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A behavioral intervention to reduce presurgical anxiety

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A BEHAVIORAL INTERVENTION TO REDUCE PRESURGICAL ANXIETY

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Abstract

A multiple baseline study was conducted across five hysterectomy patients between the ages of 30-36. Three patients received a treatment intervention consisting of general and sensory information, muscle relaxation, a cognitive coping technique, and a pre-anesthetic interview. Two yoked, placebo control patients watched a 20-min video tape about surgery, practiced recovery exercises, and made up stories from TAT cards. Self-report measures taken were the Hospital Stress Rating Scale, a recovery inventory, and postsurgical pain ratings. Physiological measures consisted of pulse, respiration, blood pressure, skin temperature, and blood lactates. Recovery variables were taken on amount of pain medication taken, number of days in the hospital, vomiting, and psychiatric or physical complications. The results indicated that patients in the treatment condition reported less pain and took fewer pain medications after surgery. All other variables indicated little or no change. All patients experienced a decrease in blood lactate levels after the training session. Training time was approximately 1 hour, and thus hospital staff could conduct the training in a reasonable amount of time.

Presurgical teaching and preparation is now being provided by hospitals across the country (Aiken, 1972; Egbert, Battit, Welch, & Bartlett, 1964). With rising medical costs and nursing shortages it is important to evaluate the outcome and cost-effectiveness of such programs. In other words, is a particular program doing what it was intended to do? To determine program effectiveness, it is important to know what measurement systems will indicate reduction of anxiety and improvement of patient recovery. A presurgery program should also be designed so that it will maximize practicality and effectiveness for the instructor and patient.

This paper is concerned with the design of a presurgical training program to reduce anxiety. The program was an attempt to maximize reduction and practicality, improve recovery, and determine what measures are sensitive to patient improvement in coping with surgery. The review will examine studies on factors which have been found to influence presurgical anxiety and recovery. Intervention techniques and the various measures which have been employed to evaluate the effectiveness of such programs will also be examined.

Presurgical anxiety is an unpleasant emotional experience reported by approximately 84% of surgical patients (Ryan, 1975). Anxiety is often due to several factors. Many patients are introduced into a hospital environment for the

first time the day before surgery and have had little opportunity to prepare themselves psychologically. The amount of pain and risk which can be expected is often unknown and may be imagined as worse than it will actually be. Patients may not adequately understand the reasons for the surgery and fear they may have a dreaded disease such as cancer which their physician is keeping from them. Patients may also fear disfigurement and death (Birkinshaw, 1978). Other common stresses reported by surgery patients include unfamiliarity of surroundings, loss of independence, separation from family, financial problems, isolation from other people, lack of information, threat of severe illness, fear of excessive pain, and problems with medication (Bodley, Jones, & Mather, 1974; Volicer, Isenberg, & Burns, 1977). Viewed from a learning theory perspective, fear of the hospital situation may also come about as a result of aversive classical conditioning from past painful medical procedures (Rachman, 1977; Shipley, Butt, Horwitz, & Farbry, 1978).

Within the last few decades there has been immense progress in the field of surgical medicine (Hart, 1980), with several million major surgeries carried out in the United States each year (Myers, 1966). These surgical advances have not been accompanied by comparable advances in procedures for preparing patients emotionally and behaviorally for surgery, although when skillful surgery

is performed, the patient usually manages a satisfactory recovery (Hart, 1980). However, the course of recovery is not only a matter of physical healing, but also involves behavioral and social events which may operate in complex ways (Cohen & Lazarus, 1973).

A high level of preoperative anxiety may adversely affect the patient's physiological status at the time of the operation. This effect can persist throughout the operation and into the postsurgical period. Patients with high levels of anxiety require a greater induction dosage of anesthesia, thus, possibly increasing the risks associated with surgery (Williams, Jones, Workhoven, & Williams, 1975). Postoperatively, patients who report high presurgical anxiety request more pain medication (Egbert, et al., 1964), take longer to resume normal daily activities, miss more days of work (Fortin & Kirouac, 1976), report depression more frequently (Janis, 1958), have a greater incidence of post-operative psychosis (Lazarus & Hagen, 1968; Layne & Yudofsky, 1971), and require greater length of stay in the hospital (Egbert et al., 1964; Healy, 1968; Janis, 1958; Streltzer & Leigh, 1978).

The physical and emotional symptoms associated with anxiety are of special concern to surgeons because they can adversely influence patients' reactions to surgical procedures and postoperative recovery (Spielberger, Wadsworth, Auerbach, Dunn, & Taulbee, 1973). Numerous physiological changes

closely correlated with anxiety have been noted in surgical patients. In one study (Mason, Sachar, Fishman, Hamburg, & Handlon, 1965) patients exhibited increased urinary corticosteroid levels at the time of hospital admission. Other studies have found elevated urine potassium levels (Pride, 1968), faster platelet aggregation time, and higher systolic and diastolic blood pressure shortly before hospitalization compared with the same measurements taken just prior to surgery and just prior to discharge. Changes in these physiological measures could affect numerous aspects of a patient's recovery from surgery such as clotting time and chances of a stroke or cardiac arrest during and after surgery (Fleischman, Bierenbaum, & Steir, 1976; Volicer & Volicer, 1978).

Assessment of Anxiety

Although anxiety has been the subject of extensive research during the past two decades (Rappaport & Katkin, 1972; Spielberger, 1966) there has been little agreement concerning the assessment of its essential characteristics. Among the various techniques employed for assessment of anxiety, self-report, observational, and physiological indices have received the most attention (Borkovec, Weerts, & Bernstein, 1977; Bridges, 1974; Glennon & Weisz, 1978; Hartlage, 1972; Himle & Barcy, 1975; Jurich & Jurich, 1978; Lamb, 1978; Reiter, 1971). Attempts to assess the relationship among psychological, physiological, and observational

measures have proven largely inconclusive (Morrow & Labrum, 1978). Physiological indications of anxiety may not occur until several minutes after a subjective report of anxiety, making objective and precise definition of anxiety difficult.

Hodgson and Rachman (1974) have suggested that desynchrony in measures of anxiety is a function of the intensity of emotional arousal. Concordance between response systems is likely to be high during strong emotional arousal. Discordance will be more evident when emotional responses are relatively mild. Lang (1978) also maintains that mild feeling states may not be manifested in the same physiological or behavioral sphere.

Melamed and Siegel (1980) suggest that a variety of measures reflecting an individual's anxiety should be taken, keeping in mind that the measures may not necessarily be congruent. The potency of the treatment should be evaluated by changes in particular dependent measures as well as in the observation of interrelationships between measures. These suggestions were based on the absence of data suggesting that any one measure or system deserves primary consideration.

Presurgery Anxiety Reduction

The procedures employed in presurgery anxiety reduction programs have varied both in terms of content and delivery. Almost all of the reported procedures have employed an information component and in every instance, treatment

procedures were administered exclusively or partially prior to surgery. The discussion that follows has been organized according to the primary anxiety reduction techniques which have been reported.

Educational Methods

The studies discussed below gave information to the patients regarding their surgery. The studies are discussed here because they attempted to systematically manipulate the amount or type of information given.

Fortin and Kirouac (1976) randomly assigned matched sociodemographic pairs to either an educational group taught by a nurse or a no-treatment control group. Education consisted of an orientation to surgery, elementary biological facts, effects of smoking on respiration, postoperative exercises, and self-care suggestions. Patients in the education group regained physical functioning faster, lost less time from work, requested fewer analgesics, and reported more comfort and satisfaction as compared to the control group. No difference was found in the length of hospitalization.

The effect of amount and type of information a patient is given on the outcome of surgery is unclear (Clum, Scott, & Burnside, 1979). Langer, Janis, & Wolfer (1975) reported that simple information about the surgery served to magnify pain by causing patients to focus on the discomforting aspects of the experience they were about to undergo. Egbert et al.,

(1964) and Healy (1968) demonstrated that specific information about the nature of the pain patients would experience and means of reducing and adapting to the pain served to decrease discomfort and speed recovery. Thus, an improvement in postsurgical adjustment appears to occur only when information is accompanied by providing the patient with a means of coping (Clum et al., 1979).

Muscle Relaxation

Muscular relaxation techniques produce physiological consequences, including decrease in pulse rate, blood pressure, and skin conductance (Jacobson, 1938; Paul, 1969). Aiken and Henrichs (1971) used relaxation exercises to reduce postsurgical psychiatric complications in 15 male open-heart surgery patients. Each patient was given a tape recorder with a 15-min tape of the relaxation exercises which they were instructed to use whenever they wanted to relax, but to use at least four times a day. Each patient used the tape for an average of 3.5 days. Each experimental patient was matched with a male patient who was within 1 yr of the same age. Patients were also matched on preoperative diagnosis and type of surgical procedure.

One outcome variable in the study consisted of the incidence of postoperative psychiatric complications which included the following: impairment of consciousness, disorientation, visual and auditory hallucinations, and delusions or paranoid behavior. Comparisons between the two groups were also made on the following surgical stress factors:

degree and duration of hypothermia, amount of time on cardiopulmonary bypass, amount of time under anesthesia, and total units of blood. Patients in the relaxation group had fewer postoperative psychiatric complications and less surgical stress than the control group.

Egbert et al. (1964) taught 46 patients how to relax their muscles as part of a preparation package in which patients were also given general information about their surgery. Those who received the information and instruction in muscle relaxation reduced postsurgical narcotic use by half and were ready for discharge about 2.7 days before the control patients.

