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thesis entitled

A COMPARISON OF THREE TYPES OF PRESURGICAL PSYCHOLOGICAL INTERVENTION WITH MALE OPEN HEART SURGERY PATIENTS

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Department of Counseling, Personnel Services and Educational Psychology

Major professor

Date December 12, 1977

A COMPARISON OF THREE TYPES OF PRESURGICAL PSYCHOLOGICAL INTERVENTION WITH MALE OPEN HEART SURGERY PATIENTS

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Personnel Services and
Educational Psychology

1978

ABSTRACT

A COMPARISON OF THREE TYPES OF PRESURGICAL PSYCHOLOGICAL INTERVENTION WITH MALE OPEN HEART SURGERY PATIENTS

By

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The Problem

The purpose of this research was to assess the effects of three types of presurgical psychological intervention on male, open heart surgery patients scheduled for surgery at the Experimental Research Hospital (ERH) from November 1976 through November 1977. Prior to surgery all subjects were tested using psychological measures and received a 35-45 minute interview of either affective psychological intervention, cognitive psychological intervention, or control intervention.

This study attempted to examine experimentally the suggestions of other research that presurgical psychological intervention aids the patient in coping with postsurgical stress, and thus helps to improve convalescence.

A review of the literature covering the psychological aspects of surgery suggested that some type of intervention is beneficial to the patient. More

specifically, it was implied by the research that several types of intervention could be appropriate, and that an evaluation of the effects of different intervention techniques on convalescence is needed. Another aspect of convalescence reviewed in the literature was the effect the patient's presurgical attitudes and beliefs might have on his ability to recover successfully.

Although researchers suggested that presurgical psychological treatment is effective and that different treatments could be appropriate for certain types of patients, experimental evidence to support that contention was not abundant. Much data existed, however, which provided correlational evidence that personality types or coping styles were in some way related to convalescence.

This research was designed to correct the limitations inherent in the previous studies discussed in Chapter I. That is, this study experimentally examined the effects of certain treatments while controlling for the several variables identified previously as possibly responsible for the differences in convalescence rates, namely, presurgical psychological data, operative data, and age of the patient.

Design and Methodology

The research design was a three-by-two, two-way design. The effect of treatment was assessed along with possible effects caused by the person administering the

treatment. The independent variables in this study, then, were the administrator, who was a social worker or a counselor, and the type of treatment. The three treatments assessed were: (a) affective intervention, (b) cognitive intervention, and (c) control intervention.

There were 12 dependent variables used in this study to measure various aspects of convalescence. All were reflective of dependent variables used in previous research reviewed in Chapter I. They were:

1. Days spent in the hospital from surgery to discharge
2. Hours spent in the intensive care unit
3. Amount of analgesic medication received
4. Amount of hypnotic medication received
5. Amount of anti-anxiety medication received
6. Amount of anti-psychotic medication received
7. Medical complications while in the intensive care unit
8. Total medical complications from surgery to discharge
9. Psychiatric complications while in the intensive care unit
10. Total psychiatric complications from surgery to discharge
11. Postsurgical depression as measured by the Beck Depression Inventory

12. Postsurgical depression as measured by the Zung Self Rating Depression Scale

All data for the dependent variables were taken from the patient charts, psychiatric assessment forms, or psychological tests.

Results

The results of the study did not support the hypothesis that there would be differences between the three presurgical treatment groups. Supplemental tests indicated it did not matter on which day of the week the patient had surgery or whether the patients were highly internally controlled or highly externally controlled, as measured on the Rotter IE Scale. There were no differences between the treatment groups. A further supplemental test showed some relationship between the presurgical psychological tests of anxiety and depression and the postsurgical psychological convalescence measures of depression and psychiatric complications while in the intensive care unit.

DEDICATION

To Pat and Jimmy

There are things which must cause you to lose your reason or you have none to lose.

Lessing

ACKNOWLEDGMENTS

The many months spent in planning, executing and completing this study brought the formation of several new relationships and the strengthening of old friendships. I would like to thank those people for whose involvement in this project I am so grateful.

To Dr. Alex J. Cade, my dissertation chairman, major professor and friend, for his long-time support of me and his faith in my abilities.

To Dr. Richard G. Johnson, committee member, for his gentle encouragement and consistent availability throughout my graduate work.

I am especially indebted to Dr. Sumer Verma, committee member, who provided the link between the university and the hospital, for his competence as a psychiatrist and teacher, his enthusiasm for research, and his delightful, spirited approach to life.

Dr. William H. Schmidt, committee member, and Dr. Judith Taylor, statistical consultant, were incredibly helpful in making the world of the statistician meaningful and relevant; Judith is to be thanked particularly for her

kindness and perseverance, and Bill for his ability to encourage rigor while not losing sight of the humanness of research.

I express my gratitude to Evelyn Koenig, my colleague and friend who shared in the experimental aspects of the project, for her tenacity, thoroughness and creativity as a researcher, and even more for her sense of humor and her willingness to take time to laugh with me.

I would like to thank Addiann Hinds for her careful and discerning editing. Also, thanks to Harold Drane and the Department of Psychiatry for providing me a comfortable home throughout the study.

My family has provided a constant base of support during my many years of education and their unwavering encouragement is much appreciated. A special thanks to my brother, Bob Elliott, and Shiley, Inc. for providing immediate and precise information and advice.

Finally, to my husband, Patrick Kowaleski, and son, Jim, who sacrificed so that I might succeed, I am least able to describe my thanks. They endured so well.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

Introduction

Interest has intensified recently regarding health care in the United States (Kimball, 1968; Rabiner, 1975; Shochet, 1974; Walker, 1973), with emphasis shifting from strictly physical considerations to psychological influences (Backus, 1974; Keats, 1956). While the physician's and surgeon's concerns have been directed mainly toward a patient's physical condition, advances in medical technology and surgical techniques and the continuing discrepancies in patient recovery rates have invited investigation of the psychological influences in health care (Schmitt, 1973; Shochet, 1974). Medical and surgical advances may, in fact, have necessitated much investigation of other influences, since complications continue to affect convalescence and mortality in spite of new techniques.

Need

Much has been written about physiological predisposition to illness and its impact upon recovery. However, although correlational research exists, with the majority

of those studies attempting to identify psychological predictors of illness (Andrew, 1970), experimental research regarding psychological influences on illness and recovery is scant. More and more specificity is needed to better identify psychological predisposition to illness and psychological implications for successful recovery (Andrew, 1970; Auerbach, 1973; DeLong, 1970; Hunt, 1975; Kimball, 1968, 1970; Weiss, 1966).

One area of concern relates to patient responses to a variety of surgical procedures. Several researchers have attempted to isolate preoperative personality types or coping styles and correlate them with postoperative recovery success. The result has been general agreement that there are preoperative personality types/coping styles which correlate with postoperative complications or the lack thereof; however, these studies have been correlational and very little predictive data exist (Heller, 1974; Kilpatrick et al., 1975; Kimball, 1968).

There seems to be tacit agreement that in most cases some type of presurgical psychological intervention would prove useful in diminishing postsurgical difficulties. Current presurgical treatment programs have developed haphazardly and without controlled evaluation. Researchers have discussed postoperative measures indicative of good convalescence and have suggested various types of intervention in an attempt to improve a patient's postoperative course (Bolton & Bailey, 1956; Brown & Rawlinson, 1975;

Elsberry, 1972; Gilberstadt & Sako, 1967). There appears to be little standardization of these intervention techniques and even less success in identifying which techniques would be most successful with which patients. A study of the effectiveness of treatment programs would serve as a preparatory move to initiate standardized programs for patients awaiting surgery.

Purpose

It is the purpose of this study to investigate the effects on male, open heart surgery candidates of three types of presurgical intervention upon various aspects of postoperative convalescence. More specifically this study will attempt to determine if presurgical psychological intervention has any effect on the postoperative course as determined by physiological convalescence data including time in intensive care unit, time in hospital after surgery, amount and type of medication received, and type and number of surgical and postsurgical complications. Psychological convalescence data also will be gathered by psychiatric assessments of patients and psychological tests of depression.

Definition of Terms

Terms used in this study are defined as follows:

Patient--all male open heart surgery patients at the Experimental Research Hospital (ERH) between the

ages of 18 and 65 who exhibit no gross psychoses or organic brain syndrome, and who have not previously undergone open heart surgery. Females were not included because there was not a sufficient number within the time period to warrant their inclusion in the design.

Open heart surgery--any valve replacement, coronary artery bypass or aneurysmectomy or combination thereof performed on the heart during which the patient is on the bypass machine.

Bypass machine--instrument which takes over the process of circulating the patient's blood during surgery (extra corporeal circulation).

Degree of hypothermia--the degree in centigrade to which the patient's body temperature is reduced during surgery.

Intra aortic balloon pump (IABP)--the machine used to take over expansion and contraction of a ventricle. Used when patient's heart is not strong enough to pump on its own; often used to augment heart function after patient is taken off bypass machine.

Coping style--in this study two coping styles were examined, internal and external. Internals are persons who believe they are responsible for controlling their own reinforcers. Externals are persons who believe

that events or reinforcements occur by chance or luck and are beyond their control.

Surgical complications--the following were considered indices of surgical complications: low cardiac output, arrest; excessive bleeding; fibrillation (fast heart); rhythm problems including sinus tachycardia, atrial flutter and arrhythmias; insertion of pacer; and difficulty in getting heart to beat.

