes were operative that might have contributed in varying degrees to psychological changes. These included observation of fearless behavior being repeatedly modeled without any unfavorable consequences, incidental information received about the feared subjects, and guided direct contact with threatening objects that engendered no adverse effects.

In an experiment aimed at isolating the relative influences of these component variables, Blanchard (1970) matched subjects in terms of their snake-avoidance behavior and assigned them to one of four conditions. One subject in each quartet received the standard procedure, which included the benefits of modeling, information and guided performance. A second subject simultaneously observed the modeling sessions and listened to the verbal interchanges, thus being exposed to both modeling and informational influences.

ences. The third subject received only the modeling component, while the fourth, who merely participated in the testing procedures, experienced none of the constituent influences. Modeling accounted for approximately 60% of the behavior change, and 80% of the changes in attitudes and fear arousal, guided participation contributed the remaining increment. Informational influences, on the other hand, had no effect on any of the three response classes. In fact, the latter condition yielded the lowest scores on all of the three sets of dependent measures. Apparently, it appeared that giving information to severely phobic people may, if anything, have increased their fearfulness. Subjects who received modeling with information displayed the highest level of fear arousal throughout the modeling trials. On the other hand, subjects in the participant modeling condition initially experienced high arousal, followed by a rapid rate of extinction and at the final performance of each approach response, they reported no more fear than the modeling group, despite the fact that they were confronted with direct threats rather than weaker observed ones.

The findings of the above study revealed the importance of including tests for generalization in evaluating the relative efficacy of different treatment approaches. Modeling with guided participation proved superior to live modeling alone in tests conducted with the snake that was

originally employed in the treatment, but the two methods yielded essentially equivalent results on generalization with an unfamiliar reptile.

The guided participation component of the modeling approach under discussion can be further analyzed into several elements. Participant observers enacted progressively more difficult responses without the occurrence of feared consequences, and these repeated disconfirming experiences, in themselves, produced direct extinction of fear arousal and avoidance behavior. In addition, whenever clients were physically assisted in performing the behavior required at each step in the graded sequence, their fears and inhibitions may be reduced to some degree by physical contact with the model and by the added protection that this behavior provided. Ritter gave special emphasis to the possible anxiety-mitigating effects of physical contact.

The research previously reviewed both with children and adults demonstrated that virtually all subjects benefited from modeling alone, and that a substantial number of them achieved complete and generalized extinction of avoidance behavior. However, two studies reported by Ritter (1968b, 1969c) failed to obtain significant reductions in avoidance behavior solely through modeling. Ritter attributed the discrepant findings to the brevity of the treatment and to the fact that in one of the experiments involving a group procedure, observations of the fearful perfor-

mances of group members may have attenuated the facilitative effects of modeling.

The process of change associated with the powerful procedure involving modeling combined with guided participation may be conceptualized as follows. Repeated modeling of approach responses, mainly through its informative function, decreases the arousal potential of aversive stimuli below the threshold for activating avoidance responses, thus enabling persons to engage, albeit somewhat anxiously, in approach behavior. Whenever vicarious extinction alone does not restore desired behavior, physical guidance through its reassuring and protective functions, serves as an additional means of reducing fear arousal and facilitating performance of previously inhibited responses. Direct contact with threats that are no longer objectively justified provides a variety of new experiences which, if favorable, further extinguish residual anxiety and avoidance tendencies. After approach behavior toward formerly avoided objects has been fully restored, the resultant new experiences give rise to substantial reorganization of attitudes.

Meichenbaum (1971), using college students in a snake avoidance treatment program, found results that suggested that coping models who subsequently overcame their fears were significantly more effective in fostering vicarious extinction than were mastery models who demonstrated total fearlessness and competence. The efficacy of the



coping model in reducing fear may be based on (a) the perceived similarity between the observer and the model which facilitates imitation, and/or (b) the explicit modeling of coping techniques to be used to overcome fears. The detailed modeling on how to cope and reduce anxiety by means of slow deep breaths and by means of self-instructional, self-assuring, and self-rewarding statements facilitated behavior change. It seemed that the demonstration of fearful behavior by the coping models did not result in an increase in maladaptive avoidance behaviors but rather provided the basis for the development of adaptive behaviors to overcome fear.

Kornhaber (1973) varied the age and degree of fearfulness of a model to determine its effectiveness on avoidance behavior in children, aged seven through nine, fearful of snakes. Girls fearful of snakes observed films of either fearless or fearful modeling by either two female adults or two female children. However, each fearful model remained fearful throughout the demonstration and all models were shown performing the tasks without the assistance of a second model. The results indicated that modeling by either fearless or fearful child models was significantly more effective than no treatment in extinguishing avoidance behavior and producing terminal task performance. Neither of the two adult modeling conditions were more significant than the no treatment group. There was no significant dif-

ference in the effectiveness of fearful and fearless modeling, but modeling by children was more effective than by adults.

King (1976) identified sixty-six first grade children as being at risk with respect to snake avoidance and implemented an experimental preventative treatment with them. These subjects observed films depicting other children displaying either a mastery or coping style of modeling in interaction with a snake. In addition, half of the children heard films supplemented by relevant verbalizations. Indices of approach and fear-related behavior reflected less fear and avoidance in subjects who received mastery modeling than in those who experienced coping-plus-rehearsal or control conditions. Analysis of the Palmar Sweat Index of physiological arousal revealed lower levels of arousal in the presence of the target stimulus for both mastery conditions as compared to all other conditions. This pattern of results was also maintained at follow-up.

Lira, Nay, McCullough & Etkin (1975) investigated the efficacy of symbolic modeling (mastery-mode) and role-playing (mastery) therapy in the reduction of avoidance behaviors with carefully selected snake phobic subjects. After brief treatment periods the role-playing subjects demonstrated significantly greater reductions in avoidance behavior than subjects in the modeling and control conditions. Post-treatment attitude ratings showed that role-playing

subjects held significantly more positive attitudes toward harmless snakes than subjects in the symbolic modeling procedure. A two month follow-up suggested that treatment gains had been maintained for both behavioral and subjective reports.

A recent variation on the use of modeling procedures for avoidance behaviors has been Cautela's (1974) covert modeling procedures. He suggested that modeling effects can be achieved covertly via imagination, which he termed covert modeling. The modeling cues, presented via instructions, are imagined by the subject. In this procedure, the representational images thought to be important in mediating live or film modeling are focused upon directly. Cautela, Flannery & Hanley (1974) recently have shown that reduction in avoidance can be achieved equally well in college subjects by both covert as well as overt modeling procedures. Kazdin (1974a, b & c), using snake fears in college students, has also supported the efficacy of covert modeling techniques. He found that imagination of a model similar in age and of the same sex led to greater reduction in avoidance behavior than imagining a model dissimilar on these dimensions. In addition, he found that coping models evidenced greater improvement than mastery model subjects on behavioral and attitudinal measures of anxiety and avoidance, thus lending support to the results by Meichenbaum (1971).

However, the potential effectiveness of covert modeling procedures was questioned when compared with guided participant modeling in a recent study by Thase & Moss (1975). In the covert modeling conditions subjects used either a similar other or themselves as the model and were asked to image fifteen treatment scenes which were expanded from the items on the Behavioral Avoidance Test based on items by Kazdin (1973). Imagery items employed coping models. All fifteen scenes were presented in each session for a total of four thirty-minute sessions. Subjects, all college students, in the guided participant modeling (GPM) condition first viewed the model perform all of the items on the behavioral test, followed by the model guiding the subject's participation through progressively more demanding items. Results indicated that greater improvement resulted for the GPM condition than for all other conditions. The difference in approach behavior between covert modeling groups and the control group was of borderline significance. Subsequent reassignment of unsuccessful subjects to the GPM treatment produced gains comparable to the original GPM group. Moreover, covert modeling techniques may have limited value as a treatment tool with young children due to its reliance on symbolic imagining (Chertock, 1976).

#### Medical Applications

This literature review was primarily organized for the purpose of exploring the degree to which modeling procedures

were applicable to the natural setting described in the early section of this paper, where a commonly feared stimulus was experienced to an equivalent degree by all members of a sample. The results on the efficacy of modeling procedures with avoidance behaviors seems to provide a feasible and powerful tool for aiding in the elimination of children's fears of medical procedures, especially as a preventative technique. The research in this specific area is quite recent and open for exploration of both parametric constraints and conceptual analysis. Many of these studies reported were either anecdotal case studies or relied on small sample sizes for the demonstration of results. First, a brief discussion of two recent studies utilizing symbolic modeling techniques with adult dental avoidance behavior are presented.

Shaw (1973) found that unfavorable previous experiences with dental work was the primary etiological basis for dentist avoidance in adults. Components of fear included high pain sensitivity, fear of injections, fear of dental equipment, and instructions. After contact through newspaper advertisements and a pretreatment assessment in a dentist's office which involved both self-report and behavioral indices of dental fear, thirty-six subjects (average age = thirty) were randomly assigned to one of four treatment groups: modeling, desensitization, placebo control, and assessment control. Modeling was found to be the most eff

fective treatment. Wroblewski (1973) randomly assigned adult dental phobics to one of three treatment conditions. Nine were treated by symbolic modeling and deep muscle relaxation. Nine were treated with symbolic modeling alone, while the remaining nine subjects received a stringent attention-placebo designed to parallel to rationale of desensitization proper. Each group was also divided into high and low fear. The results clearly showed the effectiveness of the symbolic modeling with deep muscle relaxation over the other two groups. The analysis of results for high versus low fear subjects yielded only partial support for the hypothesis that deep muscle relaxation would be necessary for the treatment of only the high fear subjects.

A collaborative effort of psychologists and dentists to reduce children's fears of dentists resulted in the development of a modeling film called "The Red Toothbrush" (Adelson, Liebert, Poulos & Hershkovitz, 1972). In their study, thirty children (half above age seven and half below), all of whom were reported as fearful of dentists, served as subjects. One third of the children in each age group saw the experimental film, one third saw an ADA film, "A Child's First Visit" and the remaining third served as untreated controls. Following the treatment, attitudes of the children towards dentists were assessed. The attitudes of the children over seven years were not influenced by the experimental film viewing but younger children who viewed

the film answered the questions more positively towards dentists than those who saw the alternate film or who were in the control condition. Unfortunately, no studies with observational data in a dental office had been conducted to evaluate the experimental film's effectiveness in actually reducing fears.

In a study comparing the potential effects of systematic desensitization and symbolic modeling on young children's behavior at their first dental appointment, Machen & Johnson (1972) used thirty-one subjects, aged three to five years, and randomly assigned them to either the desensitization, model learning or control group. Before their initial dental visit, the desensitization group received a twenty minute therapy session in which they were presented objects associated with dentistry arranged in a hierarchy of anxiety production. The model group was shown an eleven-minute videotape of a child exhibiting positive behavior during a dental visit. Visit one consisted of a clinical examination, prophylaxis and intraoral radiographs. Preparation and placement of an amalgam restoration was completed during each of visits two and three. The behavior of the children was rated independently by two previously trained observers whose inter-reliability was 0.96. Results showed that both therapy groups had significantly more positive behavior than the control groups during visits two and three, although there were no differences observed for the

first visit.

White, Akers, Green & Yates (1974) used fifteen females aged four through eight, selected on the basis of prior disruptive behavior at their first dental treatment. These investigators used a live model, also female, aged eight, who was rehearsed in the specific mode of responding necessary to maximize the effectiveness of her behavioral displays. The subjects were divided into three different groups. In the modeling condition, each subject was seated behind a one-way viewing screen with a dental student who informed the child that she was to observe a patient undergoing dental treatment. There were six sessions, each of five minute duration. In control condition I, each subject was seated with a student behind the same one-way screen on six separate occasions. However, no model was present and the dentist and his assistant merely named and manipulated the same equipment utilized in the modeling condition. In control condition II, subjects were in no way involved in observation of the operatory, professional team, or model in order to control for the effects of time on the extinction of dental fear. Behavior checklists were designed to evaluate both approach and avoidance behaviors. The results of this study clearly supported the efficacy of modeling as a means of curtailing phobic behavior in young dental patients. Under treatment, the modeling subjects never required direct support from a significant other, while sub-



jects who were in control condition I consistently demanded support in order to continue treatment.

Gordon, Terdal & Sterling (1974) in an anecdotal case report, again confirmed the efficacy of using a live model in reducing severe dental fears in a 4½ year old girl. What was significant about this case from this review's point of view was that the investigators attributed her intense dental fears as resulting from repeated and prolonged hospitalization during the first three years of her life. This case gives indirect, but highly suggestive evidence of the potential problems that can ensue from traumatic hospitalization experiences.

In one of the few failures to demonstrate clear-cut gains from overt modeling methods with children, Sawtell, Simon & Simeonsson (1974) studied seventy-three children aged two through twelve years, who were without prior dental experience. Appointment times were scheduled so that only one child and parent were in the clinic during the study at one time. Only one appointment was used for each subject, consisting of two parts. In the first part the subjects were exposed to preparatory control or treatment methods used to shape cooperative behavior. In the second part the amount of target behaviors was recorded during stages of dental treatment. The subjects were randomly assigned to one of five treatment groups: desensitization, behavior modification, vicarious symbolic modeling, placebo,

and control group. Using a posttest-only control group design, the subjects were exposed to their respective treatments and were subsequently measured for behavioral change. The behavior modification treatment consisted of socially reinforcing cooperative behaviors previously defined by operational criteria with the use of social reinforcers applied consistently and contingently. The symbolic modeling treatment consisted of showing the subject a twelve-minute videotape of nonfearful models undergoing the five procedures which would be performed on them later. The subjects assigned to the placebo control group were not exposed to any dental equipment or procedures, but spent treatment time in a conference room in nondental conversation with a dental assistant. The purpose of the placebo group was to determine whether or not exposure to a friendly dental assistant, dressed as a medical person, would in itself have a preparatory effect upon the subject's cooperation in the operatory. The control group remained in the waiting room and was not exposed to any dental equipment procedures or personnel until they entered the operatory for the initial examination by the dentist. The major data gathering instrument was a frequency sheet to register the occurrence of specified behaviors within ten-second intervals. The results showed that the placebo control condition was as effective as either desensitization or filmed modeling in keeping noncooperative behaviors low. However,

there were some methodological problems which limit the generalizability of the study. First, there was a tendency of the raters to allow the rating of one characteristic to influence the ratings of other behaviors, producing a halo effect. Secondly, and perhaps most important, the dental visit in this study did not include restorative procedures, the aspect of the treatment that produces the most disruptive behaviors. Machen & Johnson (1972) also found no differences between the treatment and control groups during the first visit but significant changes occurred during the actual dental treatment.