Recently, Wilson (1981) examined the effects of relaxation training and information about sensations patients would experience during their hospital stay on recovery variables. Thirty three cholecystectomy and 37 hysterectomy patients were assigned to one of four groups: (a) The control group received usual hospital procedures consisting of presurgical visits by the anesthesiologist and surgeon and discussion by the nurses about deep breathing and coughing after surgery. (b) The information group was provided with a 9-min audio tape describing the sensations and procedures likely to be experienced during hospitalization for abdominal surgery. (c) Patients in the relaxation group listened to a 5-min audio taped introduction to systematic muscle relaxation and then to a 20-min narrated exercise in muscle relaxation. (d) Patients in the relaxation and information group received both taped procedures.

The results indicated the following: (a) Relaxation reduced hospital stay, pain, medication for pain, and increased strength, energy, and postsurgical epinephrine levels, (b) information reduced hospital stay, and (c) all three of the treatment groups were discharged from the hospital an average of 1.1 days sooner than patients in the control group.

Wilson (1981) also found that personality variables such as the level of presurgical fear, denial, and aggressiveness were associated with recovery. The less frightened patients benefited more from relaxation than did the very frightened patients. Nonagressive patients reacted to information with decreased hospital stay, increased self-report of pain, required more postoperative pain medication, and had higher levels of epinephrine. Aggressive patients responded to information with decreased hospital stay, decreased self-report of pain, fewer pain medications, and lower epinephrine levels. Some studies (Andrew, 1970; Shipley et al., 1978, 1979) have suggested that patients who use denial as a coping style (consistently ignore the negative aspects of surgery) may be harmed by preparation programs. The patients in Wilson's (1981) study who used denial were not harmed by preparation. His study suggests that behavioral preparation benefits even frightened, aggressive, or denying elective surgery patients.

Sensory Information

Sensory information involves explaining to the patient what a painful treatment will feel like. Several studies by Johnson and others (1973, 1974, 1975) have investigated the effect of sensory information on pain and distress during medical procedures. Johnson (1973) hypothesized that the intensity of a response that reflects emotion during a threatening event may be a function of incongruency between expected and experienced sensations. The greater the incongruency the more intense the emotional response. To test her hypothesis, Johnson (1973) provided 20 male college students receiving ischemic pain with one of two descriptions related to the pain. One group received information about the sensations they would experience while undergoing the pain, such as numbness, tingling, aching. The other group received procedural information such as "a tourniquet filled with air will cause high pressure on your arm, etc." The results indicated that subjects who were given the sensory information reported lower distress during the painful procedure than those who received only a description of the procedure.

A second study (Johnson & Rice, 1974) employed ischemic pain with 52 male subjects in which the number of sensations described was varied. Johnson and Rice found that a description of only two typical sensations was as effective in reducing distress responses as a description of all five. This

suggests that patients who receive a partial description of sensations may experience as much reduction in distress as those who receive a more complete description. Since the anticipation of every sensation a patient may experience could be difficult, these findings are relevant to actual health care situations in which desensitization of aversive health care procedures is necessary.

Johnson, Kirchoff, and Endress (1975) have used this technique with children who were undergoing orthopedic cast removal. The subjects were 84 children, 6 to 11 yrs of age, male and female. Tape recorded preparatory information was used to systematically vary expectations about physical sensations. The children were randomly assigned to one of three information groups: (a) sensory information which described the sensory experience during cast removal, (b) procedural information which described the steps of the experience, and (c) control group which heard no tape recorded information. Nonverbal and verbal signs of distress reactions and the pulse rate were observed during cast removal. Children in the sensory information group reported significantly less distress than the procedure or control group. Mean pulse rate changes for information groups for before to during cast removal were in the same direction as the distress scores, but the differences were not statistically significant.

Cognitive Coping Techniques

Langer, Janis, and Wolfer (1975) provided 60 presurgery patients with either a coping strategy, preparatory information, or both strategies. The coping strategy consisted of the cognitive reappraisal of anxiety-provoking events, calming self-talk, and cognitive control through selective attention. Cognitive reappraisal involves illustrating to the patient the degree to which attention to and cognitions about an aversive event determine the stress one experiences with regard to that event (Ellis, 1962; Meichenbaum, 1977). Calming self-talk consisted of rehearsing vocally or subvocally the realistic positive aspects of surgery. Cognitive control through selective attention simply involved having the patient distract his or her attention to the more favorable aspects of the environment. The second strategy consisted of supplying information about the threatening event along with reassurances. Training sessions for all groups lasted approximately 20 min. The prediction was that the coping strategy would effectively reduce both pre- and postsurgical stress in contrast to a control procedure. This prediction was confirmed. An analysis of the nurses' ratings of presurgical stress showed a significant main effect for the coping strategy. Patients using the coping strategy also requested fewer postsurgical pain relievers and sedatives than did patients who received the preparatory information.

Peterson and Shigetomi (1981) compared the effectiveness of a combination of three behavioral coping techniques with

information alone and a filmed modeling technique in reducing 66 childrens' adverse reactions to elective tonsillectomies. The information procedure consisted of a "party" for the children in which the puppet Big Bird pretended to be a child coming into the hospital to get his tonsils out. The experimenter narrated the 15-min story of a typical hospital stay from admission to discharge.

The behavioral coping procedure consisted of three main techniques: (a) cue-controlled deep muscle relaxation, (b) distracting mental imagery in which the children were asked to imagine a scene which was quiet and which made them feel happy, and (c) comforting self-talk in which the child was given two phrases to say out loud: "I will be all better in a little while" and "Everything is going to be all right." This treatment component took approximately 15 min.

The filmed modeling procedure consisted of having the children view the 16-min film "Ethan Has an Operation," produced by Melamed and Siegal (1975). It is a realistic portrayal of the hospitalization, preparation, surgery, and recovery of a 7-yr-old white male child.

A fourth group consisted of coping plus the filmed modeling procedure. This procedure took approximately 45 min for the entire presentation. Parents were asked to practice the techniques with their children especially during injections and to relieve pain after surgery.

Children in the coping groups were able to consume more food postsurgically and were rated less anxious and more cooperative during invasive procedures before and after surgery by their parents, an independent observer, and a nurse. Parents whose children received the modeling procedure alone rated their children as more anxious and less cooperative on the afternoon after surgery than did parents in other groups. Children receiving the coping plus modeling techniques remained the most calm and cooperative during invasive procedures.

Pre-Anesthetic Visits

Several studies (Birkinshaw, 1978; Egbert et al., 1964; Williams et al., 1975) have employed brief preoperative visits by the anesthesiologist to reduce preoperative anxiety. Birkinshaw (1978) suggests that the justification for the anesthesiologist conducting the visit is that it may act as a supplement to or, in some cases, a replacement for the premedication (Van Dyke, 1970).

In the Egbert et al. (1964) study, described previously, the manipulation consisted of two visits by the anesthesiologist, one before surgery which consisted of informing the patients they would feel pain, the severity of pain to be expected, how to turn themselves in bed with minimal pain, and how to relax their muscles. These 46 patients were again visited the afternoon after surgery reiterating what the anesthesiologist had taught them the night before and

reassuring them the pain they were experiencing was normal. The 51 patients in the control group received two visits by an anesthesiologist unfamiliar to them but were not told about postsurgical pain, how to turn themselves, or how to relax. Patients in the treatment group requested a significantly smaller amount of narcotics and spent fewer days in the hospital than the control group.

Williams et al. (1975) suggested that the mere occurrence of a presurgical visit does not ensure reduction of a patient's anxiety. The direction and degree of effect may be determined by the content and duration of the interview, amount of interpersonal rapport, the anxiety level of the patient, and so on. To test this they manipulated the kind of anesthetic presurgical visit. The first ("cursory") interview was brief (3-4 min). The anesthesiologist was polite but formal, and no attempt was made to establish rapport. The second kind of visit ("supportive") which was about 12-15 min, was designed to offer opportunity for the patient to receive all the information desired as well as establish maximal rapport. Although there was no control group in this study, the results indicate that the 40 highly anxious patients, as measured by the Skin Conductance Anxiety Test, had reduced anxiety levels as a consequence of both cursory and supportive interviews. The relatively non-anxious patients had significantly increased anxiety levels following the cursory interviews. This study also

demonstrated that a high level of anxiety increases the amount of anesthesia required for induction at surgery.

The Present Study

All the studies presently reviewed have shown evidence of effectiveness in reducing self-report and physiological correlates of presurgical anxiety. The techniques described have been employed either alone or in combination with other procedures. The evidence suggests that the techniques used in combination are more effective than when used alone (Langer et al,. 1974; Peterson & Shigetomi, 1981; Wilson, 1981). Because of the high possibility of variability in subject response to a single standard treatment, the present study combined all of the following previously described techniques to maximize the probability of anxiety reduction and thus, faster recovery for a particular individual: general and sensory information about surgery, muscle relaxation, a cognitive coping technique, and a pre-anesthetic interview. For control purposes a placebo training session was given to some of the patients. The session consisted of a 20-min video tape about surgery, practicing coughing and breathing exercises, and the Thematic Apperception Test.

The measures used in the study were measures which seemed to indicate reduction of anxiety and improvement of recovery in the studies reviewed. For practical purposes, an attempt was made to obtain measures which would also normally be taken during a typical hospital stay. In

addition, a few measures which have not previously been employed with surgery patients were used in an effort to explore additonal reliable indictors of anxiety reduction and improved recovery.

All of the techniques in the review have been evaluated using group designs. Group comparisons are based on the averaged data of a large number of subjects. Since a great deal of between-subject variability is typically observed, the averaging may result in a loss of information about individual responses to treatment and about predictors of treatment success. This information may be clinically important for the nurse providing treatment to an individual patient. Thus, one goal of the present study was to obtain information about the reactions of the individual patient to surgery and to the presurgical training.

The present intervention was designed to be implemented by nursing staff either in the physician's office or in the hospital. To achieve this goal, the patient instruction must be relatively brief and within the staff nurse's range of understanding of patient services. In other words, the nature of the program should have face validity to the nursing staff who are unlikely to have had extensive behavioral training. The combination of techniques described above were taught without extending training time beyond the time available to nursing staff or beyond the attention span of patients.