Postsurgical complications--the following measures were used:

1. Depression--as measured by the Beck Depression Inventory and the Zung Self Rating Depression Scale.
2. Amount of medication administered--as measured by the patient's hospital chart. Included hypnotics (sleep), analgesics (pain), anti-anxiety and anti-psychotics. Dosage was measured in milligrams per 24-hour periods through the first five postoperative days.
3. Total length of hospital stay--the number of days a patient is hospitalized from surgery to discharge.
4. Length of time in intensive care unit--hours from surgery to discharge from intensive care unit.

Postsurgical complications--the following categories were divided into two sections--postsurgical complications during time spent in intensive care unit (ICU) and after ICU care; elevated temperature; low urinary output; kidney disfunction; cardiac rhythm problems; cardiac rub; bleeding; incision problems including lung congestion, atelectasis (collapse of all or part of a lung) or excessive coughing; small myocardial injury; return to surgery; hypotension; hypertension; chest pain; congestive heart failure; blood transfusion; heart murmurs; hoarseness due to intubation; muscle spasm; reintubation; depression; disorientation; psychotic organic brain syndrome; and nonpsychotic organic brain syndrome.

Generalizability

Since the patients involved were treated in a typical cardiac surgery unit, it can be concluded that the findings might be true for many male open heart surgery patients and can be applied to other cardiac surgery units.

There are no conclusive studies demonstrating that a person's sex plays a significant role in response to cardiac surgery; therefore, it might be assumed that similar findings would be applicable to female open heart surgery patients as well.

Finally, research indicates there are presurgical psychological difficulties and postsurgical complications

related to any life-threatening surgery. The results may benefit all surgical patients and could be used as a basis in formulating a presurgical training program for any such surgery.

Summary

The present study focused on one specific type of surgery, open heart surgery, and investigated the effects of certain types of preoperative psychological intervention on specific psychological and physiological postsurgical variables.

Review of Related Literature

The review of the literature is organized into four major categories. These are: (a) surgical stress, (b) convalescence, (c) presurgical psychological intervention, and (d) personality correlates. The literature will be reviewed as it relates to both general surgery and open heart surgery.

Surgical Stress

General surgery. Janis (1958) was one of the first to examine in detail the experience of surgery and its psychological components. He found that recovery is related to the preoperative attitudes of patients. He strongly suggested studying those preoperative feelings and carefully considering methods of treatment to alter

the postoperative experience. Shochet (1974) in his model for a psychiatric liaison service stated that:

> As no illness is limited to its physical manifestations, recognition of the psycho-social elements of illness is imperative. When a patient is hospitalized, the primary illness is often compounded by increased anxiety, reactions to separation from family and familiar surroundings, fear of the unknown and inability to understand what is happening. Psychosocial factors can delay recovery or, in extreme cases, can destroy the patient's will to survive. It is essential that these factors be recognized early in the course of the illness for effective integration to take place. To accomplish the goal of early recognition and help, hospital personnel must be sensitive to the emotional problems that patients bring with them and to those which develop in the hospital setting. Care should be provided in such a way that the patient's anxieties and emotional concerns are identified and ameliorated as much as possible. Further, staff objectives and performances should reflect awareness of the impact of staff actions on the patient.

Much research exists which supports Janis' notion that preoperative attitudes have an effect on the success of recovery (Kimball, 1968, 1969, 1970, 1973; Bodley et al., 1974). There is also supportive research to suggest that presurgical psychological preparation, such as supportive interviews and information, has an impact upon the postsurgical course (Henrichs, 1969; Hollender, 1974; Johnson, 1972; Kornfield, 1974; Lasater & Grisanti, 1975).

Open heart surgery. During the past decade the techniques of open heart surgery have become well defined and much progress has been made in standardizing surgical procedures (Beagle, 1974). This rapid advancement, plus the world-wide publicity given it, has helped open heart

surgery emerge as a vehicle to restore physical functioning of the heart to many people suffering from congenital or valvular heart disease (Brambilla, 1973). In fact, Brown (1975) cites that most patients undergoing such surgery have been able to return to a lifestyle almost comparable to that enjoyed by persons not experiencing heart problems.

Despite this medical sophistication, patients nonetheless experience physical and psychological difficulties after surgery which seem to be unrelated to their specific surgical processes. Researchers therefore have begun directing more and more attention to the psychosocial elements of general surgery and cardiac surgery (Kilpatrick, 1975; Heller, 1974; Kimball, 1969). Studies have investigated patient variables such as time spent on the bypass machine and degree of hypothermia, in order to determine their relevance as factors contributing to the success of recovery.

Measures of Convalescence

Mortality. A fairly consistent but not very sophisticated measure of convalescence is that of mortality. Some of the earlier work by Kimball (1969) examined death as it related to a patient's preoperative level of anxiety and depression. In a 1969 study, Henrichs studied the role of psychological factors in a patient's acute response to open heart surgery. He

found that a person's age or sex did not relate to operative mortality, but there was a higher mortality rate for patients identified as depressed prior to surgery.

Delerium. A common psychological complication of open heart surgery and a frequent measure of postoperative recovery is delerium, which is defined by Blachly (1964) as the presence of symptoms associated with organicity, such as impaired orientation, memory, intellectual functioning, judgment or lability of affect. Sveinsson (1975) investigated the incidence or post cardiac delerium and found a direct relationship with time spent in the intensive care unit. Despite attempts to correlate the occurrence of delerium with increased age, with a patient's sex, time spent by the patient on the bypass machine, and other patient variables, delerium remains very difficult to measure and little conclusive data exist.

Other. More discrete measures of convalescence subsequently have been developed. In his later work Kimball (1970) correlated preoperative personality test scores with such measures as: days spent in the recovery room, number of hospital postoperative days, major physical complications, and death.

Kurz (1972) examined the effects of psychosocial variables on the length of stay in the hospital and found that sick role expectations and presurgical adjustment

were good predictors of both hospital stay and general postsurgical adjustment. In a study to assess the reduction of psychological stress in surgical patients, Langer and Dweck (1975) found that teaching coping mechanisms to patients could lower the number of patients requesting sedatives and also lower the amount of pain medication requested.

In a similar study using both physiological and interactional measures, Schmitt (1973) examined the effect of psychological preparation on general surgical patients. The physiological measures of convalescence included blood pressure, pulse, vomiting, and nausea. She also suggested that

> . . . indicators of a smooth postoperative recovery . . . include the amount and time of the patient's medication, the number of days medication is required, how soon the patient resumed oral intake of food, and length of the hospitalization.

She characterized the above measures as interactional ("soft") in that they are more subject to patient manipulation than the somatic ("hard") indicators. They remain, however, less subject to manipulation than a patient's verbal responses to a questionnaire.

Amount of pain medication requested as an indirect measure of pain experienced was reviewed by Keats (1956). He found no relationship between the degree of postoperative pain experienced and any of the following: age, sex, type or duration of anesthetic, previous

medical history, previous surgical history, previous hospitalizations, noticeable personality disorders, obvious personality disorders, obvious personality types, or presence of preoperative pain.

Regardless of the measure of convalescence used, most of the research has focused upon correlating preoperative patient characteristics with those measures of convalescence.

Presurgical Psychological Intervention

More recently, it has been suggested that the predictive postoperative course can be altered and that time should be spent investigating methods of preoperative intervention to promote more effective convalescence (Hunt, 1974). Intervention is designed to assist the surgical patient in preparing himself psychologically for surgery. Two types of presurgical intervention can be identified: supportive and cognitive. General supportive psychotherapy, which encourages the patient to discuss his fears in a reassuring atmosphere, assumes that the mobilization of fear will lead to the patient's developing an appropriate response to surgery. On the other hand, cognitive intervention moves directly to aid the patient in planning his responses to surgery.

Presurgical Treatment I, then, is supportive psychological intervention designed to stimulate the

patient's fear in a conducive atmosphere. Presurgical Treatment II is cognitive information-giving to assist the patient in predicting his environment and controlling his reaction to stress. Both treatments are intended to minimize postoperative emotional complications and to facilitate convalescence.

Presurgical treatment. Janis' (1958) foundation for work with presurgical patients was based upon the concept of anticipatory fear. It was his contention that major surgery resembles other types of catastrophies and disasters in that the patient faces a combination of three types of danger--"the possibility of suffering acute pain, of undergoing serious body damage, and of dying." He further stated that generalizations about one form of severe physical danger can be applicable to any other crisis if those same basic threats of pain, injury, and annihilation exist. It is the patient's reaction to this impending surgery--fear--that Janis described as the element suitable for manipulation by preoperative intervention. It was his hypothesis that

> . . . the closer an anticipated threat of body damage is perceived to be (in space or time) the greater will be the individual's motivation to ward off anticipatory fears by minimizing the potential danger or by intellectually denying that he will be seriously affected by it.

Janis believed that without intervention designed to mobilize fear, the patient's attempt to deny his fear

of surgery may fail when the reality of surgery becomes undeniable, thus resulting in an attack of acute fear.

A supplemental hypothesis stated that

> . . . when a person attempts to minimize the danger after becoming aware of a potential threat, fear reactions are not extinguished but, rather, are temporarily held in check only so long as no clear-cut signs of danger are brought to his focus of attention.

He concluded that an effective mechanism for treatment of presurgical patients would be that of mobilizing a moderate degree of anticipatory fear so that patients would be less likely to develop emotional disturbances during or after surgery. The arousal of some amount of fear evoked what he termed a "psychological inoculation effect," which prepared the patient to meet the surgery without becoming hostile or resentful. The process of psychological inoculation included "mentally rehearsing or fantasying what the danger situation will be like, vicariously trying out varying reassuring concepts, and then accepting, rejecting, or modifying them after thinking about their truth value."