In their study of the modification of anxiety-related disruptive behaviors in dental treatment, Melamed, Weinstein, Hawes & Katin-Borland (1975a) matched fourteen inner-city children, aged five to nine, attending a pedodontic clinic and showed them either an experimental film depicting a four year-old baack child undergoing a dental restorative procedure or were given an unrelated drawing task before dental treatment. Measures used included a maternal anxiety questionnaire, the Children's Fear Survey Schedule and a behavior rating scale developed by the investigators. The Interrater reliability coefficient was 0.97. There were a total of three dental sessions, with the experimental manipulation occurring between the second and third visits, when restorative procedures were undertaken. Analysis of variance revealed no significant differences between groups in re-

spect to the dependent variables before the experimental manipulation. However, there was a significant reduction in disruptive behavior during restorative procedures for children in the experimental group as compared with the control group. The children in the control group showed more than a 120% increase in disruptive behavior over their initial levels. Although the scores on the Children's Fear Survey Schedule were not statistically different between groups at session three, there was a trend toward reporting increased anxiety by the children in the control group. The children's subjective anxiety did not correlate with their behavior during treatment. This tended to support the concept of multidimensionality of the fear construct and the idea that change in fear manifestation can take place in one system (behavior) without necessarily affecting another (subjective report) modality. A subsequent study by Melamed, Hawes, Heiby & Glick (1975b) replicated their first one with some added methodological refinements. First, they used another film of comparable length and interest for the control condition. Secondly, they added a physiological measure of arousal level, the Palmar Sweat Index (PSI). Sixteen children, aged five through eleven, with no previous dental experiences were randomly assigned to one of the two groups and matched according to age, sex, SES, and initial scores on the modified Children's Fear Survey Schedule with dental specific items included. The same behavior profile

rating scale was utilized. Again, significant differences in disruptive behaviors during restorative procedures were found in the anticipated direction with the observer's rating of fear. Although scores on the PSI and CFSS did not differentiate the groups at a significant level, there were trends in the PSI scores toward greater reduction in arousal for the experimental groups from before to after the film presentation, and from before film to after treatment.

Finally, there have only been three studies using modeling procedures to modify children's fears of some aspects of the actual hospital routine. Vernon (1973) studied thirty-eight children, aged four through nine, who were hospitalized for minor elective surgery. Prior to surgery, half of the subjects were randomly assigned to view a preparation film, which depicted other children responding calmly to anesthesia induction. The other half received no preparation. The subject's responses were assessed using global mood ratings during anesthesia induction, one day later by projective tests of their anxiety toward hospitals and medical procedures, and six and thirty days later by the parents using a posthospital behavior questionnaire. The results showed that children who observed the modeling film exhibited significantly less disruptive behaviors during anesthesia induction than the controls, as measured by the global mood scale. There was also evidence at the four-week (though not at six day) follow-up for the significant

treatment effect. The author attributed these results to the fact that the modeling film did not prepare the children for anything more than the actual anesthesia induction. This may have produced relatively high discrepancies between expectations engendered by the film and actual experiences in the treatment phase. In addition, there were other methodological problems with the study. The global mood scale only showed modest validation support. Secondly, validity of the projective test was not presented. Finally, the control group was not adequate in controlling for either activity or time spent with the investigator. It was not possible to determine whether the mere act of watching a movie or the content of the movie itself was the critical variable in the results obtained.

Melamed & Siegel (1975c) used multiple state and trait measures of anxiety to assess both prehospital personality and changes as a result of the modeling film. Sixty children, aged four through twelve, who had no prior history of hospitalization and who were to have brief elective surgery were used. The control group, which was matched for age, sex, race, and type of operation, also saw a film whose content was unrelated to hospitalization. In addition, they had the mothers complete the Behavior Problem Checklist (Peterson, 1961) both before and approximately four weeks after discharge to evaluate the posthospital effects of the different treatment groups. This study was also impor-

tant in that the hospital selected for the study was a progressive pediatric one where extensive preoperative preparation was normally performed by the medical and nursing staff to all entering children. The modeling film was used to determine its potency over and above that of the more traditional type of preparation. The child was assessed four times during the treatment, pre and post film, the night prior to surgery and approximately four weeks after discharge at their post-operative physical examination. The state anxiety measures were the PSI, the Observer Rating Scale of Anxiety (average interrater reliability was 94%) and the Hospital Fears Rating Scale, modified from the Children's Fear Survey Schedule by the investigators. The trait measures of anxiety were the Children's Manifest Anxiety Scale, the Anxiety Scale of the Personality Inventory for Children and the Behavior Problem Checklist. In addition, the parent also filled out a Parent's Questionnaire.

The efficacy of preoperative preparation using a film of a child undergoing hospitalization and surgery was demonstrated on all measures of transitory anxiety. The experimental subjects who had viewed the hospital peer-modeling film showed lower sweat gland activity, fewer self-reported medical concerns, and fewer anxiety-related behaviors than the control subjects at both preoperative and postoperative assessments. Since pretreatment assessment revealed that both groups were relatively equivalent on the dependent var-

iables, any differences between groups can be reasonably attributed to the treatment conditions. The fact that there was no significant reduction in anxiety for children receiving hospital-initiated preparation, and the fact that group differences continued to exist at the follow-up assessment, strongly argued for the need for more preparation than is ordinarily received once the child is in the hospital. Again, modeling procedures seemed to present clear advantages in both effectiveness and feasibility where children's medical fears were concerned.

A subsequent study by Melamed, Meyrr, Gee & Soule (1976) at the same hospital partially replicated the results of their first hospital preparation study using modeling techniques. Using the same state and trait measures of anxiety with the children, aged four through twelve, who had no prior history of hospitalization, they manipulated the time of preparation and whether the subject received standard preoperative preparation from the hospital staff in addition to the modeling film or just the film alone. Assessment times were kept identical to their first study. The standard hospital preparation included the use of picture books, display of anesthesia and surgeon's masks, and often, an explanatory visit by the surgeon and/or anesthesiologist. The time of preparation was either one hour or six to nine days prior to admission, depending upon group assignment. This assignment was conducted so as to counter-



balance the groups for age, sex, race, and type of surgery.

Overall, the results indicated a reduction in anxiety for the children. The reduction of self-reported medical concerns and the decrease in the independent observer's ratings of the children's anxiety level after viewing the film, preoperatively and at the postoperative assessments, were consistent with the findings from their first study. In addition, children who had seen the film in this study showed a significant reduction on severity of behavior problems from prehospital to posthospital assessment, as measured by the Behavior Problem Checklist. The degree of chronic anxiety measured on the Children's Manifest Anxiety Scale had also been reduced significantly after the hospitalization. The lack of significant group differences between children receiving minimal as opposed to more extensive preoperative preparation was again, supportive of the potency of the film's effectiveness in preparing children for hospitalization and surgery even where high patient/staff ratios did not allow for individual attention. In terms of situational anxiety as assessed by the Palmar Sweat Index, the children who had seen the film on the day of admission showed lower arousal when they also had standard preoperative preparation, whereas those who had been shown the film one week in advance of admission came into the hospital less aroused and showed least overall arousal when only minimal preparation was offered. This would be consis-

tent with their previous results that showed that children seeing the film at admission showed an increase in postfilm arousal followed by a reduction preoperatively. That group combined film viewing with standard preparation. The researchers suggested from this the need to investigate the effectiveness of viewing the modeling film a week in advance with a control group who came to view an unrelated film one week in advance and then have minimal inhospital preparation.

Finally, the authors' results tended to support Mellish's (1969) position that age should be an important consideration in deciding when a child should be prepared for imminent surgery. Older children who viewed the film one week in advance had fewer behavior problems after their hospital experience than older children who viewed the film at the time of admission. Younger children showed less Palmar Sweat Index arousal than older children prepared one hour before admission. There was, in fact, a significant increase in arousal at the postoperative assessment of younger children prepared one week in advance when compared with younger children who saw the film on the day of admission.

However, it should be noted that the authors did not present any psychometric data on their dependent measures in either report, although it can be inferred from their significant results that the tests have adequate reliability.

Moreover, the 'standard' preparation was to some extent variable, depending upon which person did the preparation and which doctors were able to be involved on any particular day. Therefore, it is clear that more research is needed in this area of clinical research. Beside gathering pertinent psychometric data, the generalizability of the film's effectiveness in hospitals without extensive preoperative preparation needs to be better assessed.

Another important issue that needs to be addressed is whether alternative means of preparation, such as play therapy, can be as effective in reducing medical fears with some children and whether its combination with modeling techniques increases the overall reduction in anxiety and behavior problems. With this in mind, there is a need for further research on the nature of the underlying cognitive and defensive processes involved in unsuccessful preparation and coping with stress. Greater attention has to be directed to the content analysis of the child's play.

## CHAPTER II

### METHOD

The comparative effects of preparation via viewing a modeling film and play therapy techniques on hospital related fears in children undergoing surgery was investigated.

#### Experimental Design

A two-way factorial design was used in this study. The first factor was Treatment (film + play, film, or play), and the second factor was Assessment Time. The subjects were randomly distributed among the three treatment groups. Analysis of the results showed that groups were roughly matched for age, sex, and type of surgery.

#### Subjects

The subjects were eighteen boys and girls (eight boys, ten girls) between the ages of four and twelve years (mean age, six years, ten months) who were admitted for brief, elective surgery at St. Patrick's Hospital. All surgery was considered minor in nature, necessitating a hospital stay of two to four days duration. The majority were for tonsillectomies and adenoidectomies, although a few were for genital-urinary tract surgery. The subjects were selected from

those patients who were being examined by previously contacted physicians in the Missoula area who were soon to enter St. Patrick's for one of the above mentioned types of surgery. Written permission from the child's parents was obtained prior to participation in the study.

### Independent Variables

The modeling film used, entitled Ethan Has an Operation, was developed by Melamed and Siegel (1975) using the Rainbow Babies' and Children's Hospital in Cleveland. It depicts a seven year-old white male who has been hospitalized for a hernia operation. This film, which is sixteen minutes in length, consists of fifteen scenes showing various events that most children encounter when hospitalized for elective surgery from the time of admission to time of discharge. These scenes include the child's orientation to the hospital ward and medical personnel, such as the surgeon and anesthesiologist, having a blood test and exposure to standard hospital equipment, separation from the mother, and scenes in the operating and recovery rooms. In addition to explanations of the hospital procedures provided by the medical staff, various scenes are narrated by the child, who describes the feelings and concerns that he had at each stage of the hospital experience. Both the child's behavior and verbal remarks exemplify the behavior of a coping model so that while he exhibits some anxiety and apprehension, he is able to overcome his initial fears and complete each

event in a successful and nonanxious manner.

The play therapy treatment, called "Hospital", was developed by the investigator. The "Hospital" consists of a miniature pediatrics ward, including an operating room, medical examination room, playroom, sleeping quarters with bathroom, and corridor for cars and ambulance to enter and leave the hospital. Dolls representing a doctor, nurse, parents, and children were available. Some of these dolls and places within the hospital were coded as "medically-relevant". In addition, there were a large variety of toys within the hospital also coded "medically-relevant" (i.e., syringe, thermometer, stethoscope) and an equal number of equally attractive toys that were coded "non-medically-relevant" and included toys occasionally found in pediatric wards of hospitals (i.e., toy cars, puzzles, musical instruments). Care was taken to have an equal number of gender-appropriate toys in this latter category. It was believed that this specific play condition would create a situation in which many behavioral observations could be made relevant to fears and defenses against hospitalization and medical procedures.

#### Dependent Measures

Seven measures of the child's emotional behavior were employed, in order to assess the various response classes indicative of anxiety. Two of these measures were designed to measure trait or chronic anxiety levels: the Anxiety

Scale of the Personality Inventory for Children, and the Children's Manifest Anxiety Scale (which henceforth will be abbreviated as CMAS). Two measures developed by Melamed & Siegel (1975), the Hospital Fears Rating Scale and the Observer Rating Scale of Anxiety were used to measure "state" or situational anxiety. The Behavior Problem Checklist was used to assess the child's emotional and behavioral adjustment, while the Parent's Questionnaire, also developed by Melamed & Siegel, was employed to measure maternal anxiety related to the child's hospitalization. Finally, an Operating Room Anxiety Scale, developed by the investigator, was used to assess the degree of anxiety and cooperation displayed by the child during the anesthesia induction, which occurred immediately prior to the actual surgery.

A defensiveness questionnaire was also administered to assess the child's tendency to deny common weaknesses. In addition, an Observer Rating Scale of Play Behavior, constructed by the investigator, was used to assess the play behavior of each child in the relevant treatment groups during the play therapy game "Hospital".

Appendix A lists all the dependent measures used in this study. These measures are discussed in more detail below.

The Anxiety Scale of the Personality Inventory for Children consists of thirty items which were rationally derived from the Personality Inventory for Children (Wirt &

Broen, 1958; cited in Melamed & Siegel, 1975). These statements, which the parent rates as true or false about her child, intend to measure chronic, stable anxiety.

The Children's Manifest Anxiety Scale (CMAS), developed by Castaneda, McCandless, and Palermo (1956) consists of fifty-three items which measure self-reported anxiety. The child responds yes or no to each statement read by the experimenter, as it applies to him or herself. The total score is determined by the number of yeses on forty-two of the items. The other eleven items, the L scale, are used to indicate a tendency to falsify answers. A sample of 361, fourth through sixth grade children yielded Pearson product-moment correlation coefficients at one week retest intervals of about 0.90 for the anxiety scale and at about 0.70 for the L scale. Intercorrelations between the anxiety and L scale clustered around the zero value.

The Hospital Fears Rating Scale (Melamed & Siegel, 1975) has a total of twenty-five items, and is a self-report measure of hospital fears. Eight items are from the Medical Fears Subscale, factor analyzed from the Fear Survey Schedule for Children (Scherer & Nakamura, 1968). An estimate of the reliability coefficient for the Fear Survey Schedule was obtained on ninety-nine children aged nine through twelve by correlating 'total number' scores from the odd-even portions of the test using the Spearman-Brown Prophecy Formula. The  $r_{xx}=0.94$  indicated a high internal consistency



reliability. Another eight items with face validity for assessing hospital fears were also included, as were nine non-related filler items. Each subject rates his or her degree of fear to the item read by the experimenter on a "fear thermometer" ranging from a score of one (not at all afraid) to a score of five (very afraid). The numerical total on the sixteen medical fear items determined the total score.