Method

Participants

The study was originally designed for six hysterectomy patients, each randomly assigned to treatment or to a yoked, placebo control condition. Due to lack of availability of patients during the 6 months allotted to complete the study, only five patients completed the training. These five patients were between the ages of 30-36. All of the patients had at least two children. Each patient had experienced at least one prior surgery within the last 7 years. One patient had received as many as nine surgeries over a period of 10 years. These two factors helped to reduce the heterogeneity of the sample in that they would eliminate additional sources of stress, such as coping with childlessness and having no prior hospital experiences which may affect patient reports of pain and physical status (Volicer & Volicer, 1978). Hysterectomy patients were chosen because the surgery and secondary medical treatments are fairly consistent across a large proportion of cases. In addition, the physiological procedures and healing process for this surgery were not likely to confound the physiological measures. For example, blood pressure and heart rate would be extremely confounded if open-heart surgery patients were used. All patients were obtained by contacting private physicians working at a 316-bed, private, community hospital.

Settings

Training sessions for two of the women were carried out in a hospital conference room. One woman was trained in her physician's office and one woman was trained in her semi-private hospital room. The reason for the different settings was due to availability of space in the hospital and physician's office on the day and time the training session was scheduled to take place. Other brief visits to take vital signs and complete questionnaires took place in one of four locations: the physician's office, a hospital conference room, the patient's home, or in one case, the patient's work place. This was due to availability of space as well as patients' work schedules.

Trainers and Observers

Two female psychology graduate students served as trainers and observers. Patients were randomly assigned to each trainer. The trainer not assigned to the patient served as observer of the training session. Observers were not naive as to which patients were in the treatment and placebo conditions since the observers also served as trainers.

Observation Checklists

To assess the equality of time and trainer attention across treatment and placebo conditions, behavioral observations were taken at 10-min intervals during the training sessions. The observer recorded occurrence or non-occurrence

of seven trainer behaviors: smiling, eye contact, bodily orientation towards the patient, speaking (including small talk and all other vocal communication), and clarity of speaking. Occurrence of speaking by the patient was also recorded as a measure of active participation by the patient.

After the training session was completed, the time length of the session was recorded. Three global ratings were also made on a 5 point Likert scale of trainer's attempt to establish rapport with the patient, clarity of explanation of techniques, and amount of time the trainer engaged in small talk. The observation checklist appears in Appendix A. Interobserver reliability was not taken because patients expressed confusion at the need for more than 1 experimenter and physicians would not allow 3 different students to work with their patients.

Procedure

All patients were given either the treatment or placebo sessions described briefly below. At the first meeting patients were given an explanation of the study and the extent of their requested participation. After all questions had been answered to the patient's satisfaction, each patient was asked to sign a consent form (Appendix B).

Training sessions for both conditions were completed in approximately 1 hour. Patients were instructed to practice the techniques included in the training they

received at least two times each day before and after surgery. Diary sheets for recording practice sessions were provided (Appendices C & D).

Muscle relaxation. Patients were given an audio tape recorder and audio-taped instructions in progressive muscle relaxation. The 25-min audio tape consisted of instructions to tense and relax the major muscle groups of the body as well as suggestions for imagining pleasant, relaxing scenes. Each patient listened to the tape during the initial training session and was also instructed to listen to the tape at least twice daily before and after surgery. The patient was asked to record the frequency and time of day of any practice sessions.

General and sensory information. Following the relaxation tape patients listened to a second 5-min audio tape which consisted of general information about the sequence of events before and after surgery. The tape also described the typical sensations patients experience with each of these events. For example, "When you wake up, your throat may be sore and dry. Your incision may feel tender to the touch and you may feel a pulling and burning sensation." A script of the tape is in Appendix E.

As part of the general information, patients were shown a catheter, I.V., and incisional clips following the tape. The function of each was explained and patients were asked to hold and look at the equipment until they felt comfortable with them.

Cognitive coping technique. Patients were trained to use coping self-statements whenever they felt anxious about surgical procedures. A list of coping self-statements applicable to stress-inoculation training (Meichenbaum, 1974) and pain control (Turk, 1975) were given to the patient (Appendix F). Examples of statements from the list include, "When fear comes, just pause" and "Just relax, breathe deeply, and use one of the strategies." In addition, a role-play (approximately 10-15 min) was conducted in which the trainer played the role of a "fearful" surgical patient. Using the list provided, the actual patient was asked to tell the trainer how the fearful patient could talk differently to herself about the situation to reduce her anxiety. Patients were instructed to use this technique whenever they felt anxious about the impending surgery and during the post-surgical period. They were requested to practice at least two times per day.

Pre-anesthetic visit and endorsement. During the routine presurgical visit the evening before surgery, the anesthesiologist attempted to establish rapport with the patient by (a) spending about 12-15 min with the patient, (b) asking the patient if she had any questions or fears about the surgery, and (c) endorsing the training program by stating that the more relaxed and calm the patient could become before surgery the faster she would recover and the more comfortable she would be after surgery. The anesthesiologist also asked the patient to practice the anxiety-

reduction techniques before surgery occurred.

Placebo session. Patients in the placebo training condition were shown a 20-min standard hospital video tape of procedural information about surgery. The tape included information about the sequence of events during the patient's hospital stay as well as a demonstration of coughing, breathing, and leg and foot exercises to improve circulation after surgery. The tape was followed by a 15-20 min practice session of the recovery exercises presented in the tape. Patients were asked to practice the exercises at least twice each day before and after surgery and record their practice sessions on a sheet provided to them (Appendix C). The remainder of the session consisted of having the patient make up stories using cards from the Thematic Apperception Test. The patient was asked to attempt to relate the stories to their upcoming surgery as this was a means for the trainer to help determine the stress the patient was experiencing. The cards were presented as an assessment device rather than as an exercise to benefit the patient.

The same anesthesiologist who visited the treatment patients also visited the placebo patients the evening before surgery. The visits for all patients were approximately 12-15 min. However, with the placebo patients the anesthesiologist was polite, but formal and asked routine questions about past surgeries, medication usage, and drug allergies. Patients were not encouraged to talk about their

fears. They were also asked to practice the exercises they had learned during the video tape session.

Measures and Assessment

Several self-report and physiological measures were taken to determine anxiety level and rate of recovery. Unless otherwise noted in later sections, these measures were taken at the following points: (a) 2 weeks before admission, (b) 1 week before admission, (c) the evening before surgery, (d) immediately prior to training, (e) immediately after training, (f) 3 days after surgery, and (g) at the 1 week follow up visit with their surgeon.

State Anxiety Inventory. This inventory was designed to measure state anxiety (A-State). State anxiety is conceptualized as a transitory emotional state characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity. A-State may vary in intensity and fluctuate over time. This differs from trait anxiety which refers to relatively stable individual differences in anxiety proneness, or differences between people in the tendency to respond to situations perceived as threatening with elevations in A-State intensity (Spielberger, et al., 1970).

The State Anxiety Scale is a 20-item inventory in which subjects were instructed to rate certain statements about how they feel at "this moment" (A-State) on a 1-4 scale. A copy of the scale is in Appendix G. Test-retest correlations

for the A-State scale with six subgroups of college undergraduates are relatively low, ranging from .16 to .54. The low correlations for the A-State scale are to be expected because a valid measure of A-State should reflect the influence of situational factors at the time of testing. Using a measure of internal consistency (KR-20) reliability coefficients ranged from .83 to .92.

To determine construct validity of the A-State scale, 977 undergraduate college students were administerd the A-State scale under normal class conditions. They were then asked to respond according to how they would feel "just prior to the final exam in an important course." The mean score for the A-State scale was considerably higher in the exam condition than in the normal condition. Point-biserial correlations for the scale were .60 for males and .73 for females (Spielberger, et al., 1970).

The Hospital Stress Rating Scale (HSRS). Psychosocial stress due to the experience of hospitalization can be quantified using the Hospital Stress Rating Scale (Volicer & Volicer, 1978). Each patient was asked to identify, from a list of 49 events often experienced by hospitalized patients, those events which she personally experienced since coming to the hospital. Each of the 49 events has a stress score corresponding to it, which indicates the amount of stress generally caused by that event relative to other events on the scale, as judged by a large number of hospital

patients (Volicer & Volicer, 1978). A stress score can therefore be calculated for each patient by summing the scores for those events she has identified. The HSRS has been administered at two points in time, the third and fifth days of hospitalization, to determine whether individual scores would change over time. Scores on the scale correlated highly between the two times and there was no tendency for the scores to either increase or decrease over time indicating reliability of the scores. A validity study using a panel of 30 graduate nurses as judges and an item X total correlation analysis of nine factors in the scale provided evidence of uniqueness among the factors, as well as validity of the stress scale (Volicer & Volicer, 1978). The scale was administered 3 days after surgery to help determine whether changes in anxiety relative to patients in the validation study were due to differences in the amount of hospital stress (see Appendix H).

Pulse, respiration, and blood pressure. Vital signs were taken at the points mentioned above under Procedures. Pulse, respiration, and blood pressure were taken by a nurse at the meetings which took place in the physician's office or in the hospital. All other vital signs were taken by one of the trainers.

Skin temperature. Boudewyns (1976) found that there are significant decreases in finger temperature of subjects

going from relaxing conditions to noxious or stressful conditions. Decreased skin temperature as a result of anxiety makes sense when one considers that vasoconstriction decreases peripheral blood flow and therefore also skin temperature, and that this process is a function of the sympathetic nervous system which readies the body for action (Hassett, 1978).