Janis concludes that unless a patient experiences anticipatory fear, he is unlikely to develop his own set of reality-based reassurances which can be used in the time of crisis. Further he implies that an individual with a low expression of anticipatory fear is likely to rely on grossly overly optimistic expectations and wishful blanket immunity concepts. These feelings of personal

invulnerability disappear when the actual surgery takes place because the feelings of immunity were based on denial of fears. Had he addressed his fear, he might have been able to develop those reassurance mechanisms in order to respond more realistically to the fears associated with surgery.

Another study of providing supportive treatments for open heart surgery patients was done by Burgess (1967). He selected 36 experimental patients plus two control groups. The control groups consisted of (a) patients who were operated on prior to the experimental group, and (b) those patients who were operated on after the experimental group. The treatment for the experimental group consisted of an hour long, open-ended informal supportive visit by a psychiatrist before and after surgery. The second control group had more long-term adjustment problems than the experimental groups as measured by an evaluation of medical records. Burgess suggests that the low incidence of postoperative adjustment problems in the first control group may be due to a lack of sophistication in recording by the physicians and nurses before the experimental group was studied. It would appear that his dependent variables were very subjective and possibly measured more staff attitude changes than patient adjustment.

In a study examining postoperative psychosis, Layne and Yudofsky (1971) examined subjects undergoing intercardiac surgery. The experimental cardiac group received an extensive neurological examination plus a psychiatric interview including encouragement of the patient to discuss problems or apprehensions. The control groups received only neurological examinations. The major finding was that the preoperative psychiatric interviews reduced the post cardiac delerium by approximately 50%. Layne and Yudofsky recommended preoperative psychological visits on all cardiotomy patients.

Jakubik (1972) examined 60 patients after closed and open heart operations. He found that postoperative difficulties of depression and delerium were related to emotional disorders existing prior to the operation. The results supported the interaction of psychological and somatic factors in the development of postoperative mental disorders. Jakubik further concluded that psychotherapy is very much needed in the presurgical period as well as postoperatively for neurotic disorders.

The emphasis of most research investigating the relationship between psychological preparation and the reduction of postoperative complications has been on individual preparation. Schmitt (1973), however, investigated the impact of psychological preparation in a group. The night before surgery, a small group (2-5 patients

and a nurse) met and (a) discussed orientation information; (b) requested new knowledge, e.g., how is a spinal given; (c) shared feelings of anxiety regarding surgery; and (d) discussed suggested methods they could use to facilitate their own recovery. The sessions lasted approximately 60 minutes. The experimental patients showed a reduction in amount of medication requested and reported a shorter postoperative stay. Schmitt recommended a wider investigation of differential preoperative treatments.

In a study of open heart surgery patients by Kornfield et al. (1974), a team treatment approach included a 1 1/2 hour interview with a psychiatrist. They reported that the patients given the interview had significantly lower delerium incidence than a comparable group not seen by the team. They suggested their interviews served a therapeutic function by offering the patients a "reassuring preoperative atmosphere in which to ventilate their fears. . . ."

Surman et al. (1974) measured the effects of a preoperative visit (60-90 minutes) by a psychiatrist on patients awaiting open heart surgery. Their result showed that ". . . as the number of visits mount, [psychiatrist's visit] delerium decreases. This would indicate that psychiatric contact in the preoperative period can effect a kind of prophylaxis against delerium."

In 1975, Williams et al. conducted an experiment on patients about to undergo therapeutic abortions and measured the effects of two types of preoperative treatments. One treatment was a "cursory" interview, lasting approximately five minutes, which was intended to be brief and minimally supportive. The second treatment was "supportive," lasting approximately 12-15 minutes. Their study showed that both the cursory and supportive interviews significantly reduced the anxiety levels of highly anxious patients.

These results indicate that patients who have received various forms of supportive treatment tend to experience less delerium, less anxiety, request less medication, spent less time in the hospital, and generally convalesce better than those patients not receiving such treatment.

Although Janis did no experimental investigation, he suggested it might be appropriate to assist the patient in formulating reality-oriented assurances. He stated that

> . . . maximally effective preparatory communication should have the goal of giving as complete a framework as possible for appraising the potentially frightening and disturbing perceptions that the person might actually experience, so as to prevent the type of surprise and ambiguity that generates unproductive, energy-consuming reactions of hypervigilance.

He states that this material, presented in a non-threatening manner, can probably influence most patients to engage in effective mental rehearsal for the impending surgery.

More recently, Seligman (1975) has postulated that the inability of a person to be able to predict what a dangerous event will be like, and his inability to feel he has some control over that environment, leads to a feeling of helplessness. He suggests that "stress and anxiety are considerably greater when events occur unpredictably than when they occur predictably." He further claims there is a direct relationship between the psychological state of helplessness and the risk of death.

He theorized that if a person feels his actions would have no impact upon the environment, there is no motivation to attempt to gain control. He states that

> . . . the expectation that an outcome is independent of responding (1) reduces the motivation to control the outcome; (2) interferes with learning that responding controls the outcome; and if the outcome is traumatic, (3) produces fear for as long as the subject is uncertain of the uncontrollability of the outcome, and then produces depression.

His cure for that helplessness, then, is reversing the expectation that responding will not work. He suggests that: "Being told--particularly by some 'who should know'--that a given event is controllable will create an expectation that the event is controllable; even without experience of the contingency."

Again, it is the expectation of perceived control, not the actual or experienced control which provides relief from anxiety--even beyond that of predictability.

Recently several researchers have tested theories of information-giving. Andrew (1970) investigated the effects of a stress reduction treatment based upon information-giving on two types of patients awaiting hernia operations. She found that a brief preparation consisting of an eight-minute tape could be effective in influencing recovery from surgery as measured by the amount of medication requested and the number of days from surgery to discharge.

Johnson (1972) investigated and found support for the hypothesis that providing patients with accurate expectations regarding physical sensations about to be experienced would reduce stress during confrontation with a threatening event. She concluded that "information leading to these accurate expectations has proven more effective than the usual nursing practice of describing procedures." She also supported Seligman's contention regarding predictability and stated that "distress reflects the degree of incongruity between expected and experienced sensation."

Support for Seligman's theory also comes from Langer et al. (1975) who tested four strategies: (a) coping device, (b) preparatory information,

(c) coping device plus preparatory information, and (d) control. The coping device patients were taught a coping device which was essentially reappraisal of the anxiety-provoking event. They were given information showing how to distract themselves from an event (surgery), by redirecting attention to more favorable aspects of the situation. Patients in the preparatory information group were given information which contained "accurate warnings about what to expect, along with pertinent reassurances." The control group received information about hospital routine.

The sessions lasted 20 minutes. The researchers evaluated their strategies by behavioral ratings from nurses on the floor on such measures as: total number of pain and sleep medication requested and length of stay in the hospital. This study sought to compare the effects of the coping device with mere information giving without coping strategies.

The results showed that, on nurses' ratings of patient anxiety and ability to cope, the coping device and coping plus information groups did better than the control group which in turn did better than the information only group. On pain medication requested, patients in all three experimental groups requested less medication than patients in the control group. There were no

differences reported for sleep medication requested or on physiological measures such as blood pressure and pulse rate.

They concluded that cognitive control through selective inattention is an effective means of reducing preoperative and postoperative stress. And they found that teaching the patient to focus on expected suffering without offering any means of controlling that experience is a less effective means of dealing with stress.

Generally, research findings suggest that information-giving, alerting the patient to the experience of surgery and the postoperative period, tends to decrease amounts of medication requested and can influence the number of days the patient spends in the hospital. In addition, the combination of giving information plus helping the patient develop a feeling of control over his postoperative environment is even more effective in helping the patient cope with surgical stress.

Personality Correlates

A considerable amount of research has been conducted investigating coping styles and their impact upon recovery from surgery. Extensive work has been done by Kimball (1969) who has identified four types of personalities based on psychological responses to surgery: (a) adjusted, (b) symbiotic, (c) anxious, and (d) depressed. His discussions were based upon open-ended,

nondirective psychiatric interviews. His correlations reported that adjusted patients demonstrated an unremarkable postoperative course; symbiotic patients experienced a prolonged period from intensive care unit to discharge; the anxious patients experienced a greater amount of cardiac arrhythmias; and depressed patients had the highest mortality rates. He suggested identifying patients as poor psychological risks and offering psychotherapeutic intervention, paying much attention to different possible modes of intervention.

Henrichs (1969) used the MMPI to identify personality variables which may affect a patient's response to cardiac surgery. He found that male nonsurvivors exhibited pronounced preoperative anxiety, while female nonsurvivors were found to be emotionally overcontrolled.

Kimball (1973), in an update of his previous work, studied several aspects of the stress of undergoing cardiac surgery. He attempted to "correlate preoperative coping styles with postoperative morbidity and mortality." Also, one goal was to define characteristics associated with those preoperative coping styles. Finally, he wanted to identify the objective psychological tests useful in identifying those groups.

Using a battery of tests, he further defined his four types previously identified as: (a) adjusted, (b) symbiotic, (c) denying anxiety, and (d) depressed.