The Observer Rating Scale of Anxiety (Melamed & Siegel, 1975) was the second measure of situational anxiety used. It is composed of twenty-nine categories of verbal and skeletal-motor behavior thought to represent behavioral manifestations of anxiety in children. A time-sampling procedure is used in which an observer indicates the presence or absence of each response category during three-minute intervals in a nine-minute observation period. Examples of items indicative of anxiety include "crying", "trembling hands", "stutters", and "talks about hospital fears". The frequency of responses observed during the total period of observation is the subject's score on the scale. Rater reliability was assessed throughout each phase of the experimental procedure. Average interrater reliability, which is computed by dividing the number of observer agreements by the total number of categories of behavior observed was over 94% in both Melamed studies (1975, 1976).

The Behavior Problem Checklist contains fifty-five

behavior problems frequently observed in children aged five through twelve (Peterson, 1961) and was used to assess the effects of hospitalization on the child's emotional and behavioral adjustment. Items on the total checklist, subdivided into the four factors of conduct disorder, personality problem, immaturity, and socialized delinquency, were rated by the child's mother as '0' (no problem), '1' (mild problem), or '2' (severe problem). Using 831 kindergarten and elementary school children, Peterson found the same two most important factors on the four subgroups separately (kindergarten, grades 1-2, grades 3-4, grades 5-6). Given the fact that no rotational technique maximizing similarities between factor solutions obtained from the different groups was used, these results were indicative of high similarity. Peterson (1961) found that for the sample of 126 kindergarten children of the above sample, inter-teacher reliabilities were 0.77 for the conduct problem dimension and 0.75 for the personality problem dimension. Quay and Quay (1965) obtained ratings from two teachers on a sub-sample of seventh and eighth graders. The inter-teacher correlations for the seventh grade group were 0.58 for conduct problem and 0.31 for personality problem, for eighth graders, the correlations were 0.71 and 0.22, respectively. These teachers averaged only one hour per day contact with the students whom they rated. Quay, Sprague, Shulman, & Miller (1966) obtained ratings from both parents and teachers on a sample

of children who were clients of a child guidance clinic. The correlations between parents and teachers were 0.78 for conduct problem and 0.67 for personality problem. Noffsinger (1968; cited by Peterson in an unpublished manuscript, 1969) obtained two-rater reliability coefficients of 0.83 for conduct problem and 0.61 for personality problem in a sample of twenty emotionally disturbed elementary age children in an educationally oriented residential facility.

Additional stability data for the Behavior Problem Checklist came from a study of public school children rated as kindergarten and first grade children in late spring, 1966, and as first and second graders in late spring, 1967. Different teachers provided the two ratings. In a sample of 428 males the coefficients of stability were 0.52 for conduct disorder, 0.38 for personality problem, 0.35 for immaturity, and 0.21 for socialized delinquency. For 378 females, the coefficients were 0.50, 0.28, 0.31, and .40, respectively.

The Parent's Questionnaire (Melamed & Siegel, 1975) was used to obtain a global measure of maternal anxiety related to the child's hospitalization. The mother rated, on a one to five scale, sixteen statements about her own anxiety about being a hospital patient, her child's past reactions to medical procedures, and her expectations as to how her child would react to current hospitalization. This scale was scored such that high scores reflected lower

levels of parental anxiety.

An Operating Room Anxiety Scale was developed by the investigator as a global measure of the child's reactions just prior to and during anesthesia induction. This scale, rated by the attendant anesthesia personnel, consists of four statements, on a one to five scale, designed to assess the degree of cooperation or fear displayed by the child as the induction procedure took place. This scale was scored such that high scores reflected lower levels of anxiety and a corresponding high degree of cooperation.

Two defensiveness scales were used in the study, depending upon the age of the subject. First, the questionnaire for older children (Wallach & Kogan, 1965) was a twenty-seven item self-descriptive inventory read by the experimenter which measures the tendency of children to deny common weaknesses, which is common to L scales in other personality measures, such as the L scale of the CMAS. Examples of items are "I always tell the truth", and "I have never had a scary dream". A sample of 151 fifth-grade children with a mean age of 10.7 years yielded a reliability coefficient (coefficient alpha) of 0.74. The questionnaire for the younger children (Wallach, Green, Lipsett, & Minehart, 1962) consisted of seven similar statements read by the experimenter. These seven items were factorially derived from a twenty-eight-item questionnaire and accounted for thirty-six percent of the total variance.

Using a sample of 120 first grade girls (mean age, six years, nine months), these seven items were found to possess loadings of 0.35 or better on the major factor and loadings of less than 0.35 on any of the minor factors. As had been hoped by these investigators, all seven of these high loading items were defensiveness items (from an initial set of eleven items designed on an a prior basis). Standard deviations for these seven items were 0.43, 0.49, 0.47, 0.48, 0.50, 0.50, and 0.49, respectively. The means for these items, in the same order, were 1.76, 1.59, 1.67, 1.35, 1.56, 1.48, and 1.58 (an item was coded '1' if the subject chose the first alternative of the statement, '2' if (s)he chose the second alternative), indicating that the items discriminated well. An odd-even reliability coefficient was computed and corrected using the Spearman-Brown Prophecy Formula and yielded a reliability coefficient of 0.79.

The Observer Rating Scale of Play Behavior was constructed by the investigator. Using a time-sampling procedure, the experimenter recorded the time period during which the subject interacted with a particular doll, toy, or area of the hospital and the type of interaction (using categories such as aggressive, fearful, neutral, depressed, happy, and matter-of-fact) displayed during that unit of time. The total observation period was fifteen minutes. From the data collected in the play situation, two measures were calculated. For both measures, for each unit time

interval, the play materials the subject interacted with were recorded, together with the corresponding locations in the hospital that these objects were used in during that specific time interval. In the analyses, these object-location combinations were collapsed over unit time intervals and assigned to one of the following four mutually exclusive categories: (a) object medically-relevant, location medically-relevant, (b) object medically-relevant, location non-medically-relevant, (c) object non-medically-relevant, location medically-relevant, and (d) object non-medically-relevant, location non-medically-relevant. For a given subject, the total number of object-location combinations within these categories were indicated by A, B, C, and D, respectively. The first measure was then calculated as follows:  $(A + B + C) / (A + B + C + D)$ . The second measure was:  $(2A + B + C) / (A + B + C + D)$ . The first measure reflected the proportion of the total playing time during which a subject played either with a medically-relevant object or in a medically-relevant location. The second measure was a variation of the first measure, and gave a double weight to those object-location combinations where both the object and the location were medically-relevant. When the probabilities of playing with a medically-relevant object and of playing in a medically-relevant location, respectively, are independent, then the last measure reflects the probability of a subject involving her- himself in

medically-relevant play.

### Procedure

Table 1 presents a time table of the schedule of events and measures administered to each experimental group. Subjects and their families in all three treatment groups reported to St. Patrick's Hospital approximately one hour prior to their scheduled admission time. They were met at the entrance to the Pediatric Ward by both the experimenter (E) and a behavioral observer (O). In all groups, the parents and child were separated once the child was shown the assessment room (Head Nurse's Office). The parents were taken by the O to the adjoining cafeteria where they were briefly told the nature of the research procedure again (an introduction was given to all parents when their participation was requested at the doctor's office) and they signed the consent form, on which they indicated the child's age, sex, grade, whether (s) he was on any medication, any previous hospitalizations of the child or siblings, type of surgery performed, and name of their surgeon. Then, the mother was instructed to fill out the Parent's Questionnaire, the Behavioral Problem Checklist, and the Anxiety Scale of the Personality Inventory for Children. The O then excused her- himself from the room but informed the parents that (s)he would return in about ten minutes to answer any questions that came up.

During this time, the child remained in the assessment room with the E who engaged the child in friendly conversation in an attempt to put him or her at ease. Mothers of reluctant children were allowed to stay with the child until (s)he was comfortable with the E. The E then sat down with the child and played a neutral ball game to establish rapport. Usually, this game was played while both the E and subject were sitting on the floor to enhance physical closeness and informality. The E then informed the child during this time that another "friend" (the O) would come into the room soon to watch them talk and that later on the child and E together would do some things in a different room. Toward the end of this neutral play and talk, the O entered the room and began rating the subject on the Observer Rating Scale of Anxiety. When this occurred, the E administered the Wallach et al. Defensiveness Scale, the CMAS, and the Hospital Fears Rating Scale, in that order.

Following this assessment, the O left the assessment room so as to remain blind as to the type of treatment administered each subject, while the E then escorted the child and remained with him/her in the experimental room to either view the modeling film, engage the child in the play therapy procedure, or do both in the order of film first, play second. When the E assembled the game for the appropriate subjects, she said, with some variation from child to child, the following:



TABLE 1  
TIME TABLE OF EVENTS

	M (mother)	C (child)	E (experimenter)	O (observer)
	<u>Experimental Groups</u>			
	<u>I</u>		<u>II</u>	<u>III</u>
	Film + Play		Film-Only	Play-Only
	1 hour prior to hospital admission		IDEM.	IDEM.
Pre-treatment (#1)	M-Consent form, data on child, Parent's Q, Behavior Problem Checklist, Anxiety Sc. of the Personality Inventory for Children		IDEM.	IDEM.
	C- Neutral game for rapport (E), Observer Rating Scale of Anxiety (O), Defensiveness Scale (E), CMAS (E), Hospital Fears Rating Scale (E)		IDEM.	IDEM.
	<u>Treatment</u>			
	Film Viewing (E present, O absent)		IDEM.	---
	Play Therapy, Play Behavior Rating Scale (E present, O absent) (10 minutes)		-----	IDEM. (15 minutes)
post-treatment (#2)	C- Obs. Rating Sc. (O), Hospital Fears Sc. (E)		IDEM.	IDEM.
Even before surgery (#3)	C- Obs. Rating Sc. (O), Hospital Fears Sc. (E)		IDEM.	IDEM.

TABLE 1 - Continued

	I	II	III
	Anesthesiology Rating Scale of Anxiety during anesthesia induction	IDEM.	IDEM.
Post- operative Follow-up (#4)	M-Behavior Problem Checklist, Anxiety Scale of Personality Inventory for Children	IDEM.	IDEM.
	C-Obs. Rating Sc. (O), CMAS (E), Hospital Fears Sc. (E)	IDEM.	IDEM.

"(Name), many of the boys and girls who come here for a few days like to play a game called "The Hospital" so I brought it here today for you to play with too. This is the operating room, the examination room, the playroom, and here's where patients like you sleep. And here are a bunch of dolls. This is the doctor, the nurse, here are a mommy and daddy, and here are some dolls your own age. There are all sorts of neat toys and things that you can play with in this hospital too (E points to a few). You start the game by taking a doll if you want (E hands subject the appropriate sex doll) and pretending to be him (or her) as s(he) goes through the hospital."

During the time the child played, the E checked which doll(s), toy(s), and location(s) the subject played in during the same time interval and rated the type of interaction the subject maintained, using the Play Behavior Rating Scale. A system of bells on a tape recorder informed the E when to start recording behaviors in the next time period and when to terminate the behavioral ratings entirely.

While the E and subject were in the experimental room, the E revisited the parents to check out how they were pro-

ceeding with their forms and if there were any difficulties. Immediately following the treatment, both the E and subject returned to the Assessment room where the O was already waiting, and who then proceeded to observe the child again using the Observer Rating Scale. Simultaneously, the E readministered the Hospital Fears Rating Scale. At the end of the post-treatment assessment, the E asked the child if (s)he was ready to return to his parents. The child and parents were then reunited and escorted downstairs, where they proceeded to formally admit the subject to the hospital.

Once formally hospitalized, no differentiation was made between children on the basis of the type of treatment given, with respect to the behavioral observer. It should be noted, however, that the E was not blind as to treatment condition. All parents were previously informed that they would be asked to leave their child's room for about fifteen minutes on the evening prior to surgery. At this time, both the E and O again assessed the child, this time in his hospital room. The E and O administered the same two scales in the identical manner that were administered at the post-treatment assessment time.

The Operating Room Anxiety Scale was attached to the medical chart of the respective subject the evening prior to surgery and accompanied him/her to the operating room. After anesthesia preparation was successfully completed, the relevant attendant filled out the form and placed it

back in the medical chart. When the child returned to the pediatric ward post-surgery, the head nurse removed the form and stored it for the E in a prearranged place in the assessment room.

All subjects returned to the assessment room at St. Patrick's an average of two to three weeks after surgery for their follow-up evaluation. At this time, the child and parents were separated and taken to the same rooms as in the pretreatment assessment. Again, the child was observed by the O using the Observer Rating Scale of Anxiety, and the CMAS and Hospital Fears Rating Scale was readministered by the E at this time. Simultaneously, the same parent who filled out the parental forms pre-treatment again completed the Anxiety Scale of the Personality Inventory for Children and the Behavior Problem Checklist. The parent was instructed to rate the child's behavior since leaving the hospital after surgery. At the end of this final assessment, both parents and child were thanked for their cooperation and reunited.

### Hypotheses

The hypotheses were as follows:

1. The film + play condition would lead to the largest decrease in hospital fears and anxiety, as reflected in the various dependent measures.
2. A negative correlation would obtain between scores

on the defensiveness scale and medically-relevant play involvement scores for the two relevant treatment groups (e.g. film + play, play only).

3. A positive correlation would obtain between scores on the defensiveness scale and post-hospital (follow-up) scores on anxiety, fear, and behavioral problem measures for all treatment groups.

4. A negative correlation would obtain between scores on the defensiveness scale and operating room anxiety scale scores.

5. A negative correlation would obtain between scores on the Parent's Questionnaire and pre-treatment scores on the Hospital Fears Rating Scale.

6. A negative correlation would obtain between scores on the operating room anxiety scale and post-hospital (follow-up) scores on the Hospital Fears Rating Scale.

7. Positive correlations would obtain between scores on the Behavior Problem Checklist and the Anxiety Scale of the Personality Inventory for Children, both pre- and post-operatively.

8. A negative correlation would obtain between scores on the Parent's Questionnaire and post-hospital scores on the Behavior Problem Checklist.

## CHAPTER III

### RESULTS

For clarity of presentation, the results section is divided into three major parts roughly corresponding to the sequence of hypotheses presented at the end of the METHOD Chapter. That is, the first part presents reliability coefficients for certain dependent measures, specifically, those developed either by Melamed and her associates or by the present investigator. The second section is devoted to those results relevant to the first hypothesis. Finally, the third part, comprising the remaining hypothesis, presents a correlational matrix of all the dependent measures with each other. Obtained means and standard deviations of all measures are presented in Appendix B.