Patients were asked to record their skin temperature for each waking hour on a daily diary sheet (Appendix I). Monitoring began 2 weeks before hospital admission and continued until the follow up visit with their surgeon. This was accomplished by providing the patient with a thermometer ring. The ring allows 24-hr monitoring of temperature since it can be worn during most daily activities. Temperatures were not recorded during sleep. Daily skin temperature means were computed from the diary sheets. All rings worn by patients were tested against a T-67 Thermal model biofeedback machine to determine their reliability. The rings were found to accurately measure skin temperature within $\pm$ 1 degree.

Blood lactate levels. Hall and Brown (1979) found changes in lactic acid levels as a function of examination stress. Blood samples were obtained from 12 psychology graduate students at each of four times, 1 week prior to a statistics exam, within 15 min pre-exam, within 15 min post-exam, and 3 weeks after the exam. Lactic acid was signifi-

cantly elevated before the exam over the post-exam and control levels. The results suggest that changes in blood lactate level is indicative of stress levels. Self-ratings of "nervousness" by the students were not significantly correlated with pre-exam lactic acid.

As an indication of pre- and post-training stress levels, lactic acid levels were taken immediately before and after the 1 hour training sessions. This allowed for assessment of the immediate effects of training on stress level.

Recovery measures. Self-report of physical status was measured by the Recovery Inventory devised by Wolfer and Davis (1970). The patient was asked to rate herself on several areas of physical condition, from 0 (very poor) to 5 (excellent), as shown in Appendix J.

Eisler, Wolfer, and Diers (1972) administered the scale to a sample of 64 postsurgical patients and also used rating scales to give the patients scores for physical condition on the basis of clinical nursing judgments. High correlations (.67 and .69) were found between the two sets of scores and patients scoring high on the Recovery Inventory tended to have less severe surgery, spinal rather than general anesthesia, and shorter duration of anesthesia, compared with patients scoring low. These reports support the validity of this form of self-report as an indicator of physical function.

Self-report of pain was obtained after surgery. Patients were given a daily diary sheet (Appendix K; Kramer, Zlutnick, Taylor, & Corley, Note 1) Mean daily pain ratings were obtained to determine the affect of training on postsurgical pain.

In addition, recovery variables were taken from the patient's chart. These consisted of the amount of pain medications (equivalent to morphine) taken after surgery, the number of days spent in the hospital, occurrence of vomiting, and any physical or psychiatric complications noted.

Design

A non-concurrent multiple baseline design was used (Watson & Workman, 1981) in which the point of intervention was staggered across 5 patients. All patients were randomly assigned to treatment condition, point of intervention, and trainer. Patient 1 received the training 1 week before hospital admission (T1), Patient 2, 3 days before admission (T2), and Patient 3, the evening before surgery (T3). Patients 4 and 5 served as yoked, placebo controls with Patient 4 receiving the placebo session 1 week before surgery (P4) and Patient 5, 3 days before surgery (P5).

Measurements for most self-report and physiological measures were taken at 2 weeks, 1 week, and 3 days before hospital admission, before and after the training session, 3 days after surgery, and 1 week after hospital discharge.

Blood Lactate, skin temperature, hospital stress scores, and recovery measures serve as exceptions as discussed above. The design is illustrated in Figure 1.

Results

Observation Checklists

All of the sessions were completed in 55-60 min. The session with Patient 3 was not observed due to illness of the observer. The trainer present at this session estimated that actual training time was 60 min. Since this session took place in the hospital room the evening before surgery, there were several interruptions including a fire drill and having the patient's meal brought in. Thus, the total duration the trainer spent with the patient was approximately 90 min.

The following trainer behaviors occurred in every session during each 10-min interval: eye contact, facing the subject, talking clearly, and trainer talking. The patients also talked during each interval across every session. The only difference across sessions for the behavioral ratings was in the trainer smiling category. The trainer only smiled during two of the four intervals with Patients 2-4.

In global ratings across all sessions the trainer was rated as "trying very hard" to establish rapport and giving a "very clear" explanation of the program and techniques.

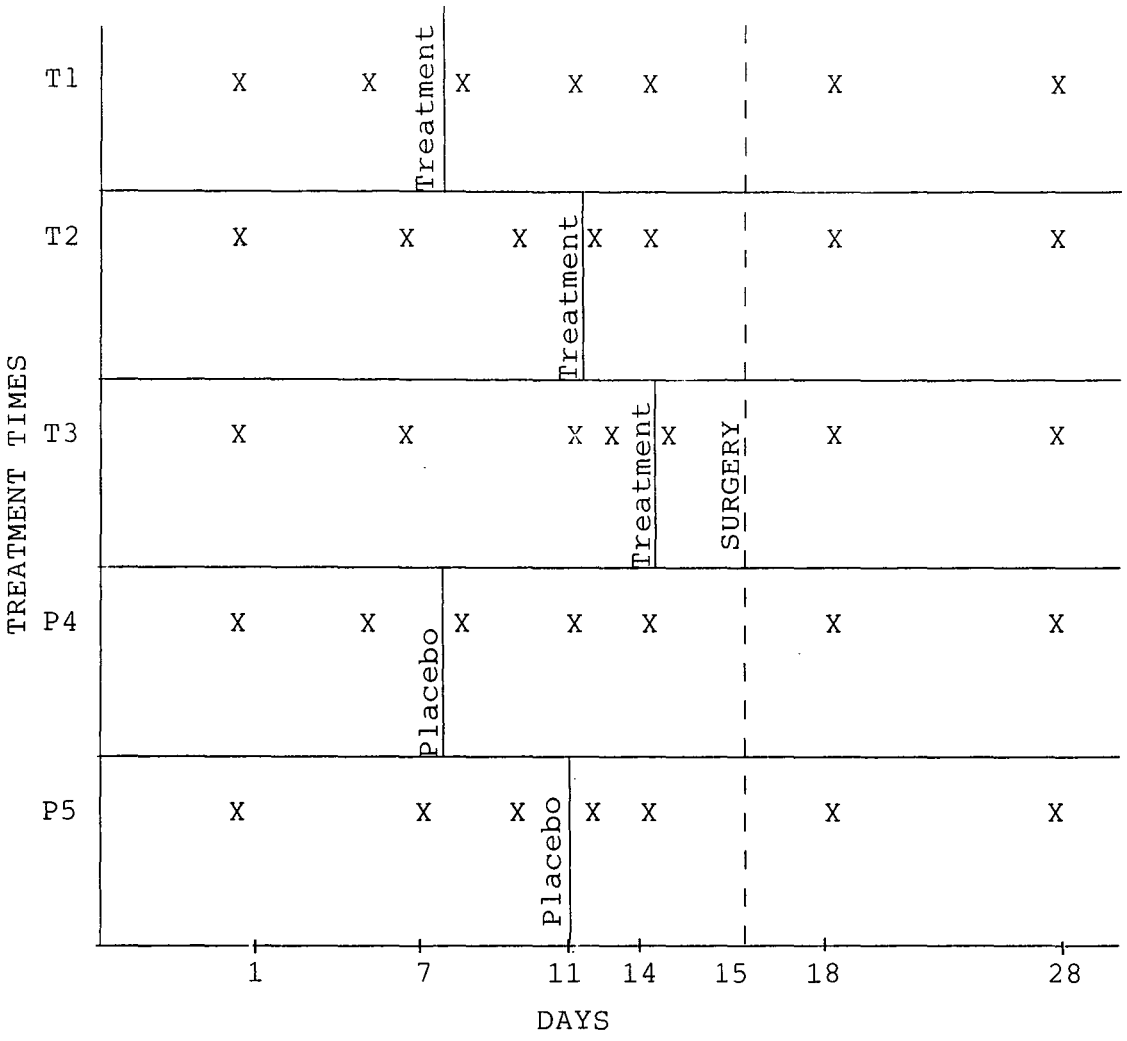

FIGURE 1. Points of measurement before training, after training, and after surgery for Patients 1-5. The solid line (———) indicates point of training for the treatment and placebo conditions. The dotted line (----) indicates point of surgery. The X's represent points at which physiological and self-report measures were taken. The points are 2 weeks (Day 1), 1 week (Day 7), and 3 days (Day 11) before hospital admission, the evening before surgery (Day 14), before and after the training session, 3 days after surgery (Day 18), and 1 week after hospital discharge (Day 28). Blood lactate, skin temperature, hospital stress scores, and recovery measures serve as exceptions and are discussed in the test.

An estimation of the amount of small talk during each session was 1-5 min for all sessions.

State-Trait Anxiety Inventory

The pattern of state anxiety scores for Patients 1-5 are summarized in Figure 2. The total possible score on the inventory is a score of 80. A score of 43 or above would indicate that the patient was reporting more anxiety than 50 percent of a normal group of surgery patients (Spielberger et al., 1970). Only one patient's score dropped notably after the training session (Patient 4). The change in scores represents an approximate 30 percent decrease in anxiety. Patient 1 and 5's scores rose somewhat the evening before surgery. All others stayed about the same or dropped slightly. A-State scores for all patients, with the exception of Patient 5, tended to show a decreasing trend after surgery, as would be expected. Patients 1 and 4 have a similar pattern with one somewhat high elevation before surgery. Patients 2 and 5 also have a similar, leveled off pattern with Patient 2's scores being lower overall. Since Patient 4 entered the study at a late date, no data was available for this patient at 2 weeks before surgery.

The Hospital Stress Rating Scale (HSRS)

HSRS scores are listed in Table 1. A total possible score on the scale is a score of 1,226. An average stress score for surgery patients is 289.08 (Volicer et al., 1977).