He claimed that the preoperative identification of his groups can be of predictive value in terms of post-operative complications. He stated that patients denying anxiety or preoperatively depressed patients have poorer prognoses. He suggested that a psychological interview is helpful in identifying group characteristics. The Rotter IE Scale seemed to reflect a correlation of low external control for patients in the adjusted group, suggesting "a greater feeling of control" in the adjusted group as opposed to a feeling of being a "victim of fate" in the other three groups.

Heller (1974) attempted to assess (a) the extent to which psychological factors hinder recovery, (b) the nature of the psychological hindrances, and (c) the existence of preoperative personality correlates and predictors of recovery. He found that patients with preoperative manifestations of high anxiety, depression, emotional lability, and disorganization were less able to cope with the stress of surgery.

Kilpatrick (1975) tried to use psychological test data to predict open heart surgery survivors. He did not replicate Henrich's finding of significant differences between survivors and nonsurvivors on the MMPI scales. He did, however, find that survivors scored higher on the Cardiac Adjustment Scale, a self-assessment of general adjustment.

As stated earlier, Jakubic studied patients after closed and open heart operations and found depression and delerium not to be correlated with sex, age, marital status, education, time awaiting surgery or duration of cardiac disease. He did find, however, that postsurgical difficulties were related to emotional disorders existing prior to surgery.

Summary

In reviewing the literature, both physiological disposition to surgery and the possible impact of personality correlates have been examined. The emphasis has been on establishing possible predictors correlated with illness rather than experimentally examining the effects of patient attitudes on their recovery. Preoperative psychological preparation has been suggested as a useful and desirable tool but no evaluation of its effectiveness with patients has been conducted. Neither has there been an attempt to identify coping styles with a differential effective preoperative treatment.

Design and procedures will be discussed in Chapter II.

CHAPTER II

DESIGN AND PROCEDURES

Overview

The primary purpose of this study was to examine the effects of preoperative psychological intervention upon convalescence. The research was conducted with 54 male open heart surgery patients at the Experimental Research Hospital (ERH). The subjects were assigned randomly to one of three treatment groups: (a) presurgical treatment I, (b) presurgical treatment II, or (c) presurgical treatment III.

Before the treatment, all subjects were given tests measuring depression, anxiety, and locus of control. In addition, they were given two tests measuring depression after surgery. Pertinent medical and surgical data also were collected from the patients' charts.

The experimental design and the procedures used to conduct this study and analyze the results will be discussed in this chapter.

Research Hypothesis

The general area of interest about open heart surgery patients assessed in this study was: do different types of preoperative psychological preparation have an effect upon convalescence. The hypothesis tested, as stated in its null form, is:

> There will be no differences between preoperative psychological intervention groups on the 12 convalescence measures of: hospital days, time in ICU, medical complications while in ICU, medical complications during total hospital stay, psychiatric complications while in ICU, psychiatric complications during total hospital stay, Zung Self Rating Depression Scale scores, pre-Beck Depression Inventory scores, analgesic medication received, hypnotic medication received, anti-psychotic medication received, and anti-anxiety medication received.

Design over Time

This study employed an experimental design using single treatment, with posttests given as shown in Figure 2.1. Subjects were assigned randomly to three groups. In the figure below, Xs represent exposure to the experimental variables, preoperative psychological intervention. The numbers 0_1 represent pretests and 0_2 represent posttests. The R indicates random assignment.

R	0_1	X_1	0_2
R	0_1	X_2	0_2
R	0_1	X_3	0_2

Figure 2.1 Pretest and posttest design with randomization

Experimental Treatments

The experimental treatments are:

X_1 = presurgical treatment I, affective intervention

X_2 = presurgical treatment II, cognitive intervention

X_3 = presurgical treatment III, control intervention

A description of the three treatment conditions follows.

Presurgical Treatment I. Treatment I, reflecting Janis' contention that giving the patient an opportunity to discuss and mobilize anticipatory fears leads to better convalescence, was supportive in nature, with the interviewer attempting to be empathic to the patient's preoperative affective state. The primary focus was on eliciting information about the patient's affect and on giving him an opportunity to talk about his fears. Within that affective focus, the interviewer helped explore the following areas:

1. The patient's understanding of what he was told about his disease and surgery;

2. The patient's feelings about his disease and its limitations;

3. The patient's feelings about and expectation of his surgery; and

4. The patient's fears of surgery, that these fears are normal and that they have no adverse impact on the outcome of surgery.

Presurgical Treatment II. Treatment II, reflecting Seligman's contention that teaching a patient to predict and control his environment will reduce surgical stress, was facilitative, giving the patient the opportunity to prepare himself for the postsurgical experience and helping him establish a method of control over that experience. The treatment included giving the patient preparatory information with which he could anticipate exercising some control over his environment.

The preparatory information included alerting the patient to psychological possibilities and informing him that the psychological disturbances experienced postsurgically are normal and temporary. Such disturbances include depression, delerium (auditory or visual hallucinations) disorientation (losing track of time, date, place, etc.), and temporary difficulty with memory. The activities in the intensive care unit also were discussed, and the patient was assured that all patients experience the same monitoring and care. Also, the treatment administrator discussed small steps of progress, such as tracheal tube removal, but did not specify when they occurred.

The control of environment information consisted of assuring the patient that he could communicate by signals when his tracheal tube is in place and that nurses are there continuously to watch for his signals. The treatment administrator also discussed the fact that the patient would experience pain but can ask for pain medication when needed. The administrator encouraged the patient to discuss with the staff any perceptual disturbances such as hallucinations or disorientation as well as feelings of depression. Finally, the administrator assisted the patient in learning to refocus his attention, e.g., by helping him look at the positive aspects of surgery to diminish the conscious attention directed toward pain.

Presurgical Treatment III. Treatment III was provided to control for the possible effects an interested interviewer might have on the patient. The introduction was the same as Presurgical Treatments I and II, but the content consisted of the interviewer asking only medical history questions. (See Appendix B.)

Subjects

The subjects were selected from the males scheduled for open heart surgery at the Experimental Research Hospital from November 1976 through November 1977. A total of 54 subjects were chosen. They ranged

in age from 358 months to 779 months, falling into the 18-65 age limitations set by the study. Patients were assigned randomly to one of the three treatments in order of the appearance of their names on the surgery schedule. Any patient exhibiting gross psychosis or organic brain syndrome during the preoperative psychiatric interview was not included in the study.

Patient characteristics are summarized in Table 2.1 for purposes of judging how this group compares to others (Cornfield & Tukey, 1956).

Setting

There are approximately 540 hospitals in the United States in which 125,000-137,000 open heart surgeries are expected to be performed in 1977 according to Theta Technology Corporation (1976). The ERH is one of the 18 such hospitals in Michigan with a total of 4500 projected open heart surgeries during 1977.

The characteristics of the ERH both generally as a hospital facility and specifically as an open heart center are presented to facilitate generalization. Figures presented reflect projected 1976 estimates. There are an average of 250 open heart surgeries performed per year in the United States and Michigan in each hospital equipped to perform open heart surgery. There are an average of 200 open heart surgeries per

Table 2.1

Demographic Characteristics of Sample

Variables	N	%
Age Mean 641.74 months	Range 358 months-779 m	
Marital Status		
Married	50	93
Single	1	2
Divorced	3	5
Type of Surgery*		
Single Coronary Artery Bypass	6	
Double Coronary Artery Bypass	7	
Triple Coronary Artery Bypass	24	
Quadruple Coronary Artery Bypass	7	
Aortic Valve Replacement	8	
Mitral Valve Replacement	2	
Aneurysmectomy	4	
Education Completed		
Grade School	1	2
Some High School	23	43
High School Graduate	20	38
Some College	5	9
College Graduate	1	2
Graduate Training	3	6
Religion		
Catholic	12	
Protestant	43	
Jewish	0	
Other	1	
Current Employment Status		
Currently Working	1	2
Employed, nor working	36	67
Unemployed	9	17
Retired	8	15
Future Employment Plans		
Resume previous employment	32	60
New employment necessary	8	15
Retirement planned	12	23
Permanently disabled	1	2
Employment of Spouse		
Employed	22	43
Not employed	26	51
Not applicable	4	6
Children Living at Home		
0 children	32	59
1 child	7	13
2 children	6	11
3 children	3	6
4 children	5	9
5 children	1	2

year at the ERH. The figures presented in Table 2.2 are from the American Hospital Association (1977).

Table 2.2

Comparative Figures for ERH and Average of All Michigan Hospitals Performing Open Heart Surgery

	Michigan Averages	ERH
Number of Beds	515	254
Annual Admissions	17,425	9,536
Occupancy Rate	83.8%	81.1%
Number of Personnel	1,856	946

The intensive care unit at the ERH is a general intensive care unit with eight private rooms arranged in a semi-circle, four of which have outside windows. The remaining four rooms are used primarily for open heart surgery patients because they are larger and accommodate the special equipment. There are three work shifts, each with eight full-time registered nurses and one orderly. There are also two licensed practical nurses, one on the afternoon shift and one on the midnight shift. Before being allowed to care for patients monitored by the intra aortic balloon pump the registered nurses are required to have extensive didactic and clinical experience.

Design over Variables

Variable Matrix

The variable matrix was a two factor fully crossed design. The first factor was the experimental variable of interest, namely type of treatment, and had three levels: (a) presurgical treatment I, affective; (b) presurgical treatment II, cognitive; and (c) presurgical treatment III, control. The second factor was administrator which was included for control. There were multiple dependent variables and an equal number of observations per cell. The overall research design is diagrammed below in Table 2.3.