#### Reliability

Table 2 lists the reliability coefficients obtained for the specified dependent measures using Cronbach's coefficient alpha. The only exception to this method was with the Observer Rating Scale of Anxiety, whose reliability estimate was calculated by dividing the total number of observer agreements within categories by the total number of categories of behavior that were observed. The average

inter-rater reliability obtained on this sample was 94.3 percent. Examination of the observer ratings revealed that two categories of behavior were never rated as occurring for any of the subjects. These were "crying" and "talks to himself". When these items were eliminated, the average inter-rater reliability was 88 percent, which was still considered to be an acceptable level.

TABLE 2

## RELIABILITIES FOR SELECTED MEASURES USING COEFFICIENT ALPHA

Measure	N	Coefficient Alpha
Operating Room Anxiety Scale	18	0.88
Parent's Questionnaire	18	0.54
Hospital Fears Rating Scale	18	0.81
Defensiveness Scale (younger children)	14	0.31
Anxiety Scale (Personality Inventory for Children)	18	0.77

## Main Effects of Treatment and Assessment Time

Given the large number of dependent measures used in this investigation, the main body of results to follow is presented in two groups, those comprising situational or "state" measures of anxiety, and those that reflected trait or chronic anxiety. Due to unequal cell frequencies, the first method of analysis used for both types of anxiety measures was the analysis of variance with repeated measures using the least squares multiple regression Method #1 (Over-

all & Spiegel, 1969). Method #1, known as the complete least squares or general linear model analysis, is simply a conventional least squares multiple regression solution in which each effect or interaction is adjusted for relationship to all other effects in the model. In all tables on analyses presented in this section, main effect A refers to the treatment factor, main effect B refers to the Assessment Time factor, while the interactions between these two variables is denoted by AxB. One female subject from the film group was dropped from the following analyses involving assessment time as a factor due to her missing her follow-up appointment.

#### Situational Anxiety Measures

Table 3 presents the analysis of variance for the Hospital Fears Rating Scale, while Figure 1 illustrates, for the same measure, the effects of time of measurement across all treatment groups. Inspection of Figure 1 revealed that reported hospital fears for the play therapy group was lower than for the film group at both pre-operative and follow-up assessment times, although to a non-significant degree.

Table 4 presents the analysis of variance for the Observer Rating Scale of Anxiety, while Figure 2 illustrates for this measure, the significant effects that resulted between groups across the times of measurement. Using the



Newman-Keuls comparison between means, the greatest increment occurred between pre-operative to post-operative (follow-up) assessment time ( $D_{(4)} = 4.50$ ;  $p < .05$ ) and from post-treatment to post-operative assessment time ( $D_{(3)} = 4.08$ ;  $p < .05$ ). This significant increase in anxiety-related behavior from pre-operative to follow-up assessment time was identical to the results obtained by Melamed & Siegel (1975) for both their treatment and control groups. Examination of Figure 2 revealed that the film + play group was consistently lower than the film group at all assessment times subsequent to treatment procedures, with respect to anxiety-related behaviors.

Table 5 presents the one-way analysis of variance for the Operating Room Anxiety Scale. Inspection of the table revealed no significant differences between treatment groups on this measure.

TABLE 3  
HOSPITAL FEARS RATING SCALE

Source	SS	df	MS	F
SS <sub>A</sub>	183.29	2	91.65	0.562 n.s.
SS <sub>B</sub>	80.39	3	26.80	0.164 n.s.
SS <sub>AxB</sub>	92.62	6	15.44	0.095 n.s.
SS <sub>Reg</sub>	356.30	11		
SS <sub>Dev.</sub>	8479.79	52	163.07	
SS <sub>Total</sub>	8843.98	63		

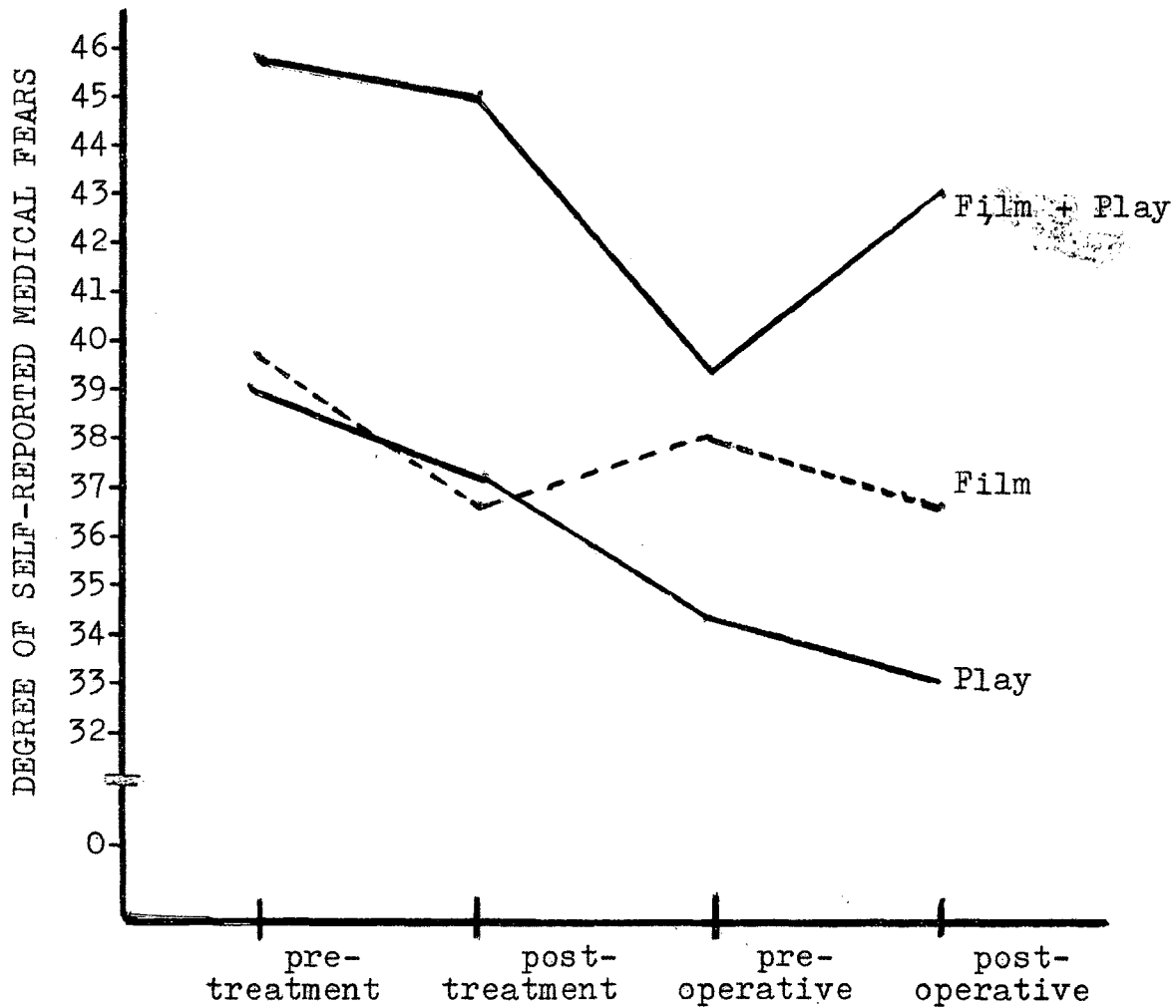


Figure 1. Degree of self-reported medical fears for all treatment groups across the four measurement times.

TABLE 4  
OBSERVER RATING SCALE OF ANXIETY

Source	SS	df	MS	F
SS	488.513	2	244.26	10.16 <sup>b</sup>
SS <sub>A</sub>	201.520	3	67.17	2.8 <sup>a</sup>
SS <sub>B</sub>	41.3111	6	6.88	0.286 n.s.
SS <sub>AxB</sub>	731.344	11		
SS <sub>Reg</sub>	1154.375	48	24.05	
SS <sub>Dev.</sub>				
SS <sub>Total</sub>	1913.745	59		

Significance levels of .05 and .01 are indicated by small letters a and b, respectively.

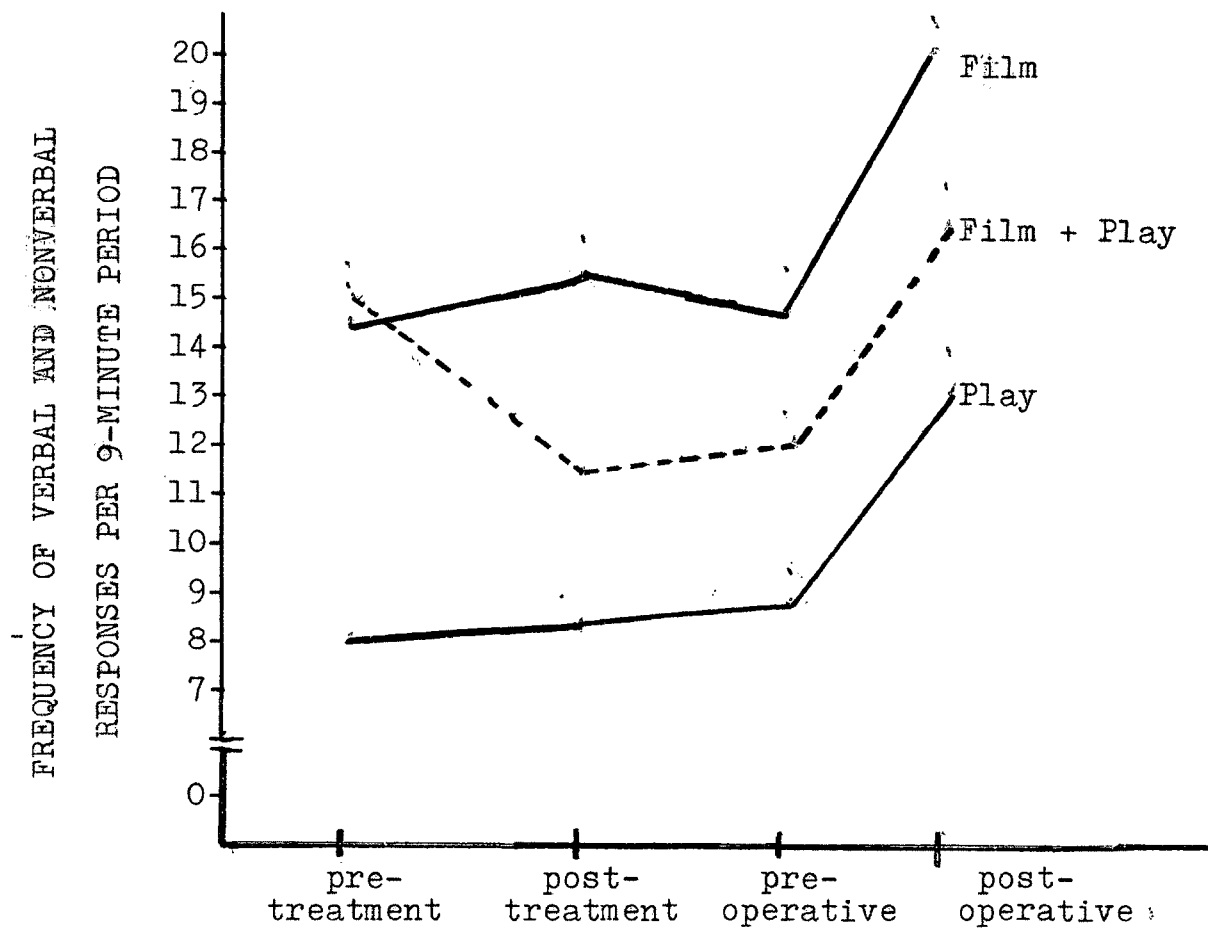


Figure 2. Frequency of observer-rated verbal and nonverbal anxiety responses for all treatment groups across the four measurement periods.

TABLE 5

OPERATING ROOM ANXIETY SCALE

Source	SS	df	MS	F
SS <sub>Reg</sub>	3.188	2	1.594	0.16 n.s.
SS <sub>Dev.</sub>	149.356	15	9.957	
SS <sub>Total</sub>	152.544	17		

Trait Anxiety Measures

Table 6 presents the analysis of variance for the

Anxiety Scale of the Personality Inventory for Children. Examination of the table revealed no significant main or interaction effects.

TABLE 6  
ANXIETY SCALE

Source	SS	df	MS	F
SS <sub>A</sub>	31.12	2	15.56	0.865 n.s.
SS <sub>B</sub>	15.23	1	15.23	0.847 n.s.
SS <sub>AxB</sub>	4.92	2	2.46	0.014 n.s.
SS <sub>Reg</sub>	51.26	5		
SS <sub>Dev.</sub>	503.56	28	17.98	
SS <sub>Total</sub>	553.19	33		

Table 7 presents the one-way analysis of variance for the Parent's Questionnaire. Inspection of the table revealed no significant differences between treatment groups on this measure.

TABLE 7  
PARENT'S QUESTIONNAIRE

Source	SS	df	MS	F
SS <sub>Reg</sub>	62.61	2	31.31	0.577 n.s.
SS <sub>Dev.</sub>	813.32	15	54.22	
SS <sub>Total</sub>	875.93	17		

Tables 8-12 display the analyses of variance for the Behavior Problem Checklist total scores and for the four factors, conduct disorder, personality problem, immaturity, and socialized delinquency, respectively. Using the Newman-

Keuls comparison between means, significant differences between treatment groups emerged only on Factor IV, socialized delinquency. The film + play group scored significantly higher ( $D_{(3)} = 0.53$ ;  $< .05$ ) than either of the other two treatment groups, which in turn, did not differ significantly from each other.