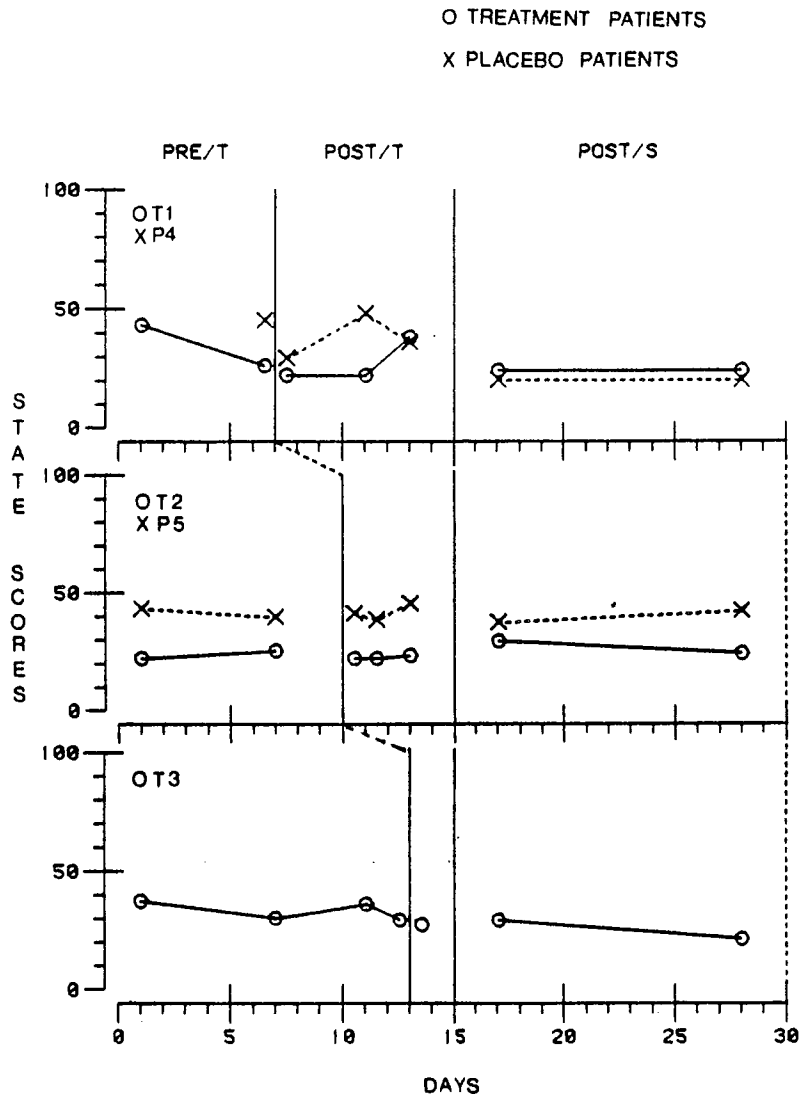

FIGURE 2. State anxiety scores as a function of time (DAYS) before or after training and/or surgery. Treatment patients are shown by O, and placebo patients by X. Patients 1 and 4 received treatment/placebo 7 days before hospital admission; Patients 2 and 5, 3 days before hospital admission; and Patient 3, 1 day before surgery. Surgery was scheduled at Day 15 for all patients. PRE/T indicates pre-training period; POST/T indicates post-training and pre-surgery period; and POST/S indicates post surgery.

Table 1

Hospital Stress Rating Scale Scores

Patient	Score
Treatment	
1	200.1
2	436.6
3	66.1
Placebo	
4	327.0
5	221.5

Scores varied greatly across patients. Patient 2's high stress score was accompanied by an increase in state anxiety, pulse, and blood pressure the evening before surgery as well as 3 days after surgery. Patient 4 also had a high stress score. However, changes in other measures did not accompany the high stress score as one might expect.

Pulse

Pulse rates of all patients are summarized in Figure 3. Pulse tended to increase gradually before surgery for all patients. Three patients' pulse rates decreased after training (Patients 2-4). Patient 3's pulse rate was the only one which decreased markedly (96 to 72). However, each of the three pulse rates tended to increase again before surgery. Patient 2's pulse increased before surgery whereas the yoked, placebo patient's (5) pulse began to decrease before surgery. After surgery, pulse rates for all patients in the treatment condition decreased whereas increases occurred for the placebo patients after surgery.

Blood Pressure

Blood pressure for all patients are illustrated in Figure 4. The trend before the training session for all but one patient (Patient 1) was an increase in blood pressure. Decreases occurred for Patient 1 at 1 week before surgery and Patients 4 and 5 at 3 days before surgery.

Blood pressure dropped for three patients after training. Patient 2's diastolic pressure dropped (70 to 65). Patient

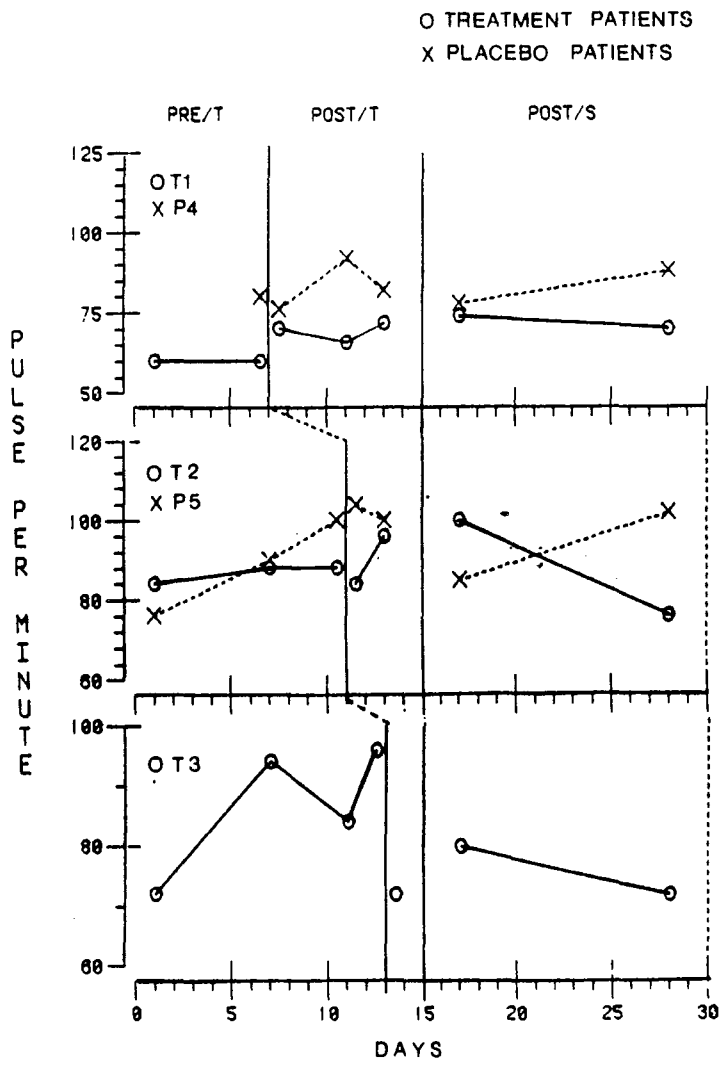

FIGURE 3. Pulse rates as a function of time (DAYS) before or after training and/or surgery. Treatment patients are shown by O, and placebo patients by X. Patients 1 and 4 received treatment/placebo 7 days before hospital admission; Patients 2 and 5, 3 days before hospital admission; and Patient 3, 1 day before surgery. Surgery was scheduled at Day 15 for all patients. PRE/T indicates pre-training period; POST/T indicates post-training and pre-surgery period; and POST/S indicates post surgery.

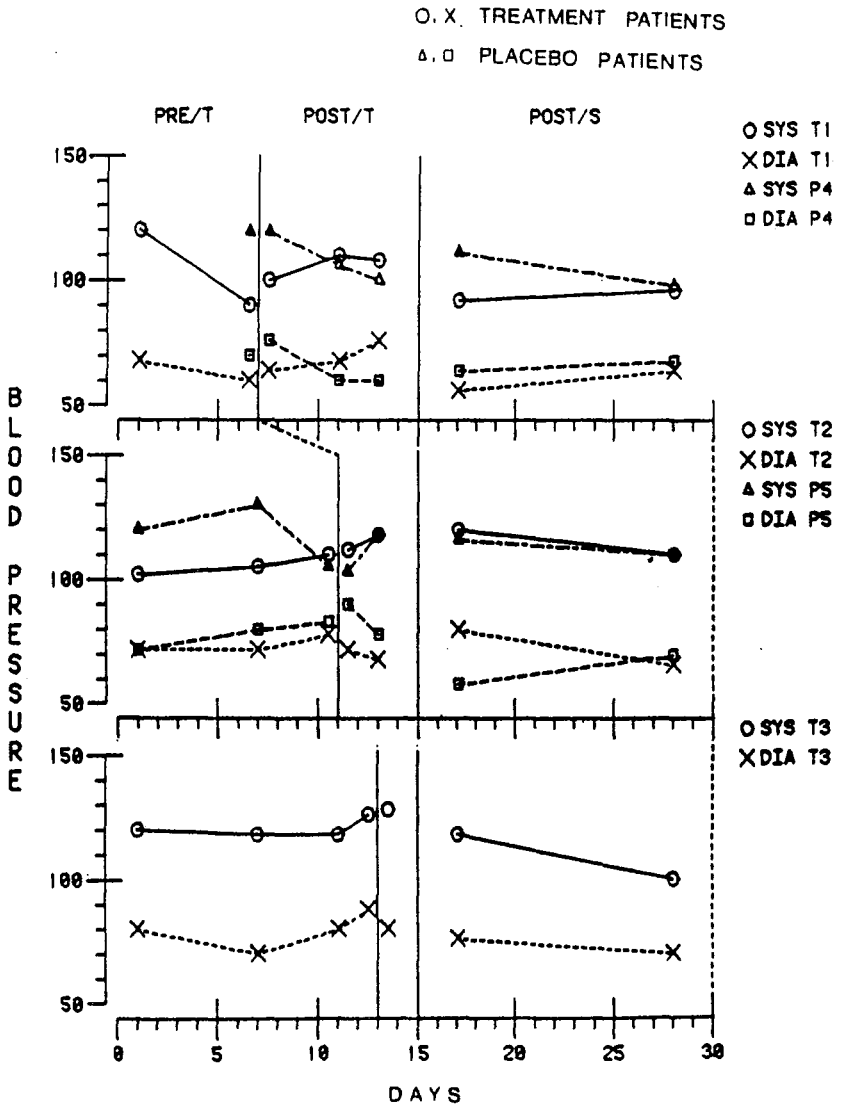

FIGURE 4. Blood pressure as a function of time (DAYS) before or after training and/or surgery. Treatment patients systolic pressure is shown by 0 and diastolic pressure by X. Placebo patients systolic pressure is shown by Δ and diastolic pressure by □. Patients 1 and 4 received treatment/placebo 7 days before hospital admission; Patients 2 and 5, 3 days before hospital admission; and Patient 3, 1 day before surgery. Surgery was scheduled at Day 15 for all patients. PRE/T indicates pre-training period; POST/T indicates post-training and pre-surgery period; and POST/S indicates post-surgery.