Table 2.3

Overall Research Design

	Treatment I	Treatment II	Treatment III
Counselor	n = 9	n = 9	n = 9
Social Worker	n = 9	n = 9	n = 9

Dependent Variables and Covariates

Two types of data were collected: dependent variables and covariables. Postsurgical medical complications, psychiatric complications, recovery time, amount and type of medication administered, and psychological

test data were used as dependent variables. Presurgical psychological data, age, and operative measures were used as covariates.

Dependent variables. The dependent variables were:

1. Postsurgical hospital measures
    a. Time spent, in hours, in intensive care unit
    b. Total length of hospital stay
    c. Amount of medication received divided into four groups
        1. Analgesics
        2. Hypnotics
        3. Anti-anxiety
        4. Anti-psychotic
2. Postsurgical psychological measures
    a. Postsurgical depression measured by the Beck Depression Inventory
    b. Postsurgical depression measured by the Zung Self Rating Depression Scale
3. Postsurgical medical complications from patient charts, divided into two categories: during ICU and during total length of hospital stay.
    a. Renal--including low urinary output and inoperative kidney

b. Cardiovascular--including cardiac rhythm problems, cardiac rub/friction rub, infarct, chest pain, congestive heart failure, hypertension and hypotension.

c. Lung--including hoarseness due to intubation, reintubation, and respiratory difficulties, including lung congestion, atelectasis, and excessive coughing.

d. Bleeding--including excessive bleeding and transfusions.

e. Incision problems--including sternum and leg problems.

f. Elevated temperature

4. Postsurgical psychiatric measures--as recorded by psychiatrist on patient's chart

a. Disorientation

b. Psychotic organic brain syndrome

c. Nonpsychotic organic brain syndrome

Covariates. The covariates were:

1. Presurgical psychological data

a. Depression, as measured by Beck Depression Inventory.

b. Anxiety as measured by State-Trait Anxiety Inventory, including both state and trait anxiety.

c. Locus of control as measured by Rotter Internal-External Scale.

2. Operative measures
   a. Anoxic arrest time
   b. Degree of hypothermia
   c. Time on bypass machine
   d. Blood loss
   e. Surgical complications
      1. Low cardiac output requiring the use of the intra aortic balloon pump or pacemaker.
      2. Excessive bleeding
      3. Arrhythmias--including auricular and ventricular conduction defects, cardiac arrest, difficulty getting heart started and sinus tachycardia, atrial fibrillation and atrial flutter.
3. Patient age

Procedures

Overview

Subjects included in the study were all male patients scheduled for open heart surgery at the ERH who did not exhibit gross psychosis or organic brain syndrome.

Intake Procedure

Pretreatment interview. Upon agreement to schedule cardiac surgery among the surgeons, cardiologist and patient, the cardiac surgery team, consisting of the surgeon, nursing staff, a psychiatrist, social worker, and counselor, was explained to the patient and the following interviews were scheduled.

1. Surgeon. The surgeon informed the patient that soon after admission to the hospital a representative from the cardiac surgery team would visit him to obtain his consent to participate in this study.

2. Counselor. Two days before surgery the counselor (doctoral candidate in counseling psychology) visited the patients. At that time the function of the cardiac surgery team was described. The consent necessary was obtained. Copies of the interviewer statement and consent form are in Appendix A. The counselor explained the interest of the study, the use of personality inventories, the psychiatric and social work interviews, and the use of postsurgical medical data. It also was emphasized that the patient could discontinue participation at any time; that results were treated in strict confidence and that final results were available to subjects. The counselor then administered the Beck Depression Inventory, the Rotter Internal-External Scale, and the Spielberger State-Trait Anxiety.

3. Medical Social Worker. On the same day, two days before surgery, the medical social worker visited the patient and elicited relevant social data as is the current hospital procedure.

4. Psychiatrist. On the day before surgery, the psychiatrist assessed the patient's mental status.

Each patient, after having had the preliminary testing and psychiatric examination, was assigned randomly to one of the three treatments: Presurgical Treatment I, Presurgical Treatment II, or Presurgical Treatment III. Copies of the treatment content and checklists are presented in Appendix B.

Experimental Procedure

Treatment. Subjects received one of three treatments. All treatments were presented by either the social worker or the counselor. They took approximately 35-45 minutes to administer and were thus comparable in length. Each subject was treated individually either at his bedside in his room with the curtains drawn or in the private conference room. All treatments were administered on the day before surgery.

Postsurgical Procedure

Psychiatrist. On the second postoperative day the psychiatrist visited the patient either in the

intensive care unit or on the surgery floor and administered a mental status examination.

Counselor. On the sixth postsurgical day the counselor visited the patient in his room and administered the Beck Depression Inventory and the Zung Self Rating Depression Scale.

Instrumentation

Measures of presurgical depression, anxiety, and locus of control were assessed by the Beck Depression Inventory, the Spielberger State-Trait Anxiety Scale and the Rotter Internal-External Scale respectively. Two instruments were used to assess the postoperative measure of depression--the Zung Self Rating Depression Scale (SDS) and the Beck Depression Inventory (BDI). Those measures and the instruments used to assess them are discussed below.

Measures

The pretest measures of the patient's depression, anxiety and locus of control were used as covariates. The post-treatment measure of the patient's depression was used as a dependent variable in this study.

Instrument Characteristics

Rotter Internal-External Scale. The Rotter Internal-External Scale (IE) is an instrument which

measures the degree to which an individual accepts personal responsibility for what happens to him (Rotter, 1962, 1975). It is a 29-item, forced choice test with six filler items. The subject is asked to respond as he believes the nature of the world to be. Persons who score high on the IE are described as regarding fate or chance as causes for consequences, and are thus more externally controlled; persons who score low are identified as those who view consequences as occurring because of their own actions and are thus more internally controlled.

Reliability measures for internal consistency are reported as .49 - .83 for test-retest, and .65 - .79 for Spearman Brown split-half reliability (Joe, 1971). Rotter (1966) suggests that because of the additive nature of the score in addition to having items which are not comparable, "split-half or matched-half reliability may underestimate internal consistency."

Seeman and Evans (1962) examined the validity of the IE Scale with a study of hospital patients and the attempts of those patients to control their environment in the hospital setting. They measured the number of questions patients asked the medical staff, how much they were aware of their condition, and their satisfaction with feedback from physicians and nurses. They found that those scoring low on the IE Scale (internals) were

more aware of their condition, questioned staff more and were less satisfied with the amount of feedback they were getting.

Burnes et al. (1971) found the IE score correlating with high ego strength (K values) and low pathology (F scores) on the MMPI. They concluded that such correlations suggest a "sense of control over external events is related to self control and competency in handling events." Johnson et al. (1970) examined surgical patients' attempts to control their environment in a hospital setting. Using dosages of analgesics received they found that patients who scored higher on the IE Scale (mean of 9.0 on a short form of the IE Scale) received more analgesics while there was no difference between the medium and low IE group.

Several researchers have contradicted Rotter's 1966 claim that the IE Scale is free from the social desirability set (Gold, 1968; Berzins et al., 1970). Rotter (1972), however, concludes that studies lend

> . . . strong and relatively consistent support to the hypothesis that generalized expectancy--that one can affect the environment through one's own behavior--is present in at least two different cultures, can be reliably measured, and is predictive of logical behavioral construct referents.

The Rotter IE Scale was used in this study to assess the degree of self-perceived control over life events.

Spielberger State-Trait Anxiety Inventory (STAI). The STAI was developed in 1964 to provide a self-report index of two types of anxiety: state--at the moment, and trait--general anxiety over time.

It is a two-part questionnaire with 20 questions per part and with a possible score range of 20-80 per side. The 20 statements for state anxiety ask the individual to describe his feelings at the present moment. The 20 statements for trait anxiety ask the individual to describe his feelings generally. The response categories for state anxiety are (a) not at all, (b) somewhat, (c) moderately so, and (d) very much so. The response categories for trait anxiety are (a) almost never, (b) sometimes, (c) often, and (d) almost always.

Spielberger (1970) reports high test-retest reliability for trait anxiety, .73 - .86, and low test-retest reliability for state anxiety is expected because of factors unique to the time of testing. Internal consistency reliability coefficients of .83 - .92 are reported for both state and trait scores.

He reports correlations of .75 - .77 with the IPAT Anxiety Scale and .79 - .83 with the Taylor Manifest Anxiety Scale. He also cites construct validity of the STAI as state anxiety as a "transitory emotional state" and trait anxiety as a "relatively stable personality trait." In an investigation of patients' reactions to

surgery, Spielberger (1973) found that the difference between presurgery and postsurgery scores on state anxiety were highly significant; conversely, the presurgical and postsurgical trait differences were not statistically significant. Spielberger's conclusions were supported in a 1975 study by Auerbach who studied STAI state and trait scores both pre- and postsurgically. He found pre- and postsurgery differences in state anxiety to be significant whereas pre- and postsurgery differences in trait means were not significant. He also suggested that his findings supported Janis' finding that intermediate levels of preoperative anxiety (34-41 state score) were facilitative of postoperative adjustment.

Martines-Urrutia (1975) investigated the effect of surgery on anxiety and pain. He found that state scores as measured by the STAI were considerably higher before surgery on those patients who also had high scores on a Fear of Surgery Scale. He also reported high preoperative trait anxiety scores correlated with greater postoperative experience of pain as measured by the Melzack-Torgerson Pain Questionnaire.

In this study the STAI was used to measure patient's preoperative anxiety and general anxiety.