TABLE 8  
BEHAVIOR PROBLEM CHECKLIST (TOTAL SCORE)

Source	SS	df	MS	F
SS <sub>A</sub>	58.53	2	29.26	0.535 n.s.
SS <sub>B</sub>	1.42	1	1.42	0.026 n.s.
SS <sub>AxB</sub>	14.47	2	7.24	0.132 n.s.
SS <sub>Reg</sub>	74.42	5		
SS <sub>Dev.</sub>	1530.88	28	44.67	
SS <sub>Total</sub>	1606.01	33		

TABLE 9  
BEHAVIOR PROBLEM CHECKLIST (CONDUCT DISORDER)

Source	SS	df	MS	F
SS <sub>A</sub>	24.94	2	12.47	1.11 n.s.
SS <sub>B</sub>	.40	1	0.40	0.035 n.s.
SS <sub>AxB</sub>	.61	2	0.30	0.027 n.s.
SS <sub>Reg</sub>	25.95	5		
SS <sub>Dev.</sub>	314.69	28	11.24	
SS <sub>Total</sub>	340.50	33		

TABLE 10  
BEHAVIOR PROBLEM CHECKLIST (PERSONALITY PROBLEM)

Source	SS	df	MS	F
SS <sub>A</sub>	35.03	2	17.51	2.19 n.s.
SS <sub>B</sub>	.51	1	0.51	0.063 n.s.
SS <sub>AxB</sub>	.11	2	0.05	0.006 n.s.
SS <sub>Reg'</sub>	35.63	5		
SS <sub>Dev.</sub>	224.29	28	8.01	
SS <sub>Total</sub>	259.88	33		

TABLE 11  
BEHAVIOR PROBLEM CHECKLIST (IMMATURITY)

Source	SS	df	MS	F
SS <sub>A</sub>	1.25	2	0.63	0.378 n.s.
SS <sub>B</sub>	.21	1	0.21	0.126 n.s.
SS <sub>AxB</sub>	.05	2	0.027	0.016 n.s.
SS <sub>Reg'</sub>	1.52	5		
SS <sub>Dev.</sub>	46.46	28	1.66	
SS <sub>Total</sub>	47.88	33		

TABLE 12  
BEHAVIOR PROBLEM CHECKLIST (SOCIALIZED DELINQUENCY)

Source	SS	df	MS	F
SS <sub>A</sub>	1.69	2	0.845	3.66 <sup>a</sup>
SS <sub>B</sub>	.06	1	0.06	0.264 n.s.
SS <sub>AxB</sub>	.44	2	0.22	0.058 n.s.
SS <sub>Reg'</sub>	2.19	5		
SS <sub>Dev.</sub>	6.46	28	.231	
SS <sub>Total</sub>	8.62	33		

A significant level of .05 is indicated by small letter a.

Since it was found that initial scores on the CMAS correlated significantly ( $r = -.698$ ) with defensiveness scores (see Table 15 for the correlation matrix) an analysis of covariance was performed on the CMAS, using defensiveness as the covariate. The results are presented in Table 13. Inspection of the table revealed no significant main or interaction effects.

TABLE 13  
CHILDREN'S MANIFEST ANXIETY SCALE

Source	SS	df	MS	F
SS <sub>A</sub>	72.77	2	36.39	0.593 n.s.
SS <sub>B</sub>	.0001	1	0.0001	0.000001 n.s.
SS <sub>AxB</sub>	31.96	2	15.98	0.262 n.s.
SS <sub>Reg</sub>	104.74	5		
SS <sub>Dev.</sub>	981.65	16	61.35	
SS <sub>Total</sub>	1086.39	22		

It should be emphasized here that the statistical analysis used up to this point is far from being maximally powerful. There are two primary reasons for this. First, the number of subjects per treatment condition was small.

Second, the first hypothesis specified a partial ordering among the treatment conditions in terms of fear reduction. That is, the (F + P) treatment was predicted to have the most beneficial effect. The multiple regression analysis used does not specifically test for this ordering.

Barlow, Bartholomew, Bremner, and Brunk (1972) have developed a test, based on the likelihood ratio principle specifically designed for this type of situation. Briefly stated, the test is a variation of the one-way analysis of variance, where the group means are replaced by estimates of these means under the hypothesized order restrictions. In the present case,  $H_0$  was:  $\mu_{F+P} = \mu_F = \mu_P$ , and  $H_1$  was:  $\mu_{F+P} \geq \mu_F$  and  $\mu_P$ . Here,  $\mu_{F+P}$ ,  $\mu_F$ , and  $\mu_P$  stand for the group means of the film + play, film, and play conditions, respectively. This was applied to the following measures: (a) Hospital Fears Rating Scale (pre-treatment minus pre-operative); (b) Hospital Fears Rating Scale (pre-treatment minus follow-up); (c) Observer Rating Scale of Anxiety (pre-treatment minus pre-operative); and (d) Observer Rating Scale of Anxiety (pre-treatment minus follow-up). None of these analyses approached significance. However, when the further, and post-hoc, restriction was imposed of  $H_1: \mu_{F+P} \geq \mu_P \geq \mu_F$ , then significance was approached for measure (c) only ( $p < .08$ ).

The minimal differences found between treatment groups justified investigating the effects of assessment time collapsed across conditions. More specifically, it was decided to test whether these reductions of fear, anxiety, and behavior problems were essentially the same as those found in Melamed and Siegel's (1975) one treatment group. Hence, these analyses were carried out using unidirectional t-tests.



Table 14 presents the results of this series of analyses. Examination of the table revealed consistent evidence for significant reduction in these areas and suggested these reductions were the result of hospital preparation of the subject.

Both the minimal differences found between the treatment groups in the present study and the great similarity of the treatment groups, when collapsed, to Melamed & Siegel's (1975) treatment group, with respect to the effects of the assessment time, made it meaningful to compare the collapsed

TABLE 14  
t-TESTS COLLAPSED ACROSS TREATMENT GROUPS

Measure	N	t	df	p (one-tailed)
Anxiety Scale (Children's Personality Inv.)	17	2.09	16	.03
Behavior Problem Checklist	17	1.61	16	.07
CMAS	16	2.09	15	.03
Hospital Fears Rating Scale (pre-treatment to post-treatment)	18	1.26	17	.12
Hospital Fears (pre-treatment to pre-operative)	17	2.64	16	.01
Hospital Fears (Pre-treatment to follow-up)	17	2.20	16	.02
Observer Rating Scale of Anxiety (all comparisons)	(17)	< 1.00	(16)	n.s.

group of the present study to Melamed & Siegel's 'control' group, in order to determine whether treatment, per se, was beneficial. It should be noted that this series of analyses to follow was not a strict comparison because Melamed & Siegel's control group did have inhospital preparation by the hospital staff and therefore was not a pure 'no treatment' group. Moreover, the differences between hospitals experimenters, and experimental designs served as additional sources of confounding between the two studies. Nevertheless, it was still considered instructive to compare the two groups. Unfortunately, in addition, the variances of Melamed & Siegel's dependent measures were unavailable to the present investigator. Therefore, the assumption chosen for reasons of parsimony, was that these unknown variances were statistically equal to those obtained in the present study. The measures used in this series of analyses were the following: (a) Hospital Fears Rating Scale (pre-treatment minus pre-operative); (b) Hospital Fears Rating Scale (pre-treatment minus follow-up); (c) Observer Rating Scale of Anxiety (pre-treatment minus pre-operative); and (d) Observer Rating Scale of Anxiety (pre-treatment minus follow-up). Both measures (a) and (b) were in the expected direction in favor of treatment ( $t_{(45)} = 1.81$ ,  $p < .03$ , one-tailed;  $t_{(45)} = 1.20$ ,  $p < .12$ , one-tailed, respectively). The results for (c) and (d) were nonsignificant. However, it should be noted that Melamed & Siegel did not obtain significance

between their treatment and control conditions in these latter cases either.

### Correlations

This section of the results is devoted to discussing Hypotheses Two through Eight. The results for Hypothesis Two, dealing with the measure of medical-play involvement, are presented below followed by a more general discussion of the remaining hypotheses.

#### Medical Play Involvement

Hypothesis Two predicted a negative correlation between defensiveness and medical-play involvement. Using the play measures discussed in the METHOD Chapter, two correlation coefficients were obtained with the defensiveness scale (the form for younger children only), in their respective order. With their corresponding t-values, significance levels, and 95 percent confidence intervals, they are as follows:  $r_1 = -.683$  ( $t_{(6)} = -2.293$ ,  $p < .035$ , one-tailed);  $+0.042 > p_1 > -.937$  and  $r_2 = -.724$  ( $t_{(6)} = -2.568$ ,  $p < .025$ , one-tailed);  $-.039 > p_2 > -.946$ . Therefore, Hypothesis Two appeared to have been confirmed.

The relation between the two medical-play measures and pre-post treatment difference scores on selected dependent measures was next investigated. These dependent measures were the Hospital Fears Rating Scale, the Observer Rating Scale of Anxiety, the Behavior Problem Checklist

(total scores and factor scores), CMAS, and the Anxiety Scale of the Personality Inventory for Children. For clarification, it should be noted that both for the Hospital Fears Rating Scale and the Observer Rating Scale of Anxiety, there were three pre-post treatment difference scores, corresponding to each assessment time following treatment. The relationship between the two medical-play measures and the pre-post treatment difference scores were analyzed in two ways. The first method used was Kendall's tau while the second procedure was slightly more complex. In the latter method, for either medical-play involvement measure, the investigator divided the subjects into two groups, one containing those subjects whose scores on the measure were above the median, and a second group composed of subjects whose scores fell below the median. For any particular pre-post treatment difference score examined, the difference in terms of this score between these two groups was tested for significance using two-sample, t-tests. No significance was obtained using either method of analysis.

#### Hypotheses Three Through Eight

Table 15 presents the correlation matrix of all dependent measures with each other. It should be noted that within each measure, results obtained at different assessment times were all highly and positively correlated. This was considered as an indication of the reliability of these

measures. In addition, within a given measure, results obtained at different assessment times exhibited highly similar patterns of correlation with other variables. This lends further credence to the assertion that despite the small number of subjects, these data can be considered as a firm basis for testing the hypotheses previously proposed. Discussion of the results in this matrix center exclusively on the remaining hypotheses. Appendix C gives a complete overview of the missing data per subject so that the reader can determine the exact  $n$  for each correlation coefficient obtained.

#### Hypothesis Three

The hypothesis of positive correlations between defensiveness scores and follow-up hospital scores on anxiety, fear, and behavior problem measures was not totally borne out by the obtained results. Most of the coefficients except for those between defensiveness and Behavior Problem Checklist total score ( $r=.028$ ), Behavior Problem Checklist Factor III ( $r=.388$ ), and Behavior Problem Checklist Factor IV ( $r=.242$ ), were in the opposite direction. However, none of these correlation coefficients approached significance.

#### Hypothesis Four

The coefficient obtained ( $r=.052$ ) between defensiveness scale scores and scores on the operating room anxiety scale was in the opposite direction than expected but was clearly non-significant.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1: HOSPITAL FEARS, OBS. 1	1.000	0.935	0.915	0.831	0.019	-0.222	-0.388	-0.283	-0.226	0.472	0.463	0.619	0.696
2: . . . . . OBS. 2	0.935	1.000	0.933	0.786	0.006	-0.165	-0.432	-0.315	-0.191	0.458	0.432	0.622	0.593
3: . . . . . OBS. 3	0.915	0.933	1.000	0.869	0.058	-0.258	-0.390	-0.084	-0.109	0.405	0.458	0.458	0.512
4: . . . . . OBS. 4	0.831	0.786	0.869	1.000	0.352	-0.021	-0.237	-0.292	-0.208	0.499	0.464	0.541	0.612
5: OBSERV. RATING SCALE, OBS. 1	0.019	0.006	0.058	0.352	1.000	0.720	0.664	0.201	-0.162	0.329	0.322	0.129	0.121
6: . . . . . OBS. 2	-0.222	-0.165	-0.258	-0.021	0.720	1.000	0.806	0.329	-0.268	0.361	0.345	-0.105	-0.071
7: . . . . . OBS. 3	-0.388	-0.432	-0.390	-0.237	0.664	0.806	1.000	0.616	-0.103	0.084	0.145	-0.232	-0.026
8: . . . . . OBS. 4	-0.283	-0.315	-0.084	-0.292	0.201	0.329	0.616	1.000	-0.056	0.104	0.355	-0.393	-0.214
9: DEFENSIVENESS, YOUNG CHILD.	-0.226	-0.191	-0.109	-0.208	-0.162	-0.268	-0.103	-0.056	1.000	-0.107	-0.227	-0.698	-0.467
10: ANX. SCALE, PARENT'S, OBS. 1	0.472	0.458	0.405	0.499	0.329	0.361	0.084	0.104	-0.107	1.000	0.823	0.072	0.144
11: . . . . . OBS. 2	0.463	0.432	0.458	0.464	0.322	0.345	0.145	0.355	-0.227	0.823	1.000	0.065	0.128
12: CHILD. MANIF. ANX., OBS. 1	0.619	0.622	0.458	0.541	0.129	-0.105	-0.232	-0.393	-0.698	0.072	0.065	1.000	0.695
13: . . . . . OBS. 2	0.696	0.593	0.512	0.612	0.121	-0.071	-0.026	-0.214	-0.467	0.144	0.128	0.695	1.000
14: BEHAV. PROBL., TOTAL, OBS. 1	0.082	0.043	0.094	0.143	0.553	0.382	0.363	0.055	-0.116	0.389	0.421	0.222	-0.022
15: . . . . . I . . .	0.165	0.098	0.175	0.221	0.542	0.259	0.364	0.146	-0.318	0.309	0.399	0.375	0.079
16: . . . . . II . . .	0.229	0.203	0.155	0.223	0.196	0.315	0.048	-0.111	-0.254	0.589	0.561	0.275	0.138
17: . . . . . III . . .	-0.167	-0.174	-0.097	-0.093	0.542	0.304	0.444	0.042	0.345	0.050	0.073	-0.139	-0.194
18: . . . . . IV . . .	-0.054	0.100	-0.169	-0.032	0.564	0.427	0.447	0.052	0.270	0.173	0.045	-0.033	-0.320
19: BEHAV. PROBL., TOTAL, OBS. 2	0.057	0.098	0.031	0.093	0.230	0.317	0.415	0.281	0.028	0.288	0.553	-0.031	0.274
20: . . . . . I . . .	0.210	0.254	0.017	0.086	0.294	0.341	0.593	0.294	-0.119	0.215	0.436	0.193	0.389
21: . . . . . II . . .	0.038	0.013	0.125	0.085	0.077	0.231	0.265	0.362	-0.169	0.334	0.660	-0.058	0.182
22: . . . . . III . . .	-0.136	-0.072	-0.046	0.001	0.218	0.215	0.355	0.275	0.388	0.036	0.284	-0.300	0.104
23: . . . . . IV . . .	0.044	0.137	-0.096	0.137	0.126	0.017	-0.160	-0.269	0.242	0.211	-0.084	0.203	0.075
24: PARENT'S QUEST.	0.098	-0.028	0.267	0.026	-0.289	-0.157	-0.126	0.415	-0.243	0.186	0.191	-0.119	-0.094
25: OPERATION ROOM ANX.	-0.097	0.042	-0.218	-0.163	-0.189	-0.095	-0.070	-0.171	0.052	-0.355	-0.065	0.017	0.081