3's diastolic pressure dropped (88 to 80). Patient 5's systolic pressure dropped slightly (105 to 103).

After surgery, the trend was a decrease for all but Patient 1 who experienced a slight increase in both measures and Patient 5 whose diastolic pressure increased. Overall, the changes were relatively small and not unusual.

Respiration

Respiration rates are summarized in Figure 5. All but Patient 1 and 2's respiration tended to increase before training. All but Patient 1 and 4's respiration decreased after training with the biggest drop shown in Patient 3 (24 to 16). A notable change also occurred in Patient 2 whose rate rose markedly at one day before surgery. Again, this score occurred in conjunction with a high hospital stress score. After surgery, respiration tended to decrease for Patients 1, 2, and 4 but increased in Patients 3 and 5.

Skin Temperature

Patients 3 and 5 tend to show a decrease in skin temperature before the training session (Figure 6). Patient 1, 2, and 4's temperatures gradually increased after the training session. Since Patient 3 had surgery the morning after training, it was impossible to determine if her temperature changed. Except on one day, Patient 5 did not complete the diary sheets after the training session and before surgery. All patients' temperatures either rose or stayed about the same after surgery.

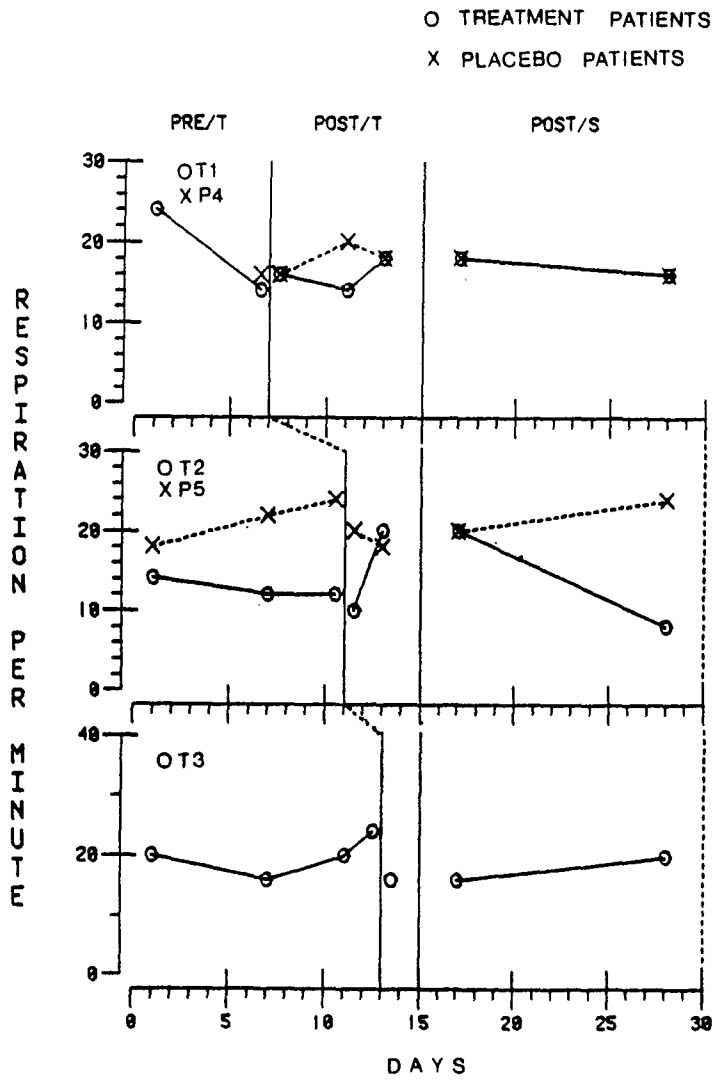

FIGURE 5. Respiration rates as a function of time (DAYS) before or after training and/or surgery. Treatment patients are shown by O, and placebo patients by X. Patients 1 and 4 received treatment/placebo 7 days before hospital admission; Patients 2 and 5, 3 days before hospital admission; and Patient 3, 1 day before surgery. Surgery was scheduled at Day 15 for all patients. PRE/T indicates pre-training period; POST/T indicates post-training and pre-surgery period; and POST/S indicates post surgery.

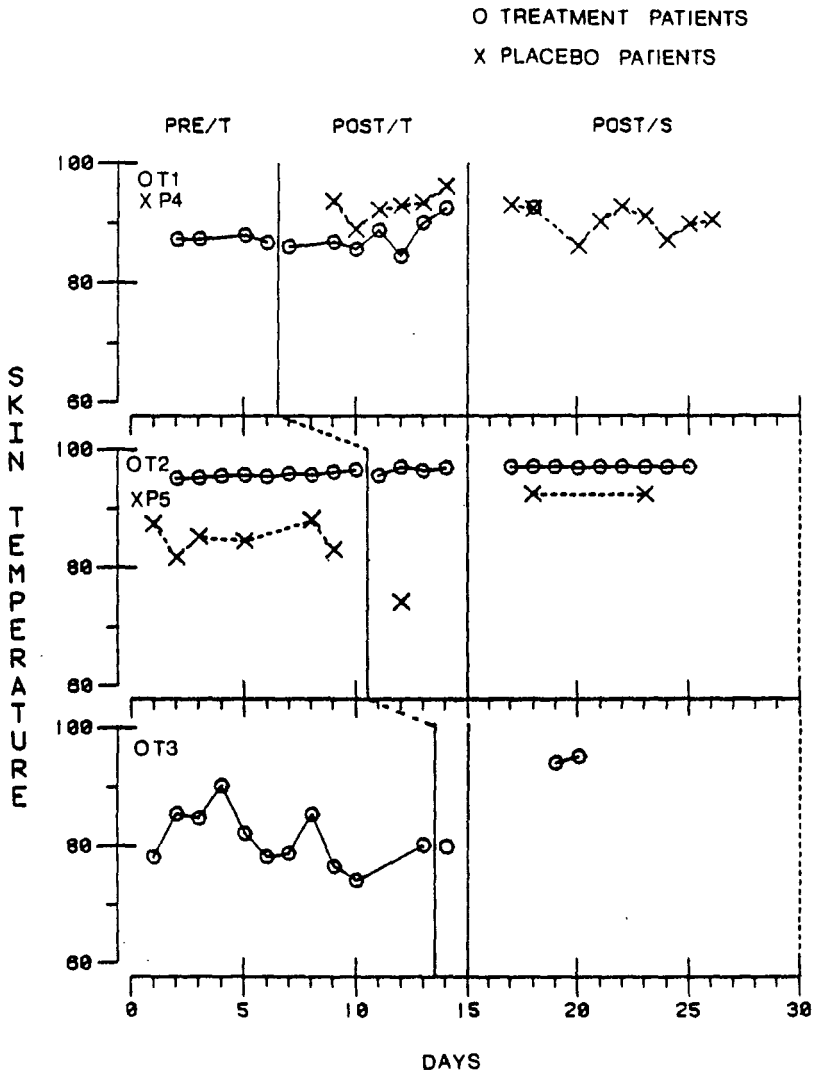

FIGURE 6. Skin temperature as a function of time (DAYS) before or after training and/or surgery. Treatment patients are shown by O, and placebo patients by X. Patients 1 and 4 received treatment/placebo 7 days before hospital admission; Patients 2 and 5, 3 days before hospital admission; Patient 3, 1 day before surgery. Surgery was scheduled at Day 15 for all patients. PRE/T indicates pre-training period; POST/T indicates post-training and pre-surgery period; and POST/S indicates post surgery.

Blood Lactate Levels

Normal range for lactic acid in the blood is .5-2.2 mili-equivalence per liter (mEq/L). Lactic acid levels dropped in all patients from before to after the one hour training session (Table 2). The greatest decreases occurred in Patients 2 and 5 with a difference of .9 for both. The smallest decrease was in Patient 1 with a decrease of .2.

Postsurgery Pain Ratings

Daily mean pain ratings for each patient are shown in Table 3. Because no patients kept complete data, comparison for any one day is difficult. Two days after surgery the treatment Patients (1 and 2) reported less pain than their placebo counterparts (Patients 4 and 5).

Pain Medication

Amounts of pain medication taken by each patient are listed in Table 4. In order to make comparison across all patients, all pain medications were converted into milligrams of morphine. The amount of pain analgesics taken after surgery increases as the time of the training session moves closer to the time of surgery and according to treatment condition. In other words, the patient who received the treatment session the evening before surgery (Patient 3) took the most pain medication of that group. The placebo patient who received the session 3 days before surgery (Patient 5) took more pain medication than Patient 4. Also, patients in the placebo condition took more than patients in the treatment condition.