Beck Depression Inventory (BDI). The Beck Depression Inventory was used in this study to examine the level of depression a patient was experiencing. The

inventory is a 21 question test with four or five responses per category. The 21 questions assess intensity of mood, pessimism, sense of failure, dissatisfaction, guilt, expectation of punishment, self-dislike, self-accusations, suicidal ideas, crying, irritability, social withdrawal, indecisiveness, body image changes, work retardation, insomnia, fatigability, anorexia, weight loss, somatic preoccupation, and loss of libido. Beck (1967) suggests that the total score reflects a combination of patient symptoms and the severity of each symptom.

In this study the format of the BDI was revised by omitting categorical labels above each set of items. In addition, each set of responses to a question was lettered rather than shown with numerical score values. Also, the BDI was filled out by the patient rather than read to him as in the standard instructions. Schmickley (1974) reports having used the BDI in this self-report manner with satisfactory results, and asserts the validity of that procedure.

A split-half reliability test for internal consistency resulted in a score of .86 (Pearson r) between odd and even questions; the corrected Spearman-Brown brought the reliability score up to .93 (Beck, 1967). A test of concurrent validity demonstrated that the BDI corresponded to another measure of depression, the patient's clinical state as diagnosed by psychiatric

interview. Beck reports correlations of .62 - .73 between BDI scores and psychiatrists' clinical interviews.

Beck reports evidence of construct validity with the BDI and correlations with scores on hostility inward scores, and decrease in depression index scores following administration of antidepressant drugs. Beck also suggests that the BDI differentiates depression from anxiety, giving an r of .59 (Pearson r) with clinical ratings of depression and .14 with clinical ratings of anxiety.

Beck cites a significant negative correlation between the BDI and educational level as measured by number of grades completed in school. That is, "patients with lower educational attainment tended to have higher BDI scores than those with higher educations." This indicates that perhaps more highly educated people are less likely to report their depression.

Zung Self Rating Depression Scale (SDS). Another measure employed in this study to measure depression was the Zung Self Rating Depression Scale. The SDS measures depression using what Zung (1974) refers to as the common clinical characteristics of depression including: "pervasive affective disturbances, physiological disturbances, psychomotor disturbances and psychological disturbances."

The scale has 20 items and the subject is asked to respond to each item as it relates to him at the time of testing. There are four possible responses: (a) none

or a little of the time, (b) some of the time, (c) good part of the time, and (d) most or all of the time.

Zung (1967) reports that the SDS is able to differentiate patients who are depressed from patients with other diagnoses with a correlation of .43 to .65. He also cites significant correlation with the Beck Depression Inventory, .72 - .76 (Zung, 1969), and the D scale of the MMPI, .59 - .75 (Zung, 1967). He cites no correlation between the SDS scores and age, annual income, intelligence levels, marital status, or sex.

The measure of reliability, dependability of the instrument each time it is used, was examined by intercorrelation of items. He cites a .73 split-half reliability coefficient (Zung, 1972).

Buros Mental Measurements Yearbook (1972) reported that there is a negative correlation ($r = -.28$) between SDS scores and years of education, suggesting, again, that more highly educated people are less likely to admit being depressed.

The SDS was used in this study to assess post-surgical depression.

Data Collection

All medical and surgical data were obtained from the patient charts. Psychiatric data were obtained from the psychiatric mental status examination form and psychological data were obtained from the posttest scores.

All data were collected through the date of discharge for patients admitted between November 1976 and November 1977, except for medication information which was collected through the fifth postsurgical day. The experimental procedures are displayed graphically in Figure 2.2.

Data Analysis

There was a preliminary analysis to explore the relationship between the set of covariates and the dependent measures. A two-way analysis was used to test the data even though there was only one factor of interest in order to control for the administrator as a factor. A two-way multivariate analysis of variance on the set of 12 dependent variables was performed.

There were also four supplemental analyses:

1. Groups having surgery on different days of the week were compared.

2. Patients were divided into high external and high internal scores and their convalescence data were examined.

3. Cell means were computed for examining and describing patterns of interest.

4. Data on the relationship between the covariates and dependent variables were explored.

All supplemental data were analyzed to provide descriptive evaluation of the data.

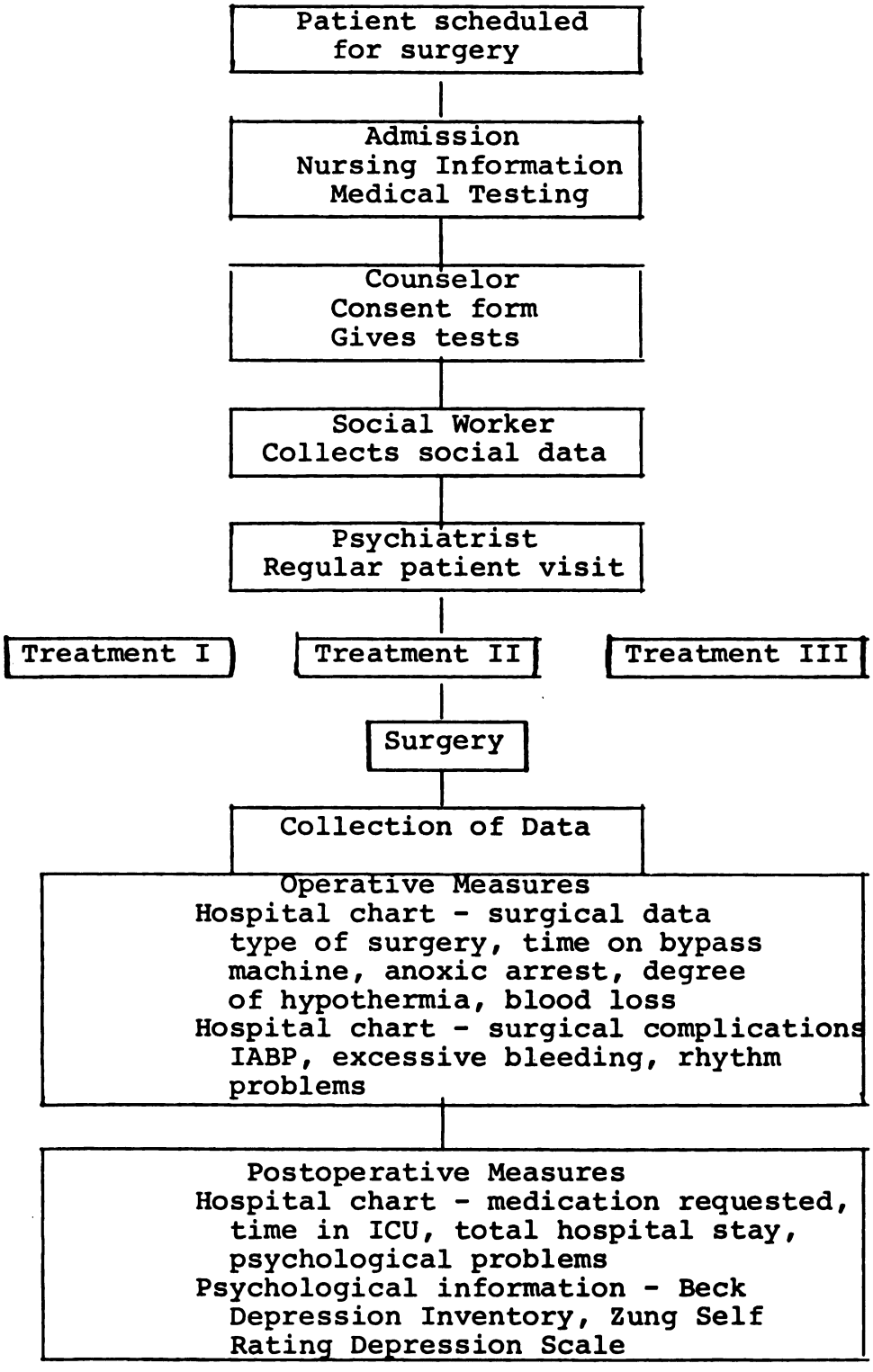

Figure 2.2 Experimental procedure

CHAPTER III

RESULTS

Overview

Hypothesis test results are presented in this chapter. The results of this experiment were based on measures of convalescence for each of the 54 male patients who underwent open heart surgery. The data collected on those measures of convalescence were:

1. Number of hospital days
2. Time spent in ICU
3. Total number of medical complications
4. Number of medical complications while in ICU
5. Total psychiatric complications
6. Psychiatric complications while in ICU
7. Zung Self Rating Depression Scale score
8. Post-surgery Beck Depression Inventory score
9. Analgesic medication received
10. Hypnotic medication received
11. Anti-psychotic medication received
12. Anti-anxiety medication received

A preliminary analysis was performed using a multivariate analysis of covariance (MANCOVA). The

multivariate test for relationship between the covariables and the dependent variables was not significant, permitting the discarding of the covariables in the analysis. A two-way multivariate analysis of variance (MANOVA) was used for the analysis since there were two factors of interest, one being the administrator and the other being the treatment. The administrator factor was included simply to control for possible differences between the two administrators; because there was no particular interest in that factor, no test was done. The primary factor of interest was treatment which involved three levels. These were: (a) presurgical treatment I, affective; (b) presurgical treatment II, cognitive; and (c) presurgical treatment III, control.

This hypothesis test was done with an alpha level of .05.