TABLE 15 - CORRELATION MATRIX

	14	15	16	17	18	19	20	21	22	23	24	25
1: HOSPITAL FEARS, OBS. 1	0.082	0.165	0.229	-0.167	-0.054	0.057	0.210	0.038	-0.136	0.044	0.098	-0.097
2: . . . . . OBS. 2	0.043	0.098	0.203	-0.174	0.100	0.098	0.254	0.013	-0.072	0.137	-0.028	0.042
3: . . . . . OBS. 3	0.094	0.175	0.155	-0.097	-0.169	0.031	0.017	0.125	-0.046	-0.096	0.267	-0.218
4: . . . . . OBS. 4	0.143	0.221	0.223	-0.093	-0.032	0.093	0.086	0.085	0.001	0.137	0.026	-0.163
5: OBSERV. RATING SCALE, OBS. 1	0.553	0.542	0.196	0.542	0.564	0.230	0.294	0.077	0.218	0.126	-0.289	-0.189
6: . . . . . OBS. 2	0.382	0.259	0.315	0.304	0.427	0.317	0.341	0.231	0.215	0.017	-0.157	-0.095
7: . . . . . OBS. 3	0.363	0.364	0.048	0.444	0.447	0.415	0.593	0.265	0.355	-0.160	-0.126	-0.070
8: . . . . . OBS. 4	0.055	0.146	-0.111	0.042	0.052	0.281	0.294	0.362	0.275	-0.269	0.415	-0.171
9: DEFENSIVENESS, YOUNG CHILD.	-0.116	-0.318	-0.254	0.345	0.270	0.028	-0.119	-0.169	0.388	0.242	-0.243	0.052
10: ANX. SCALE, PARENT'S, OBS. 1	0.389	0.309	0.589	0.050	0.173	0.288	0.215	0.334	0.036	0.211	0.186	-0.355
11: . . . . . OBS. 2	0.421	0.399	0.561	0.073	0.045	0.553	0.436	0.660	0.284	-0.084	0.191	-0.065
12: CHILD. MANIF. ANX., OBS. 1	0.222	0.375	0.275	-0.139	-0.033	-0.031	0.193	-0.058	-0.300	0.203	-0.119	0.017
13: . . . . . OBS. 2	-0.022	0.079	0.138	-0.194	-0.320	0.274	0.389	0.182	0.104	0.075	-0.094	0.081
14: BEHAV. PROBL., TOTAL, OBS. 1	1.000	0.891	0.768	0.751	0.324	0.459	0.405	0.445	0.212	0.027	-0.223	-0.197
15: . . . . . I . .	0.891	1.000	0.551	0.548	0.333	0.282	0.387	0.315	-0.055	-0.002	0.035	-0.248
16: . . . . . II . .	0.768	0.551	1.000	0.365	-0.070	0.544	0.355	0.603	0.235	0.136	-0.177	-0.070
17: . . . . . III . .	0.751	0.548	0.365	1.000	0.450	0.407	0.243	0.288	0.510	-0.080	-0.506	-0.090
18: . . . . . IV . .	0.324	0.333	-0.070	0.450	1.000	0.015	0.288	-0.323	0.061	0.443	-0.367	-0.030
19: BEHAV. PROBL., TOTAL, OBS. 2	0.459	0.282	0.544	0.407	0.015	1.000	0.829	0.878	0.839	0.003	-0.394	0.506
20: . . . . . I . .	0.405	0.387	0.355	0.243	0.288	0.829	1.000	0.583	0.566	0.066	-0.331	0.514
21: . . . . . II . .	0.445	0.315	0.603	0.288	-0.323	0.878	0.583	1.000	0.658	-0.271	-0.052	0.328
22: . . . . . III . .	0.212	-0.055	0.235	0.510	0.061	0.839	0.566	0.658	1.000	0.056	-0.550	0.488
23: . . . . . IV . .	0.027	-0.002	0.136	-0.080	0.443	0.003	0.066	-0.271	0.056	1.000	-0.340	-0.050
24: PARENT'S QUEST.	-0.223	0.035	-0.177	-0.506	-0.367	-0.394	-0.331	-0.052	-0.550	-0.340	1.000	-0.473
25: OPERATION ROOM ANX.	-0.197	-0.248	-0.070	-0.090	-0.030	0.506	0.514	0.328	0.488	-0.050	-0.473	1.000

TABLE 15 - Continued

#### Hypothesis Five

The coefficient obtained ( $r = -.097$ ) between scores on the Parent's Questionnaire and pre-treatment scores on the Hospital Fears Rating Scale, although in the expected direction, was clearly nonsignificant.

#### Hypothesis Six

The coefficient obtained ( $r = -.163$ ) between scores on the operating room anxiety scale and follow-up scores on the Hospital Fears Rating Scale, although in the expected direction, was also nonsignificant.

#### Hypothesis Seven

Since this hypothesis predicted results specifically based on Melamed & Siegel's (1975) data, the corresponding significance levels reported for the correlation coefficients were one-tailed rather than two-tailed. The coefficients obtained between scores on the Behavior Problem Checklist and the Anxiety Scale of the Personality Inventory for Children, both pre- and post-operatively, were all in the predicted positive direction, except for one which was between Factor IV of the Behavior Problem Checklist and the Anxiety Scale, post-operatively ( $r = -.084$ ). This coefficient was clearly nonsignificant. Of the nine remaining coefficients that were in the predicted positive direction, four were significant at the five percent level (one-tailed).



### Hypothesis Eight

As with Hypothesis Seven, because this hypothesis was also specifically predicted on the basis of Melamed & Siegel's results, the corresponding significance levels reported for the correlation coefficients were one-tailed as well. The coefficients obtained between scores on the Parent's Questionnaire and follow-up scores on the Behavior Problem Checklist were all in the predicted negative direction. However, only one of these five coefficients reached significance ( $r = -.550$ ,  $p < .01$ , one-tailed) and that was between the Parent's Questionnaire and Factor III of the Behavior Problem Checklist.

In summary, support for Hypotheses Three through Eight was mixed, at best. The only coefficients that reached significance were those predicted directly from previous research (Melamed & Siegel, 1975) in this area.

## CHAPTER IV

### DISCUSSION

The results from this investigation provided some support for the efficacy of preoperative preparation using either a modeling film or play therapy techniques for children undergoing hospitalization for surgery on a variety of behavioral and self-report measures. Most subjects showed a significant reduction in anxiety-related behaviors as compared with their initial (pre-treatment) hospital experience. Moreover, this reduction was significantly larger than in Melamed & Siegel's (1975) control group, where, in fact, no reduction was found. However, this latter finding due to the number of differences between the two studies and the fact that it too was not a pure no-treatment group, should be taken with a great deal of caution.

This study was intended to be a replication and extension of Melamed & Siegel's (1975) study. Where strictly comparable, the data obtained here replicated their results. The most pertinent replication was for the efficacy of the modeling film as a viable preoperative preparation for children undergoing brief surgery. Other examples include the significant increment in behaviorally-

rated anxiety in all treatment groups from the pre-operative to post-operative (follow-up) assessment times and the correlations obtained between scores on the Behavior Problem Checklist and Anxiety Scale of the Personality Inventory for Children and between scores on the Parent's Questionnaire and post-operative scores on the Behavior Problem Checklist.

The overall similarity obtained between the two studies makes it meaningful to challenge some of Melamed and Siegel's conclusions. Specifically, these authors asserted, from a social learning framework, that the modeling film used was uniquely effective precisely because the use of modeling effectively reduced anxiety-mediated avoidance behavior in children concerning the hospital experience and surgery procedures. That is, the content of the film, visually and verbally, depicted a child model successfully negotiating medical procedures specific to hospitalization and surgery and hence prepared the child viewers, via imitation processes, to cope with similar situations. This successful coping with similar situations thus reduced medically-related anxiety and any attendant behavior problems. However, the present results suggest that the modeling film may not necessarily be the only effective treatment approach for hospital preparation. In fact, using a modeling film does not seem to be any more effective than alternative approaches, such as play therapy,

which encourages the child to explore and express specific individual fears related to the hospital and surgery procedures, with the hoped for result that such cathartic release of tension and fears will thereby facilitate more realistic and less anxious coping strategies (Axline, 1947; Peller, 1954; Erikson, 1940). It should be stressed that this assertion of no differences between treatment approaches may only be due to the lack of statistical power in the current study and that real differences may exist.

While this investigator agrees with Melamed & Siegel's (1975) contention that in order to avoid post-hospital traumatization as reflected in psychological disturbance, extensive pre-operative preparation is advisable, both studies suffer from a particular methodological shortcoming that limits the generalizability of this statement. This is the lack of a control group in either study, particularly the present one, that receives no preparation whatsoever. It would appear essential in future research to have a control group of children who either briefly walk through the hospital prior to admission, or alternatively, are given no preparation by the hospital staff but are assessed at comparable times with the relevant dependent measures as the children in the treatment conditions. This control group would then constitute a more appropriate baseline to examine the supposed benefits of any specific form of hospital preparation. However, due to the concerns of most pediatric

staff to provide some type of hospital and surgical preparation and the ethical implications of withholding such treatment, it may not be possible to assemble such a control group. The resolution of this difficulty will have to await the ingenuity of subsequent investigators.

Be that as it may, the present results suggest that the form preparation takes may be more flexible (Cassell, 1963; Weinick, 1958; Lende, 1971) than originally suggested by Melamed & Siegel, determined by the vicissitudes of the child's previous hospital experience and expectations of surgery, coupled with the expertise and practical limitations of the particular hospital staff involved. Of course, future research of diverse preparation methods should be undertaken to bear out this tentative conclusion. The first study that clearly suggests itself is a larger scale, systematic comparison of these two treatment approaches, i.e., modeling versus play therapy techniques. The next thrust of research should attempt to identify the critical psychological dimensions characterizing treatment methods developed from differing theoretical orientations, in particular, the behavioral orientation and the expressive, more nondirective approach. Specifically, there are several preparation methods derived from these two orientations, such as modeling, modeling with graduated participation, systematic desensitization, play therapy, and puppet therapy, that should be systematically compared with

each other in order to identify the critical dimensions for anxiety reduction. Once these critical dimensions have been isolated, attention can then be directed to such questions as which type of treatment (as described in terms of these dimensions) is most beneficial for which preparation setting (e.g., hospital, physician's office, home), when previous exposure to surgery by the child has taken place (and was either traumatic or non-traumatic), and who would be the most effective therapist, given a particular treatment (e.g., nurse, physician, parent, psychologist). It is quite possible that these factors of setting, previous exposure, and type of preparer for hospitalization can interact in highly complex ways.

The nonsignificant correlations obtained between the degree of medical-play involvement and reduction in hospital anxiety and on behavioral measures were identical to the findings obtained by Lende (1971) using puppet-therapy as a preparatory technique. She found that in her sample, children who were more actively involved in the preparatory procedure did not behave significantly different after surgery from the children who were less actively involved. However, the lack of correlation between the degree of medical-play involvement and anxiety and behavioral reduction, coupled with the indications for the effectiveness of play therapy, suggested that active play involvement, per se, might not be essential for the success of this type of

treatment. That is, the value of play therapy as a form of hospital and surgical preparation was not necessarily negated by this lack of correlation since all children in the play therapy groups evidenced the same pattern of fear reduction as in the film-only group. Again, this result may have been due exclusively to the lack of statistical power in the present investigation.

Since the results arguing for the extra potency of the combined film + play treatment group were ambiguous at best, future research should be undertaken to more systematically explore this prediction of greater efficacy. Specific issues that need to be addressed are whether the order of film followed by play is more advantageous than its reverse and whether the additional time (here, 10 minutes) spent with the experimenter, and not the particular components of the treatment condition, is the critical variable effecting change.

The use of a multidimensional approach to the measurement of anxiety proved as valuable in the present study as it did in the Melamed & Siegel (1975) study in understanding the relationships and changes between subjective and behavioral subsystems of human fear and stress responses. That is, the multidimensional approach, as opposed to a unidimensional one, gives a broader picture of the child's psychological state, in particular, in that the correlational pattern of the variables allows one to draw converging

inferences regarding psychological processes and states. However, the replicability of this added information should not be overestimated. For example, Melamed & Siegel (1975) found that the self-report measure of hospital fears and pre-post CMAS scores, a measure of more chronic, as opposed to situational anxiety, were least sensitive to changes in anxiety response throughout the course of hospitalization. However, in a sample of children of the same age range, the present investigator found, on the basis of the multiple t-tests performed on the same dependent measures, that both measures were as, if not more, sensitive to changes in medical anxiety and fear as were the more behaviorally observable, situation-specific, ones.

One of the innovations of the present study to the play therapy literature in general, and to hospital preparation specifically, was the development of a specially constructed model hospital with an accompanying behaviorally oriented play rating scale. Both the play procedure and scale were specifically developed to assess each child's degree of medical-play involvement prior to hospitalization and surgery. Clearly, future research can investigate children's medical play patterns as a function of additional treatment methods, of certain personality and situational variables, or of specific parent-child interactions. One basic question that needs to be addressed is the following: Is activity level during play therapy a causal factor for



anxiety reduction or is it merely the result of some personality variable that, in turn, might or might not effect subsequent fear reduction. A second area of interest, following Meichenbaum and Burstein (1973), would be to trace the time course of medical-play involvement as a function of various hospital-related events, such as prior to formal admission, after preparatory treatment for hospitalization, following a specific medical procedure, after surgery, and finally, after hospital discharge. A final question of interest concerns whether certain parent-child interaction styles result in a greater or lesser degree of medical-play involvement by the child that is independent of hospital setting or impending surgery. With respect to parent-child interactions, it should be noted that in the present study the Parent's Questionnaire, although not a parent-child interaction measure per se, did have the expected positive correlation with the two indices of medical-play involvement, although not significantly so. The correlation coefficients were  $r_1 = .05$  and  $r_2 = .15$ , respectively.

The predicted negative correlation obtained between defensiveness scores and medical-play involvement, in addition to directly supporting the results of Meichenbaum & Burstein's (1973) work with children's play as a function of impending hospitalization, was a beginning step in looking more systematically at some of these relationships

of medical-play involvement with other variables. Thus, the play rating scale developed may be a valid and sensitive indicator of a child's defensiveness in the context of impending surgery. However, this result should be taken with a good deal of caution as it exemplifies some of the major limitations of this study. These limitations include the small number of subjects in either play therapy group who were administered the modified defensiveness scale for younger children, the low coefficient alpha obtained for this measure in this study, and finally, the impossibility of assessing the reliability of the play therapy rating scale. The latter problem was due to the fact that, by virtue of the experimental design to keep the behavioral observer blind as to type of treatment, only the experimenter rated and scored this measure on all the relevant subjects. Obviously, future research to study this negative correlation between defensiveness and medical-play involvement should be completed after the necessary refinements have been accomplished.