Table 2

Blood Lactate Levels

Patient	Pre-training	Post-training
Treatment		
1	1.6	1.4
2	1.6	.7
3	.8	.3
Placebo		
4	1.5	.8
5	1.6	.7

Note. Lactate levels are expressed in mEq/L.

Table 3

Self-rating of Pain After Surgery

Patient	Days After Surgery					
	1	2	3	4	5	6
Treatment						
1	-	1.00	1.14	1.00	-	-
2	-	1.83	1.15	1.46	1.00	1.38
3	-	-	-	1.18	1.31	-
Placebo						
4	1.06	2.38	-	-	.63	1.06
5	3.25	3.50	3.71	-	-	-

Note. - indicates that the patient did not complete the form for that day.

Table 4

Postsurgery Pain Medications

Patient	Mg of Morphine
Treatment	
1	186.95
2	264.80
3	358.35
Placebo	
4	701.47
5	755.70

Note. All pain medications were converted to morphine equivalents.

Recovery Inventory

Recovery scores are difficult to compare since patients were not consistent in completing the forms. Table 5 summarizes the scores for each day after surgery. Of the three patients who rated their recovery the 2 days following surgery, Patient 4 rated her recovery highest on Day 1 followed by Patient 1 and then Patient 5. On Day 2, Patients 1 and 4 rated their recovery about the same. Once again, on Day 2, Patient 5 scored the lowest.

Hospital Days

The number of hospital days for each patient is in Table 6. Each figure includes the day of admission but not the day of discharge. The average length of stay for hysterectomy patients at the hospital where the study took place is 6.98 days (1981 average). Thus, Patients 1, 2, and 5 spent about 1 less day than the average. Patient 4 spent the average number of days in the hospital and Patient 3 spent approximately 1 day more than average. Patient 1 spent 1 day less than the control patient (4).

Discussion

Postsurgery pain ratings on Days 2 and 3 and medication usage was lower in the treatment condition than in the placebo condition. Patients 4 and 5 averaged approximately 3 times more medication than their treatment counterparts (Patients 1 and 2). These findings are consistent with several previous studies (Egbert et al., 1964; Fortin &

Table 5

Recovery Inventory Scores

Patient	Days After Surgery 1	2	3	4	5	6	7
Treatment							
1	30	35	-	43	-	-	-
2	-	-	27	30	33	32	29
3	-	-	32	-	-	-	-
Placebo							
4	41	35	51	-	45	-	-
5	23	31	-	-	-	-	-

Note. - indicates patient did not complete form.

Table 6

Number of Days in the Hospital

Patient	No. of days
Treatment	
1	6
2	6
3	8
Placebo	
4	7
5	6

Kirouac, 1976; Langer, et al., 1975; Wilson, 1981). All other recovery variables indicated no major differences.

Overall, the treatment session was accompanied by a leveling off of anxiety before surgery with the exception of one point for Patients 1 and 4. However, blood pressure, pulse, and respiration tended to increase before surgery regardless of training with the exception of Patient 4's blood pressure and Patient 5's respiration.

All of the patients tended to recover at about the same rate as indicted by the days in the hospital and self-report of recovery. Although Patient 4 rated her recovery quite high the first few days after training she still spent the average number of days in the hospital. Egbert et al. (1964) were able to reduce hospital stay by 2.7 days and Wilson (1981) by 1.1 days. One reason why a larger change in hospital stay was not observed may be due to the fact that the hospital's average stay is about 40% below the national average, thus, patients usually have a shortened stay just by having their surgery at this particular hospital.

All patients experienced a decrease in stress level after the training sessions as evidenced by the decrease in blood lactate levels. This measure appeared to be the most sensitive of the physiological measures and may be very useful in the future for determining stress levels in this type of research. However, it can only be used with patients

whose illnesses will not confound the lactate levels. This finding emphasizes the importance of providing some type of presurgical preparation in which the patient is given, at minimum, attention and information.

Skin temperature may also be a useful physiological measure in research with surgical patients. All but two of the patients skin temperatures rose after surgery. The exceptions were Patients 1 and 4 whose temperatures stayed about the same. The value of the skin temperature data was difficult to determine since several data points were missing. This is largely due to the amount of effort involved for the patient in collecting the data. The patients were requested to complete daily diary sheets throughout the study or a total of about 28 days. They were required to wear a special ring and to record their temperature for each waking hour. Most patients did not do this consistently. Also, skin temperature is affected by the temperature of the environment. Thus, when patients entered the hospital it was difficult to determine if a change in temperature was due to the temperature of the hospital or a true skin temperature change. This problem could be solved by obtaining a home and hospital baseline to determine changes in different environments. Further study on changes in skin temperature in surgery patients may provide a sensitive, non-invasive, physiological measure of surgical stress.

The point of intervention may be just as important as the content of the intervention. Of the 3 patients receiving

the treatment intervention, Patient 3 appeared to be best prepared before surgery. Her state anxiety, pulse, and respiration decreased after training as compared to Patient 1 whose state anxiety alone decreased and Patient 2 whose pulse and respiration decreased. Although Patients 1 and 2 did not show much change before surgery, they took fewer pain medications and went home 2 days sooner than Patient 3. Patient 4 who received the placebo intervention 1 week before surgery did better than Patient 5 who received the placebo intervention 3 days before surgery on 8 of the 11 measures. Thus, the data suggest that training which takes place 1 week before surgery may be most likely to favorably affect self-report, physiological, and recovery variables. This conclusion is drawn from only five cases, however, and should be considered as a tentative finding for further investigation. No studies to date in the literature (to the author's knowledge) have explored the optimal time for intervention with adult surgical patients.

Practical issues also enter into the decision of when to intervene. One week before surgery seemed to be the easiest time to intervene since the evening before surgery tended to be quite hectic for the patient and nursing staff. If the patient's anxiety is elevated at this time the patient may not be able to learn the techniques as well or have enough time to practice them before surgery. Three days before surgery also tended to be a hectic time for patients

in that most patients had presurgery appointments with their surgeons at this time. They were also trying to make arrangements at work and at home for the 6 weeks they needed for recovery. These extra stresses may have some effect on how the patient learns the techniques as well as how fast and how well she recovers.

Hospital staff time was also a consideration in the study. Since the training session requires only an hour of the trainer's time, it is feasible for a nurse to conduct the training. Further study about the reactions of patients when trained in a group setting may make the training even more cost-effective. Information about which components of the training program are most effective with each individual is also needed.

The design of the study brings with it some limitations. The conclusions drawn are based on a small sample and are worth further study. A third placebo control patient would have provided more information about patient reactions to attention the evening before surgery. Physiological measures tend to fluctuate somewhat, making it difficult to obtain a stable measure at one particular point in time.

The present study has been an attempt to obtain information about individuals' responses to two intervention programs before surgery as well as develop a practical, effective treatment approach to presurgery anxiety. An attempt has also been made to explore the usefulness of various measures

for determining the effects of such a program on the self-report, physiological, and recovery aspects of patients who experience surgery. The study should be viewed as primarily exploratory in nature since the package of techniques and some of the measures as well as the method of individual study have not been reported in the literature on surgery patients.

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Appendix A

OBSERVATION CHECKLIST

	1	2	3	4	5	6	7	8	9	10	11	12
SMILES												
EYE CONTACT												
FACING SUBJECT												
SMALL TALK												
TALK CLEAR												
TRAINER TALKS												
PATIENT TALKS												

Definitions:

1) SMILES: both corners of mouth turned up

2) EYE CONTACT: trainer looks at subject's face for at least 1 second

3) FACING SUBJECT: trainer's body orientation is facing towards subject; does not include head towards with body away

4) SMALL TALK: asks subject or comments on an aspect of the subject's personal life or impersonal life as long as it does not directly involve the upcoming surgery. Includes questions such as, "What does your husband do for a living? Does not include something like "How does your husband feel about your surgery?"

5) TALK CLEAR: is trainer's speech clear and easy to understand? Is she talking loud enough so that the patient can hear?

6) TRAINER TALK: does trainer talk during interval?--includes mmhmm, etc.

7) PATIENT TALK: does patient talk during interval--same as above

Complete after session

1) Time length of entire session (including measures before)_____

2) Did experimenter attempt to establish rapport? (circle one)

not at all not too hard about average tried somewhat tried very hard

3) How clear was the explanation of techniques & the program?

unclear somewhat unclear average pretty clear very clear

4) The trainer engaged in small talk

not at all 1-5 min. 6-10 min. 11-15 min. 16-20 min. over 20 min.

Appendix B

CONSENT FORM FOR PARTICIPATION IN THE
POST-OPERATIVE RECOVERY PROGRAM STUDY

Your physician has recommended the surgical procedure _____ _____. In order to enhance a patient's recovery from surgery, St. Joseph's Hospital is currently assessing the present post-operative recovery program in an effort to improve those services. The assessment is being conducted by hospital staff and a psychology graduate student from the University of the Pacific. Your participation in this assessment shall include the performance of additional laboratory tests to assess your level of blood lactates. This additional lab work will be done at no additional cost to you. The information collected during your stay at the hospital will be anonymously combined and summarized with information from other patients undergoing similar surgery.

I have read the above summary and heard the explanation of this assessment program. I understand all procedures involved in the assessment and they have been explained to my satisfaction. I also understand that I may withdraw from the program at any time. I agree to participate in the program assessment and give my permission to have my records included anonymously in the published report. I also give my permission to obtain information from my hospital chart regarding my physical condition.

(Patient's Signature)	(Date)	(Time)
(Witness's Signature)	(Date)	(Time)

DO NOT WRITE BELOW THIS SPACE

(Physician's Signature)	(Date)	(Time)

Appendix C

Surgical Preparation Practice Sessions

Name_____

To be most effective, the muscle relaxation and coping self-statements should be rehearsed each time you feel worried or tense. However, you should practice the techniques at least twice per day. Use the taped instructions and the list of coping self-statements provided for you. Please record your practice sessions below.