Supplemental data were gathered and analyzed to provide for descriptive evaluation of the data, although formal hypotheses were not stated. The supplemental comparisons explored were divided into four segments. First, groups having surgery in the beginning of the week, that is on Monday or Tuesday, were compared with patients having surgery later in the week, Wednesday, Thursday, and Friday. Second, patients were divided into high internals (score of 4 or less on the Rotter IE) and high externals (score of 10 or more) and their

convalescence data were examined. Third, the cell means of the treatments groups were computed to facilitate understanding of the treatment. Fourth, supplemental data on the relationship between covariates and dependent variables were examined.

Covariables

An overall multivariate test of the relationship between the nine covariates of (a) IE score, (b) age, (c) state anxiety, (d) trait anxiety, (e) pre-Beck score, (f) bypass time, (g) anoxic arrest, (h) blood loss and (i) degree of hypothermia and the set of 12 dependent variables indicated no relationship ($F = 1.17$, p .165). They were, therefore, rejected as a set of covariables. The relationship for each separate covariate is shown in Table 3.1.

The overall multivariate test indicated that there was no significant association between the set of covariables and the set of dependent variables. Also, examination of the stepdown F-tests for each of the covariables suggested there was no candidate for a covariate and thus shows no support for the appropriateness of using an analysis of covariance. Therefore, the multivariate analysis to test the research hypothesis was done without any covariates.

Table 3.1

Stepwise Regression F Statistics for Each Covariate on the Set of 12 Convalescence Measures

Multivariate F test	F = 1.17		p < .165
Covariate	F	df	p <
IE	.95	12,36	.506
Age	1.34	12,35	.237
State Anxiety	1.67	12,34	.118
Trait Anxiety	1.42	12,33	.205
Pre-Beck	1.51	12,32	.171
Bypass Time	1.11	12,31	.382
Anoxic Arrest	.38	12,30	.959
Blood Loss	1.55	12,29	.163
Hypothermia	1.03	12,28	.443

Hypothesis Testing

The hypothesis was directed at exploring group differences between types of presurgical psychological treatments. A two-way multivariate analysis of variance was used to test this hypothesis. The probability of a Type I error for testing the treatment effect was set at .05. There was insufficient evidence to suggest that one treatment would be superior to another thus the hypothesis is nondirectional. Stated again,

H_1: There will be treatment group differences on the set of 12 convalescence measures of hospital days, time in ICU, total medical complications, medical complications while in ICU, total psychiatric complications, psychiatric complications while in ICU, Zung Self Rating

Depression Scale score, pre-Beck Depression Inventory score, analgesic medication received, hypnotic medication received, anti-anxiety medication received, and anti-psychotic medication received.

H_0: There will be no treatment group differences on the set of 12 convalescence measures.

A two-way design was used to control for the possibility of an administrator effect. An inspection of the MANOVA analysis as shown in Table 3.2 revealed no significant differences for treatment, administrator nor the interaction of treatment and administrator.

The F statistics for the treatment factor ($F = .65$, $p < .880$), for the administrator factor ($F = 1.35$, $p < .232$) and for the interaction of treatment and administrator ($F = 1.07$, $p < .391$) were not significant at the .05 level. Although there was a lack of significance shown by the multivariate test, in the absence of administrator effect or interaction, a table of univariate and stepdown F statistics will be presented in Table 3.3 to aid in understanding the treatments.

Upon further examination it can be seen from Table 3.3 that even considered separately none of the dependent variables was significant. In summary, the hypothesis that predicted there would be differences between the groups was not supported.

Table 3.2

MANOVA Statistics for the Simultaneous Testing of the Treatment, Administrator and Treatment and Administrator Interaction on the Convalescence Measures

Sources	Multivariate F	df	p <
Treatment	.65	24,74	.880
Administrator	1.35	12,37	.232
Interaction	1.07	24,74	.391

Table 3.3

Multivariate, Univariate and Step-Down F Statistics for the Treatment Effect on the Set of 12 Convalescence Measures

Multivariate F = .6519	df = 24,74		p < .8802	
Variable	Univariate F	p <	Step Down	p <
Hosp Days	.13	.875	.13	.875
ICU Time	.94	.398	1.00	.377
Total Comp	.68	.511	.33	.720
ICU Comp	2.25	.117	1.43	.251
Tot Psy	1.93	.156	1.86	.167
ICU Psy	1.48	.238	.44	.648
Zung	1.75	.184	.99	.379
Post Beck	1.22	.305	.13	.880
Analgesics	1.33	.275	.21	.814
Hypnotics	.60	.553	.32	.727
Anti Psychotics	1.00	.376	.96	.393
Anti Anxiety	.55	.583	.58	.563

Supplemental Findings

The supplemental findings reported in this section include: (a) multivariate analysis of variance to test the effects of day of surgery on the dependent measures; (b) multivariate analysis of variance to test for the effects of high internal and high external scores on the dependent measures; (c) presentation of cell means for treatment effect on covariates and dependent measures; and (d) description of the relationship between covariates and dependent variables.

As none of these analyses was conducted to test formal hypotheses, the results are reported for descriptive information only.

The first supplemental investigation was that of effects of the day of surgery on convalescence. A two-way multivariate analysis of variance was used to test this relationship with a .05 significance level. The MANOVA analysis, Table 3.4, revealed no significant differences for treatment, day, nor treatment by day interaction.

The F statistics for the treatment factor ($F = .65$, $p < .882$), for the day factor ($F = 1.13$, $p < .371$), and for the interaction of treatment and day ($F = .76$, $p < .766$) were not significant.

Table 3.4

MANOVA Statistics for the Simultaneous Testing of Treatment, Day and Treatment by Day Interaction on the Convalescence Measures

Sources	Multivariate F	df	p <
Treatment	.65	24,72	.988
Day	1.13	12,3	.371
Interaction	.76	24,72	.766

Another area of interest was the possibility of high internal (score of 4 or less) or high external (score of 10 or more) on the IE Scale on the set of dependent measures. A two-way multivariate analysis was used to test this relationship with a .05 significance level. The MANOVA results are presented in Table 3.5.

The F statistics for the treatment factor ($F = 1.04$, $p < .478$), for the IE factor ($F = .73$, $p < .699$), and for the interaction of treatment and IE ($F = .64$, $p < .842$) were not significant at the .05 level. This indicated there was no difference between the convalescence rates of high externals and high internals.

Another source of information regarding the results of hypothesis tests is that of cell mean comparisons. The cell means for presurgical treatments I, II and III on all covariates are presented in Table 3.6.

Table 3.5

MANOVA Statistics for the Simultaneous Testing of Treatment, IE and Treatment by IE Interaction on the Convalescence Measures

Source	Multivariate F	df	p <
Treatment	1.04	24,16	.478
IE	.73	12,8	.699
Interaction	.64	24,16	.842

From the table (3.6) one can note that there are small differences between the groups on the covariates. A least squares analysis of the effects and their corresponding standard errors support the fact that these differences are due to chance. These results support the efficacy of randomization in this sample.

As stated earlier, there were no significant differences between treatments on any dependent measure of convalescence. For further discussion, however, marginal means for presurgical treatments across all 12 dependent variables are presented in Table 3.7. In addition, cell means and standard deviations on all covariates are presented in Table 3.8 and cell means and standard deviations on all dependent variables are presented in Table 3.9.

In the absence of significant differences, let us pursue some patterns of interest. On eight measures, or three-fourths of all dependent variables, treatment III

Table 3.6

Marginal Means of All Covariables Reported by Treatment Condition

	IE	Age	State Anxiety	Trait Anxiety	PreBeck	Bypass Time	Anoxic Arrest	Blood Loss	Hypothermia
T_1	7.111	655.2	39.50	36.72	8.833	124.9	64.44	1767	27.97
T_2	6.611	664.9	39.22	34.61	8.889	129.7	63.06	1407	28.67
T_3	7.722	608.1	33.17	33.33	8.167	127.4	60.72	1354	29.72

Table 3.7

Marginal Means of All Dependent Measures Reported by Treatment Condition

Treatment	Hosp Days	ICU Time	Total Comp	ICU Comp	Total Psy	ICU Psy	Zung	Post Beck	Analg	Hypno	Antipsy	Anti Anx
T_1	11.61	96.88	1.944	1.167	1.111	.3889	37.11	9.056	1159.0	11.67	.0	30.11
T_2	11.11	105.10	2.167	1.556	.722	.1667	33.33	6.556	723.6	10.83	.1111	23.28
T_3	10.78	87.49	1.611	.888	.0	.0	32.89	6.778	982.4	20.00	.0	23.06

Table 3.8

Cell Means and Standard Deviations of All Covariables

		IE	AGE	State Anxiety	Trait Anxiety	Pre Beck	Bypass Time	Anoxic Arrest	Blood Loss	Hypo-thermia
T_1										
	A_1	6.667 (3.041)	654.333 (86.458)	39.556 (8.862)	35.556 (7.367)	8.667 (5.196)	111.222 (28.952)	61.667 (14.491)	1456.222 (640.395)	28.278 (.833)
	A_2	7.556 (4.391)	656.111 (88.262)	39.444 (9.888)	37.889 (9.804)	9.000 (4.444)	138.556 (30.336)	67.222 (18.886)	2078.333 (2025.237)	27.667 (2.828)
T_2										
	A_1	5.778 (5.167)	663.333 (76.412)	40.111 (16.699)	36.111 (9.427)	10.000 (8.396)	125.556 (32.623)	60.111 (15.235)	1313.556 (794.504)	28.444 (.882)
	A_2	7.444 (2.963)	666.444 (86.302)	38.333 (12.176)	33.111 (6.254)	7.778 (5.380)	133.778 (33.518)	66.000 (25.372)	1500.889 (782.272)	28.889 (1.054)
T_3										
	A_1	7.222 (3.308)	602.444 (90.330)	30.444 (11.642)	37.889 (9.089)	10.667 (6.364)	119.444 (41.627)	59.667 (22.611)	1316.444 (639.118)	29.444 (1.810)
	A_2	8.222 (3.667)	613.778 (124.707)	35.889 (10.787)	28.778 (6.379)	5.667 (4.444)	135.333 (31.161)	61.778 (28.587)	1390.778 (1076.819)	30.000 (2.958)