The results obtained here only partially support Janis' (1958) contention that highly defensive subjects would have an absence of anxiety prior to surgery and a substantial increment subsequently, due to the fact that they would insulate themselves from experiencing surgery-related thoughts and images and thus would not develop successful coping mechanisms during stressful periods of

hospitalization. While the present results showed a consistent tendency for the more defensive children to be rated, both on self-report and behaviorally oriented measures, as less anxious prior to hospitalizations, as well as less involved with medically-relevant play materials than their less defensive counterparts, the expected increase in anxiety and psychological disturbance post-operatively appeared with the Behavior Problem Checklist only. Again, the above mentioned weaknesses of the present study may account for most of this discrepancy.

The small number of subjects investigated also points up another limitation of the present study, namely, the impossibility of studying the relation between fear reduction and treatment methods as a function of sex and age. Results obtained by Melamed & Siegel (1975) and by Melamed, Meyer, Gee, & Soule (1976) suggest that these can be important mediating variables for the ultimate success of hospital preparation approaches.

The particular limitations of the present investigation, coupled with the important implications of this area of clinical research and practice for later attitudes and behavior toward health-care and its practitioners, underscores the need for future research in the area of children's adjustment and attitudes toward hospitalization, surgery, and medical procedures in general. The direction future

research should take has been highlighted in this discussion.

## CHAPTER V

### SUMMARY

The literature on hospitalization suggests that there is a consensus that all children need some kind of psychological preparation for the hospital experience, particularly when accompanied by surgery. The need for such preparation is predicated on the belief that hospitalization and surgery are stressful, anxiety-producing events that can lead to transient or long-term psychological disturbances in most children.

In an attempt to alleviate the stressful effects of hospitalization, several methods of psychological preparation have been utilized but only recently have some of these methods been scrutinized under controlled, experimental conditions. The work of Melamed & Siegel (1975), using a modeling film as preparation, was a notable example of this trend toward increased rigor in treatment evaluation. The present study constituted a replication and extension of their research by investigating the comparative efficacy of a modeling film and play therapy techniques for preparation of children undergoing brief hospitalization for minor surgery. Treatment, conducted immediately prior to hospital admission, consisted of either viewing a

modeling film only (F), play therapy in a specially constructed miniature hospital only (P), or a combination of these two treatments (F + P).

Both state and trait measures of anxiety, including self, parental and staff report, as well as behavioral observation, were taken at various stages of the procedure. This also included a follow-up assessment conducted approximately two weeks after hospital discharge. In addition to anxiety and behavior measures, both children's defensiveness as well as the relative amount of time subjects, in the relevant treatment groups, played with previously designated, medically-relevant toys were measured.

Eighteen subjects about to undergo minor surgery were randomly assigned to one of the three treatments. They were roughly matched for age, ranging from four to twelve, sex, and type of surgery. Based, in part, on previous research it was hypothesized that the F+P group would be the most effective treatment followed by the Film only group. In addition, it was hypothesized that a negative correlation would obtain between defensiveness and degree of medically-relevant play involvement. Finally, it was hypothesized that there would be a negative relationship between defensiveness and anxiety reduction (pre-treatment vs. post-operative).

The results indicated that, where comparable, previ-

ous research findings were replicated and, in addition, all treatments led to significant anxiety reduction. Although there was only marginal support for the F+P group to be more effective in anxiety reduction than the F group, surprisingly, the P group was found to be at least as effective as either of these two treatments. However, this result could be due to the lack of statistical power in the present study and that real differences between treatment conditions may exist. As predicted, there was a significant negative relation between defensiveness and medically-relevant play, although it was found that this degree of medical-play involvement was not necessarily related to greater anxiety reduction. Finally, there was a negative but nonsignificant relation between defensiveness and anxiety reduction.

While in agreement with Melamed & Siegel's (1975) contention that, in order to avoid post-hospital traumatization, extensive pre-operative preparation is advisable, it was tentatively concluded that the form this preparation takes can be flexible. That is, hospital preparation can employ procedures other than modeling for beneficial effects with the decision as to type of treatment determined by both the child's previous hospital and medical experiences and expectations and the expertise and practical limitations of the particular hospital staff. The direction future research should take with respect to bearing out this

assertion was discussed.



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## APPENDICES

APPENDIX A  
DEPENDENT MEASURES FOR INVESTIGATION



## PARENTS' QUESTIONNAIRE

Parents' Name: mother \_\_\_\_\_ father \_\_\_\_\_

Child's Code No. \_\_\_\_\_

Date: \_\_\_\_\_

Circle the right answer:

1. How has your child been since he was told he needed an operation?
  1. very concerned
  2. somewhat concerned
  3. no change
  4. somewhat relieved
  5. very relieved
  
2. How do you think your child is feeling right now about having an operation?
  1. very concerned
  2. somewhat concerned
  3. no change
  4. somewhat relieved
  5. very relieved
  
3. How do you think your child will react to surgery?
  1. very uncooperative
  2. somewhat uncooperative
  3. no change
  4. somewhat cooperative
  5. very cooperative
  
4. In the last year, telling my child he was to see a doctor made him act:
  1. always bad
  2. usually bad
  3. no change
  4. usually good
  5. always good
  
5. How do you think your child has reacted to past medical procedures?
  1. always bad
  2. sometimes bad
  3. no change
  4. sometimes good
  5. always good

## Parents' Questionnaire (continued)

6. In the past two years, my child has had pain with medical procedures:
  1. more than ten times
  2. 5-9 times
  3. 1-4 times
  4. no times
  
7. How are you feeling right now?
  1. very nervous
  2. a little nervous
  3. no different than usual
  4. somewhat relieved
  5. very relieved
  
8. The thought of being a hospital patient:
  1. terrifies me
  2. worries me a little
  3. doesn't affect me
  4. relieves me a little
  5. relieves me very much
  
9. When I knew my child was to be admitted to the hospital:
  1. I was most concerned about his illness, treatment or outcome
  2. I was most concerned that he would be frightened by the hospital situation
  3. I was most worried about leaving the rest of the family home
  4. I was most worried about the time and money this would cost
  
10. Hospital-oriented activities such as watching hospital programs on TV, reading about hospitals, and playing hospital games are something:
  1. I often try to encourage for my child
  2. I sometimes try to encourage
  3. I seldom try to encourage
  4. I never try to encourage
  
11. When I accompanied my child to the hospital, I was:
  1. not at all reassured of his condition
  2. somewhat reassured of his condition
  3. completely reassured of his condition
  
12. If I were ill, I would want to know:
  1. everything about my condition
  2. something about my condition
  3. little about my condition
  4. nothing about my condition

## Parents' Questionnaire (continued)

13. When getting my child ready for the hospital, I:
1. had already discussed the operation with him
  2. left it to the doctor to explain to him
  3. told him we were going \_\_\_\_\_
14. I have spent time in hospitals myself for a total of:
1. more than one month
  2. a week to ten days
  3. a few days
  4. overnight
15. Going to the doctor for a routine check-up makes me feel:
1. very concerned
  2. a little concerned
  3. no change
  4. a little satisfied
  5. very satisfied
16. Thinking about going to visit the doctor for myself, if I'm sick, makes me feel:
1. very concerned
  2. somewhat concerned
  3. no change
  4. somewhat relieved
  5. very relieved

## BEHAVIOR PROBLEM CHECKLIST

Please complete items 1 to 6

1. Name of child \_\_\_\_\_
2. Age (in years and months) \_\_\_\_\_
3. Sex (male-1: female-2) \_\_\_\_\_
4. Name of person completing this checklist \_\_\_\_\_
5. Occupation \_\_\_\_\_
6. Relationship to child (circle one)
  - a. mother
  - b. father
  - c. other \_\_\_\_\_ (specify)

Session # \_\_\_\_\_

Please indicate which of the following constitute problems as far as your child is concerned. If an item does not constitute a problem encircle the zero; if an item constitutes a mild problem, encircle the one; if an item constitutes a severe problem, encircle the two. Please complete every item.

- |   |   |   |                                                                |
|---|---|---|----------------------------------------------------------------|
| 0 | 1 | 2 | 1. Oddness, bizarre behavior                                   |
| 0 | 1 | 2 | 2. Restlessness, inability to sit still                        |
| 0 | 1 | 2 | 3. Attention-seeking, "show-off" behavior                      |
| 0 | 1 | 2 | 4. Stays up late at night; difficulty falling asleep           |
| 0 | 1 | 2 | 5. Doesn't know how to have fun; behaviors like a little adult |
| 0 | 1 | 2 | 6. Self-consciousness; easily embarrassed                      |
| 0 | 1 | 2 | 7. Fixed expression, lack of emotional reactivity              |
| 0 | 1 | 2 | 8. Disruptiveness; tendency to annoy and bother others         |
| 0 | 1 | 2 | 9. Feelings of inferiority                                     |
| 0 | 1 | 2 | 10. Steals in company of others                                |
| 0 | 1 | 2 | 11. Boisterousness, rowdiness                                  |
| 0 | 1 | 2 | 12. Crying over minor annoyances and hurts                     |
| 0 | 1 | 2 | 13. Preoccupation; "in a world of his own"                     |
| 0 | 1 | 2 | 14. Shyness, bashfulness                                       |
| 0 | 1 | 2 | 15. Social withdrawal, preference for solitary activities      |
| 0 | 1 | 2 | 16. Dislike for school                                         |
| 0 | 1 | 2 | 17. Jealousy over attention paid to other children             |
| 0 | 1 | 2 | 18. Belongs to a gang                                          |
| 0 | 1 | 2 | 19. Repetitive speech                                          |
| 0 | 1 | 2 | 20. Short attention span                                       |
| 0 | 1 | 2 | 21. Lack of self-confidence                                    |

## Behavior Problem Checklist (continued)

- |   |   |   |                                                                             |
|---|---|---|-----------------------------------------------------------------------------|
| 0 | 1 | 2 | 22. Inattentiveness to what others say                                      |
| 0 | 1 | 2 | 23. Easily flustered or confused                                            |
| 0 | 1 | 2 | 24. Incoherent speech                                                       |
| 0 | 1 | 2 | 25. Fighting                                                                |
| 0 | 1 | 2 | 26. Loyal to delinquent friends                                             |
| 0 | 1 | 2 | 27. Temper tantrums                                                         |
| 0 | 1 | 2 | 28. Reticence, secretiveness                                                |
| 0 | 1 | 2 | 29. Truancy from school                                                     |
| 0 | 1 | 2 | 30. Hypersensitivity, feelings easily hurt                                  |
| 0 | 1 | 2 | 31. Laziness in school and in performance of other tasks                    |
| 0 | 1 | 2 | 32. Anxiety, chronic general fearfulness                                    |
| 0 | 1 | 2 | 33. Irresponsibility, undependability                                       |
| 0 | 1 | 2 | 34. Excessive daydreaming                                                   |
| 0 | 1 | 2 | 35. Masturbation                                                            |
| 0 | 1 | 2 | 36. Has bad companions                                                      |
| 0 | 1 | 2 | 37. Tension, inability to relax                                             |
| 0 | 1 | 2 | 38. Disobedience, difficulty in disciplinary control                        |
| 0 | 1 | 2 | 39. Depression, chronic sadness                                             |
| 0 | 1 | 2 | 40. Uncooperativeness in group situations                                   |
| 0 | 1 | 2 | 41. Aloofness, social reserve                                               |
| 0 | 1 | 2 | 42. Passivity, suggestibility, easily led by others                         |
| 0 | 1 | 2 | 43. Clumsiness, awkwardness, poor muscular coordination                     |
| 0 | 1 | 2 | 44. Hyperactivity; "always on the go"                                       |
| 0 | 1 | 2 | 45. Distractibility                                                         |
| 0 | 1 | 2 | 46. Destructiveness in regard to his own and/or other's property            |
| 0 | 1 | 2 | 47. Negativism, tendency to do the opposite of what is requested            |
| 0 | 1 | 2 | 48. Impertinence, sauciness                                                 |
| 0 | 1 | 2 | 49. Sluggishness, lethargy                                                  |
| 0 | 1 | 2 | 50. Drowsiness                                                              |
| 0 | 1 | 2 | 51. Profane language, swearing, cursing                                     |
| 0 | 1 | 2 | 52. Nervousness, jumpiness, easily startled                                 |
| 0 | 1 | 2 | 53. Irritability, hot-tempered, easily aroused to anger                     |
| 0 | 1 | 2 | 54. Enuresis, bed-wetting                                                   |
| 0 | 1 | 2 | 55. Often has physical complaints, e.g., headaches, stomach ache, dizziness |
| 0 | 1 | 2 | 56. Nightmares, bad dreams                                                  |

## ANXIETY SCALE-PERSONALITY INVENTORY FOR CHILDREN

I. Directions

These are statements about children and family relationships. First fill in the information requested below. Then read each of the statements in this form and decide whether it is true as applied to your child or false as applied to your child.

If a statement is TRUE or MOSTLY TRUE, as applied to your child, circle the T in the left hand column of the page (see #25 in the example below). If a statement is FALSE or MOSTLY FALSE, as applied to your child, circle the F in the right hand column of the page (see #26 in the example below).

EXAMPLE    25.     T     F  
               26.     T     F

II. Identifying Information (Please fill out completely)

Child's Name \_\_\_\_\_ Date \_\_\_\_\_  
 Age \_\_\_\_\_ Sex \_\_\_\_\_ Grade or Class \_\_\_\_\_  
 Date of birth \_\_\_\_\_  
 Parent's Name \_\_\_\_\_  
 Address \_\_\_\_\_

1.    T    F    My child worries about things that usually only adults worry about.
2.    T    F    Usually my child takes things in stride.
3.    T    F    My child is worried about sin.
4.    T    F    My child has little self confidence.
5.    T    F    My child broods some.
6.    T    F    Thunder and lightning bother my child.
7.    T    F    My child often asks if I love him/her.
8.    T    F    My child takes criticism easily.
9.    T    F    My child tends to talk faster than he/she can think.
10.   T    F    My child is afraid of animals.
11.   T    F    My child is afraid of dying.
12.   T    F    My child worries about hurting others.
13.   T    F    My child seems too serious minded.
14.   T    F    My child seems unhappy about our home life.
15.   T    F    My child is as happy as ever.
16.   T    F    Others often remark how moody my child is.
17.   T    F    Nothing seems to scare my child.
18.   T    F    Often my child is afraid of little things.
19.   T    F    My child doesn't seem to have any fear.
20.   T    F    My child insists on keeping the light on while sleeping.
21.   T    F    Chewing fingernails is a problem for my child.