Relaxation Practice

Date	Time

Coping Self-Statements

Date	Time

Appendix D

Practice Diary for Placebo Group

To help you recover quickly it is important that you are able to do the coughing, breathing, leg, and foot exercises discussed in the videotape. To be familiar with them by the day of your surgery you should practice them at least 2 times a day. Please record your practice sessions below.

DATE	TIME	PLACE	EXERCISE

DATE	TIME	PLACE	EXERCISE

Appendix E

General and Sensory Information (Script)

"First of all, I would like to briefly describe the general sequence of events that will occur during your hospital stay as well as give you information about typical sensations patients experience before and after surgery. During the early part of your stay a few tests may be done. These are done so that the surgery team knows how your body is functioning before the operation. Some of these tests include body temperature, pulse and breath rates, blood pressure, and examinations of blood and urine.

The evening before surgery the anesthesiologist will visit you. He will ask you questions about your general health, previous operations, drug allergies, and current medications you are taking. Also, during the evening before surgery, you may receive a treatment such as an enema or douche ordered by your surgeon. You may be asked to take or be given a bath with a soap which helps prevent infection. Medications will also be given to help you rest well during the night.

In the morning on the day of your surgery the area of incision will be washed and shaved. In some cases shaving is not needed. You will be asked to go to the bathroom to empty your bladder. If medications have been ordered, they will be given at this time. They will make you feel relaxed and drowsy and make your mouth feel dry.

Your operation will take approximately 45 minutes for a vaginal hysterectomy and 1 1/2 hours for an abdominal hysterectomy. If you are having additional surgical procedures it will take

longer. You will also be catheterized during and after surgery for 1-3 days or until you are able to void on your own. When you awaken, you may feel a sense of urgency to go to the bathroom when the catheter is in place. You will also have an IV in your arm. You may feel slight pressure where the IV is inserted under the skin.

After your surgery you will be taken to the post-anesthesia area or recovery room. You will be there at least one hour. Nurses will take your blood pressure, pulse and respiratory rates frequently. You will be asked to take deep breaths, cough, do leg and foot exercises, and will be turned frequently. Even though you are awake and cooperative when you leave the post-anesthesia area, you may not remember being there at the time immediately after the operation. This is because of the medications you receive. As you are waking up you can expect to feel very drowsy. Your throat may be sore and your mouth dry. Your incision will feel tender to the touch. You may feel a pulling and burning sensation. You may begin to feel a moderate, throbbing pain. Before your pain becomes severe you may want to ask for pain medications. Shortly after you have received the medication you may feel a little lightheaded and sleepy. You may also feel heavy and apathetic.

Some patients report experiencing a bloating of the abdomen about 2-4 days after surgery. This is caused by the reactivation of your digestive system. While you're under anesthesia your digestive system is put to "sleep" and it takes a few days to begin functioning normally again. However, even though your system

is not processing food during this time, the microorganisms in your intestines are still producing gas, thus your body develops a buildup of the gas, producing pressure, bloating and a cramping-like pain. This pain will gradually subside over a 2-3 day period.

It is hoped that this information about typical sensations experienced by hysterectomy patients will help you become prepared for your surgery. These procedures and sensations should be considered a normal part of your surgical experience.

Appendix F

Coping Self-Statements

Preparing for a stressor
- What is it you have to do?
- You can develop a plan to deal with it.
- Just think about what you can do about it. That's better than getting anxious.
- Don't worry; worrying won't help anything.
- You have lots of different strategies you can call upon.

Confronting and handling a stressor
- Just "psych" yourself up-you can meet this challenge.
- You can convince yourself to do it. You can reason your fear away.
- One step at a time; you can handle the situation.
- Don't think about fear; just think about what you have to do.
- Stay relevant.
- This tenseness can be an ally; a cue to cope.
- Relax; you're in control. Take a slow deep breath. Ah, good.

Coping with feeling overwhelmed.
- When fear comes, just pause.
- Keep the focus on the present; what is it you have to do?
- Label your fear from 0 to 10 and watch it change.
- Don't try to eliminate fear totally; just keep it manageable.

Confronting and handling the pain
- You can meet the challenge.
- One step at a time; you can handle the situation.
- Just relax, breathe deeply, and use one of the strategies.
- Don't think about the pain, just what you have to do.
- This tenseness can be an ally, a cue to cope.
- Relax. You're in control; take a slow deep breath. Ah, good.
- This anxiety is what the trainer said you might feel.
- That's right; it's the reminder to use your coping skills.

Coping with feelings at critical moments
- When pain comes just pause; keep focusing on what you have to do.
- What is it you have to do?
- Don't try to eliminate the pain totally; just keep it under control.
- Just remember, there are different strategies; they'll help you stay in control.
- When the pain mounts you can switch to a different strategy-you're in control.

Reinforcing self-statements
- Good, you did it.
- You handled it pretty well.
- You knew you could do it!
- Wait until you tell the trainer about which procedures worked best.

Appendix G

Stat Anxiety Form

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

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

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④

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Appendix H

The Hospital Stress Rating Scale

Assigned Rank	Event	Mean Rank Score
1	Having strangers sleep in the same room with you	13.9
2	Having to eat at different times than you usually do	15.4
3	Having to sleep in a strange bed	15.9
4	Having to wear a hospital gown	16.0
5	Having strange machines around	16.8
6	Being awakened in the night by the nurse	16.9
7	Having to be assisted with bathing	17.0
8	Not being able to get newspapers, radio, or TV when you want them	17.7
9	Having a roommate who has too many visitors	18.1
10	Having to stay in bed or the same room all day	19.1
11	Being aware of unusual smells around you	19.4
12	Having a roommate who is seriously ill or cannot talk with you	21.2
13	Having to be assisted with a bedpan	21.5
14	Having a roommate who is unfriendly	21.6
15	Not having friends visit you	21.7
16	Being in a room that is too cold or too hot	21.7
17	Thinking your appearance might be changed after your hospitalization	22.1
18	Being in the hospital during holidays or special family occasions	22.3
19	Thinking you might have pain because of surgery or test procedures	22.4
20	Worrying about your spouse being away from you	22.7
21	Having to eat cold or tasteless food	23.2
22	Not being able to call family or friends on the phone	23.3
23	Being cared for by an unfamiliar doctor	23.4
24	Being put in the hospital because of an accident	23.6
25	Not knowing when to expect things will be done to you	24.2
26	Having the staff be in too much of a hurry	24.5
27	Thinking about losing income because of your illness	25.9
28	Having medications cause you discomfort	26.0
29	Having nurses or doctors talk too fast or use words you can't understand	26.4
30	Feeling you are getting dependent on medications	26.4
31	Not having family visit you	26.5
32	Knowing you have to have an operation	26.9
33	Being hospitalized far away from home	27.1
34	Having a sudden hospitalization you weren't planning to have	27.2
35	Not having your call light answered	27.3
36	Not having enough insurance to pay for your hospitalization	27.4
37	Not having your questions answered by the staff	27.6
38	Missing your spouse	28.4
39	Being fed through tubes	29.2
40	Not getting relief from pain medications	31.2
41	Not knowing the results or reasons for your treatments	31.9
42	Not getting pain medication when you need it	32.4
43	Not knowing for sure what illness you have	34.0
44	Not being told what your diagnosis is	34.1
45	Thinking you might lose your hearing	34.5
46	Knowing you have a serious illness	34.6
47	Thinking you might lose a kidney or some other organ	35.6
48	Thinking you might have cancer	39.2
49	Thinking you might lose your sight	40.6

Appendix I

Skin Temperature Diary

Name_____ Date_____

Hour	Activity	Place	Temperature
12:00am			
1:00			
2:00			
3:00			
4:00			
5:00			
6:00			
7:00			
8:00			
9:00			
10:00			
11:00			
12:00noon			
1:00			
2:00			
3:00			
4:00			
5:00			
6:00			
7:00			
8:00			
9:00			
10:00			
11:00			

Appendix J

(1)

Recovery Inventory

The purpose of this questionnaire is to give you an opportunity to rate various aspects of your recovery today. Please be as frank as possible.

Name:_____ Date:_____

	Very Poor	Poor	Fair	Good	Very Good	Excel-lent
Sleep last night						
Usual sleep at home						
Appetite today						
Usual appetite at home						
Strength and energy today						
Usual strength and energy						
Stomach condition today (i.e. upset, nauseated, vomiting)						
Stomach condition yesterday (i.e. upset, nauseated, vomiting)						
Bowel condition today (i.e. gas pains)						
Ability to urinate without trouble						
Ability to do things for yourself						
Ability to move around and get out of bed by yourself						
Interest in what is going on around you						

How many times have you been out of bed today? [ ]

Appendix J--cont.

	None	Very Little	Some	Quite A Bit	Much	Very Much
How much pain have you had today?						

	Very Mild	Mild	Moderate	Intense	Very Intense	Extremely Intense
How intense has the pain been?						

If anything unusual or distressing happened today, either in or out of the hospital, that has caused you to be upset, please indicate how distressing it was to you:

Not At all	A Little	Moderately	Quite A Bit	Very Much	Extremely

Please explain the incident or circumstances:

Appendix K

Pain Rating Scale

NAME: _____

DATE: _____

HOUR BEGINNING	PAIN absence 0	1	2	3	4	5 unbearable
12:00 am						
1:00						
2:00						
3:00						
4:00						
5:00						
6:00						
7:00						
8:00						
9:00						
10:00						
11:00						
12:00 noon						
1:00						
2:00						
3:00						
4:00						
5:00						
6:00						
7:00						
8:00						
9:00						
10:00						
11:00						