## Anxiety Scale-Personality Inventory for Children (Continued)

22. T F My child worries about talking to others.  
23. T F My child frequently has nightmares.  
24. T F My child is usually in good spirits.  
25. T F My child seems fearful of blood.  
26. T F My child is easily embarrassed.  
27. T F My child will worry a lot before starting something new.  
28. T F My child usually looks at the bright side of things.  
29. T F My child is afraid of the dark.  
30. T F My child often has crying spells.

## OBSERVER RATING SCALE OF ANXIETY

NAME: \_\_\_\_\_

Pre-film \_\_\_\_\_ Post-film \_\_\_\_\_ Pre-op. \_\_\_\_\_ Post discharge \_\_\_\_\_

0-3	3-6	6-9	(minutes)
T F	T F	T F	1. Crying
T F	T F	T F	2. Frowning
T F	T F	T F	3. Little or no eye contact
T F	T F	T F	4. Scans E's face for approval
T F	T F	T F	5. Appears in pain (face grimacing, frowning)
T F	T F	T F	6. Smiles
T F	T F	T F	7. Trembling hands
T F	T F	T F	8. Hands on lips, bites lips
T F	T F	T F	9. Plays with a hair
T F	T F	T F	10. Scratches arms, legs, etc.
T F	T F	T F	11. Quick, jerky movements
T F	T F	T F	12. Stiff body posture (sits straight, doesn't move unless directed)
T F	T F	T F	13. Swings legs back and forth
T F	T F	T F	14. Rocks back and forth
T F	T F	T F	15. Unusual aggression (throws toys around etc.)
T F	T F	T F	16. Talks to himself
T F	T F	T F	17. Speaks spontaneously (doesn't need prompting, etc.)
T F	T F	T F	18. Stutters
T F	T F	T F	19. Mumbles, speaks softly
T F	T F	T F	20. Laughs
T F	T F	T F	21. Speaks very slow or fast
T F	T F	T F	22. Speaks when spoken to
T F	T F	T F	23. Talks about hospital fears
T F	T F	T F	24. Talks about separation from mother
T F	T F	T F	25. Talks about interests
T F	T F	T F	26. Talks about going home
T F	T F	T F	27. Says he feels anxious
T F	T F	T F	28. Distractible, doesn't pay attention at all well
T F	T F	T F	29. Stereotyped, repetitive behavior



## DEFENSIVENESS SCALE FOR CHILDREN (YOUNGER GROUP)

Name of child \_\_\_\_\_ Age \_\_\_\_\_

Date \_\_\_\_\_ 1 = 1st alternative 2 = 2nd alternative

1. Do grown-ups ever say you daydream too much, or don't they ever say this?
2. Do your friends sometimes say bad things about you, or do they say only true things?
3. Does everything go wrong for you sometimes, or are you happy all the time?
4. When someone tells you to do something or put something away, do you always do it right away, or do you sometimes forget what you are supposed to do?
5. Do other children sometimes pick on you, or are they always nice to you?
6. Are you happy all the time, or do you sometimes get sad?
7. If you wake up in the dark, do you sometimes feel scared, or don't you mind it?

## DEFENSIVENESS SCALE FOR CHILDREN (OLDER GROUP)

Name of child \_\_\_\_\_ Age \_\_\_\_\_

Date \_\_\_\_\_

I am going to read you some statements. Please answer yes if you feel they describe how you sometimes feel, no if you never feel this way.

Yes = 1

No = 2

1. I feel cross and grouchy sometimes.
2. I never worry about what people think of me.
3. I always tell the truth.
4. No one has ever been able to scare me.
5. I never get scolded.
6. I am sometimes afraid of getting into arguments.
7. I have never had a scary dream.
8. There are some people I don't like.
9. I like everyone I know.
10. I sometimes lose my temper.
11. I have never been afraid of getting hurt.
12. There are some things about myself I'd change if I could.
13. I never worry.
14. I don't feel sorry for any of the things I have done.
15. I am sometimes sorry for the things I do.
16. I always do the right thing.
17. I never worry about something bad happening to someone I know.
18. I don't feel badly when someone scolds me.
19. I am never shy.
20. Sometimes when I get mad, I feel like smashing something.
21. I never worry about what is going to happen.
22. I never hurt anybody's feelings.
23. I sometimes dream about things I don't like to talk about.
24. I am never unhappy.
25. I never have arguments with my mother and father.
26. When I was younger there were some things that scared me.
27. I always know what to say to people.

## CHILDREN'S MANIFEST ANXIETY SCALE

Name \_\_\_\_\_ Code Group \_\_\_\_\_

Assessment time \_\_\_\_\_

I am going to read you some statements. Please answer yes if you feel they describe what you are like, and no if you feel they don't describe you.

Yes = 1

No = 2

1. It is hard for me to keep my mind on anything.
2. I get nervous when someone watches me work.
3. I feel I have to be best in everything.
4. I blush easily.
5. I like everyone I know.
6. I notice my heart beats very fast sometimes.
7. At times I feel like shouting.
8. I wish I could be very far from here.
9. Others seem to do things easier than I can.
10. I would rather win than lose in a game.
11. I am secretly afraid of a lot of things.
12. I feel that others do not like the way I do things.
13. I feel alone even when there are people around me.
14. I have trouble making up my mind.
15. I get nervous when things do not go the right way for me.
16. I worry most of the time.
17. I am always kind.
18. I worry about what my parents will say to me.
19. Often I have trouble getting my breath.
20. I get angry easily.
21. I always have good manners.
22. My hands feel sweaty.
23. I have to go to the toilet more than most people.
24. Other children are happier than I.
25. I worry about what other people think about me.
26. I have trouble swallowing.
27. I have worried about things that did not really make any difference later.
28. My feelings get hurt easily.
29. I worry about doing the right things.
30. I am always good.
31. I worry about what is going to happen.
32. It is hard for me to go to sleep at night.
33. I worry about how well I am doing at school.
34. I am always nice to everyone.
35. My feelings get hurt easily when I am scolded.
36. I tell the truth every single time.
37. I often get lonesome when I am with people.
38. I feel someone will tell me I do things the wrong way.

## CHILDREN'S MANIFEST ANXIETY SCALE (Continued)

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39. I am afraid of the dark.
40. It is hard for me to keep my mind on my school work.
41. I never get angry.
42. Often I feel sick in my stomach.
43. I worry when I go to bed at night.
44. I often do things I wish I had never done.
45. I get headaches.
46. I often worry about what could happen to my parents.
47. I never say things I shouldn't.
48. I get tired easily.
49. It is good to get high grades in school.
50. I have bad dreams.
51. I am nervous.
52. I never lie.
53. I often worry about something bad happening to me.

Name of child: \_\_\_\_\_

Pre-film \_\_\_\_\_ Post-film \_\_\_\_\_ Pre-Op. \_\_\_\_\_ Post-discharge \_\_\_\_\_

## CHILDREN'S "HOSPITAL FEARS" RATING SCALE

Instructions: I want to find out how afraid you are of different things. Listen, and when I name some thing I want you to tell me how afraid you are of it by putting a mark on this thermometer. If you feel very afraid of the thing I say, put a mark on the top (point). If you don't feel afraid at all, put a mark on the bottom (point to 'one'). And if you feel somewhere in between, put a mark somewhere in between the top and bottom. (run your finger up and down scale between top and bottom.)

Here's the first one: Elevators. How afraid are you of elevators?

Ex.: Elevators

How afraid are you of:

- |                                               |                                          |
|-----------------------------------------------|------------------------------------------|
| _____ sharp objects                           | _____ germs or getting a serious illness |
| _____ having to go to the hospital            | _____ the sight of blood                 |
| _____ getting a shot from the nurse or doctor | _____ deep water or the ocean            |
| _____ making mistakes                         | _____ being alone without your parents   |
| _____ spiders                                 | _____ having an operation                |
| _____ going to bed in the dark                | _____ ghosts or spooky things            |
| _____ going to the dentist                    | _____ getting car sick                   |
| _____ strange or meanlooking dogs             | _____ People wearing masks               |
| _____ going to the doctor                     | _____ getting sick at school             |
| _____ flying in an airplane                   | _____ not being able to breathe.         |
| _____ getting punished                        |                                          |

CHILDREN'S "HOSPITAL FEARS" RATING SCALE - Continued

- \_\_\_\_\_ getting a haircut
- \_\_\_\_\_ falling from high places
- \_\_\_\_\_ thunderstorms

## PLAY BEHAVIOR RATING SCALE

Child's name \_\_\_\_\_ post-film \_\_\_\_\_ pre-surg. \_\_\_\_\_ post-surg. \_\_\_\_\_

Room Code: Operating room= O      Playroom= P      Outside= \*  
 Doctor's Office=D      Bedroom= Be  
 Corridor = C      Bathroom= Ba

Minutes

\_\_\_\_\_  
 Nurse  
 Doctor  
 Mother  
 Father  
 Boy  
 Girl  
 (Medical toys)  
 ambulance  
 Bandages  
 Cotton  
 Hypodermic needles  
 Knife(s)  
 Medical measuring cup  
 Medicinal bottle  
 Microscope  
 Mini Medical case  
 O<sub>2</sub> bottle  
 O.R. Mask  
 Oscilloscope  
 Play Pills  
 Play pliers  
 Scissors  
 Sponges  
 Stethoscope  
 Thermometers  
 (Non-medical toys)  
 Animal(s)  
 Blocks  
 Cooking ware  
 Furniture  
 Gun  
 Jeep  
 Mug(s)  
 Musical Instrument  
 Stuffed Teddy Bear  
 Tool chest & tools  
 TV  
 Weeble(s)

Code: 1=aggressive      4=neutral, matter of fact  
 2=fearful, anxious      5=hyperactive or random manipulation of toys  
 3=withdrawn, sad, depressed      6=cheerful, happy

## OPERATING ROOM ANXIETY SCALE

- Key: 1 - very anxious: struggling, fighting, disruptive behavior, needs to be held down.
- 2 - anxious: whining, saying he does not like it, asking if it is going to hurt.
- 3.- mildly anxious: going along with procedure passively, no affect, silence.
- 4.- minimally anxious: smiling, asking questions about environment.
- 5 - not at all anxious: laughing, broad grin, coherent conversation about non-pain related topics.

Please circle the appropriate answer.

1. Was the child sleeping upon arrival at O.R.?      Yes No  
If no, was the child alert?

2. How anxious did this child appear:

- a) while waiting to enter the O.R.?

1      2      3      4      5

Very anxious  
(crying, etc.)

Not at all  
anxious (calm)

- b) on entering the operating room?

1      2      3      4      5

Very anxious  
(crying, etc.)

Not at all  
anxious (calm)

- c) when the child was put under anesthesia?

1      2      3      4      5

Very anxious  
(crying etc.)

Not at all  
anxious (calm)

3. How cooperative was this child during anesthesia induction?

1                      2                      3                      4                      5

Not at all cooperative    Minimally cooperative    Mildly cooperative    Cooperative    Very Cooperative



APPENDIX B  
MEANS AND STANDARD DEVIATIONS OF ALL DEPENDENT MEASURES

	Total		F + P		F		P	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
1 Hospital Fears, Obs. 1	40.67	12.16	45.60	14.93	38.88	12.96	38.60	10.33
2 . . . . . Obs. 2	38.72	14.19	44.60	18.13	36.25	11.93	36.80	16.39
3 . . . . . Obs. 3	36.24	11.43	39.00	13.24	36.38	10.89	33.80	14.18
4 . . . . . Obs. 4	37.12	10.84	42.20	9.01	36.71	11.91	32.60	12.14
5 Observ. Rating Scale, Obs. 1	12.97	4.76	14.90	3.13	15.00	3.64	7.80	4.76
6 . . . . . Obs. 2	12.44	4.46	11.38	2.14	15.75	3.20	8.00	3.96
7 . . . . . Obs. 3	12.47	5.00	12.00	2.94	15.38	4.95	8.20	4.09
8 . . . . . Obs. 4	16.09	7.08	15.20	6.02	19.14	8.61	12.90	5.79
9 Defensiveness, Young Child.	3.79	1.70	4.25	0.96	2.83	2.23	4.75	0.96
10 Anx. Scale, Parent's, Obs. 1	7.51	4.13	8.80	5.17	7.71	4.04	5.90	4.02
11 . . . . . Obs. 2	6.20	3.70	6.40	4.51	7.04	3.43	4.82	4.08
12 Child. Manif. Anx., Obs. 1	18.61	7.79	20.20	4.09	18.75	10.90	16.80	6.42
13 . . . . . Obs. 2	15.63	8.34	15.80	9.20	16.00	10.18	15.00	7.97
14 Behav. Probl., Total, Obs. 1	9.67	6.76	8.00	4.18	12.00	8.55	7.60	6.35
15 . . . . . I . . .	3.78	3.39	3.60	2.07	5.00	4.72	2.00	1.22
16 . . . . . II . . .	3.11	2.75	1.60	1.52	3.86	2.99	3.40	3.44
17 . . . . . III . . .	1.17	1.42	0.80	1.30	1.38	1.51	1.20	1.79
18 . . . . . IV . . .	0.28	0.45	0.60	0.55	0.25	0.46	0.00	0.00
19 Behav. Probl., Total, Obs. 2	8.56	7.26	6.40	4.51	9.71	7.11	9.10	10.91
20 . . . . . I . . .	3.59	3.20	4.00	3.54	4.14	3.80	2.40	2.61
21 . . . . . II . . .	2.82	2.71	1.20	0.84	3.71	2.69	3.20	3.83
22 . . . . . III . . .	0.88	1.08	0.60	0.55	0.86	1.07	1.20	1.64
23 . . . . . IV . . .	0.29	0.57	0.60	0.55	0.00	0.00	0.40	0.89
24 Parent's Quest.	67.97	6.98	67.51	7.85	69.86	7.14	65.40	7.24
25 Operation Room Anx.	16.34	2.91	15.94	4.17	16.19	2.88	17.00	2.35
26 Age (months)	82.22	21.92	80.00	34.94	83.38	19.00	82.60	17.14

APPENDIX C  
MISSING DATA PER SUBJECT