Table 3.9

Cell Means and Standard Deviations of All Dependent Measures

		Hosp Days	ICU Time	Total Comp	ICU Comp	Total Psy	ICU Psy	Zung	Post Beck	Analg	Hyp	Antipsy	Anti Anx
T_1													
	A_1	11.889	89.867	1.222	.667	1.333	.444	39.333	10.000	1046.667	16.667	.000	23.000
		(5.840)	(33.506)	(.972)	(.707)	(3.041)	(1.333)	(5.362)	(4.062)	(1134.857)	(40.000)	(1.000)	(12.379)
	A_2	11.333	103.889	2.667	1.667	.889	.333	34.889	8.111	1271.111	6.667	.000	37.222
		(4.472)	(53.402)	(1.732)	(1.000)	(1.691)	(.707)	(7.944)	(5.487)	(877.204)	(13.229)	(.000)	(35.825)
T_2													
	A_1	12.111	112.611	2.556	1.778	.889	.333	34.556	6.556	783.333	10.000	.000	31.778
		(5.183)	(43.596)	(1.944)	(1.202)	(1.691)	(.707)	(10.051)	(5.388)	(563.183)	(21.213)	(.000)	(22.543)
	A_2	10.111	97.611	1.778	1.333	.556	.000	32.111	6.556	663.778	11.667	.222	14.778
		(1.537)	(34.257)	(1.302)	(1.000)	(1.667)	(.000)	(7.132)	(6.784)	(418.967)	(23.452)	(.667)	(12.132)
T_3													
	A_1	9.667	89.978	1.444	.778	.000	.000	36.778	9.444	885.333	36.667	.000	25.778
		(.707)	(26.645)	(1.333)	(.883)	(.000)	(.000)	(6.797)	(5.769)	(420.614)	(41.833)	(.000)	(27.119)
	A_2	11.889	85.000	1.778	1.000	.000	.000	29.000	4.111	1079.444	3.333	.000	20.333
		(7.590)	(34.373)	(1.093)	(.866)	(.000)	(.000)	(6.442)	(3.855)	(1082.735)	(10.000)	(.000)	(18.735)

had more successful convalescence experiences. They spent 10.3 days in the hospital while treatment I spent 11.1 and treatment II spent 11.6. They spent 9.39 hours less in ICU than treatment I and 17.61 less hours in ICU than treatment II. Treatment III also had fewer medical complications while in ICU (.89) and fewer total complications (1.6) than treatment I (1.2 and 1.9 respectively) or treatment II (1.1 and 2.2 respectively). In addition, they had no reports of psychiatric complications in ICU nor any during the total hospital stay. On the other hand, treatment I reported .39 psychiatric complications while in ICU and 1.1 during the total hospital stay, and treatment II reported .17 while in ICU and .72 totally.

Their scores on both the BDI (6.81) and Zung SDS (32.9) were lower than treatment I (9.1 and 37.1 respectively) or treatment II (6.6 and 33.3 respectively). The only measure on which treatment III did not do better than either treatment I or treatment II was on hypnotic medication requested. They received almost twice as much hypnotic medication (20.0) as treatment I (11.7) and treatment II (10.8).

These patterns indicate the control group to be doing better with convalescence as measured by these eight measures.

The final supplemental analysis was a regression analysis performed on the set of 12 dependent variables

using the three presurgical measures of state anxiety, trait anxiety and pre-Beck Depression Inventory scores as independent variables. The test for association between dependent variables and independent variables showed a significant relationship, $F = 1.516$, $p < .055$. The variable yielding the greatest contribution was state anxiety, $F = 1.88$, $p < .071$. A stepwise regression is presented in Table 3.10.

Table 3.10

Stepwise Regression F Statistics for the Three Psychological Covariates on the Set of 12 Convalescence Measures

Covariates	Stepwise F	df	p <
State Anxiety	1.88	12,36	.071
Trait Anxiety	1.21	12,35	.317
Pre-Beck	1.57	12,34	.148

A regression analysis was also performed using the scores of the post-Beck, Zung SDS, and psychiatric complications in ICU as dependent variables and the three presurgical measures of state anxiety, trait anxiety and pre-Beck scores as independent variables. The F statistics for association between dependent and independent variables was significant, $F = 3.039$, $p < .001$. A stepwise regression to analyze the contribution of each

correlate indicated a significant contribution from the variable state anxiety, $F = 5.52$, $p < .001$. That stepwise regression is presented in Table 3.11.

Table 3.11

Stepwise Regression F Statistics for Three Psychological Covariates on the Four Psychological Convalescence Measures

Covariates	F	df	p <
State Anxiety	5.52	4,44	.001
Trait Anxiety	1.60	4,43	.193
Pre-Beck	2.38	4,42	.067

It can be seen from Table 3.11 that whatever association there is stems primarily from the pretest of state anxiety.

Summary

The primary research question, that of treatment effect, yielded nonsignificant results on a MANOVA. Therefore, the research hypothesis that there would be differences between treatment groups was not supported.

Supplemental tests indicated these findings remained the same when a two-way MANOVA was computed for the effects of day of surgery, and when compared for high internal and high external scores. A final supplemental test indicated a relationship between the state anxiety scores and the postsurgical psychological convalescence measures.

CHAPTER IV

SUMMARY, DISCUSSION AND IMPLICATIONS

Summary

The Problem

The purpose of this research was to assess the effects of three types of presurgical psychological intervention on male, open heart surgery patients scheduled for surgery at the Experimental Research Hospital (ERH) from November 1976 through November 1977. Prior to surgery all subjects were tested using psychological measures and received a 35-45 minute interview of either affective psychological intervention, cognitive psychological intervention, or control intervention.

This study attempted to examine experimentally the suggestions of other research that presurgical psychological intervention aids the patient in coping with postsurgical stress, and thus helps to improve convalescence.

A review of the literature covering the psychological aspects of surgery suggested that some type of intervention is beneficial to the patient. More specifically, it was implied by the research that several types

of intervention could be appropriate, and that an evaluation of the effects of different intervention techniques on convalescence is needed. Another aspect of convalescence reviewed in the literature was the effect the patient's presurgical attitudes and beliefs might have on his ability to recover successfully.

Although researchers suggested that presurgical psychological treatment is effective and that different treatments could be appropriate for certain types of patients, experimental evidence to support that contention was not abundant. Much data existed, however, which provided correlational evidence that personality types or coping styles were in some way related to convalescence.

This research was designed to correct the limitations inherent in the previous studies discussed in Chapter I. That is, this study experimentally examined the effects of certain treatments while controlling for the several variables identified previously as possibly responsible for the differences in convalescence rates, namely, presurgical psychological data, operative data, and age of the patient.

Design and Methodology

The research design was a three-by-two, two-way design. The effect of treatment was assessed along with possible effects caused by the person administering the treatment. The independent variables in this study, then,

were the administrator, who was a social worker or a counselor, and the type of treatment. The three treatments assessed were: (a) affective intervention, (b) cognitive intervention, and (c) control intervention.

There were 12 dependent variables used in this study to measure various aspects of convalescence. All were reflective of dependent variables used in previous research reviewed in Chapter I. They were:

1. Days spent in the hospital from surgery to discharge
2. Hours spent in the intensive care unit
3. Amount of analgesic medication received
4. Amount of hypnotic medication received
5. Amount of anti-anxiety medication received
6. Amount of anti-psychotic medication received
7. Medical complications while in the intensive care unit
8. Total medical complications from surgery to discharge
9. Psychiatric complications while in the intensive care unit
10. Total psychiatric complications from surgery to discharge

11. Postsurgical depression as measured by the Beck Depression Inventory

12. Postsurgical depression as measured by the Zung Self Rating Depression Scale

All data for the dependent variables were taken from the patient charts, psychiatric assessment forms, or psychological tests.

Results

The results of the study did not support the hypothesis that there would be differences between the three presurgical treatment groups. Supplemental tests indicated it did not matter on which day of the week the patient had surgery or whether the patients were highly internally controlled or highly externally controlled, as measured on the Rotter IE Scale. There were no differences between the treatment groups. A further supplemental test showed some relationship between the presurgical psychological tests of anxiety and depression and the postsurgical psychological convalescence measures of depression and psychiatric complications while in the intensive care unit.

Discussion and Implications

Limitations

The limitations of this study provide a framework within which to interpret the results, and before discussing

the implications of the findings, several caveats should be explored. The effects of the experimental procedures as well as some unavoidable consequences of clinical research must be addressed.

The lack of validity data for the dependent variables in this study introduced a threat to internal validity. Recovery from surgery is a complex process which is not easily quantified, although measures such as the amount of time spent by the patient in the intensive care unit have been considered as indicators of recovery. Despite their intuitive appeal, however, the factors used in this study have not been validated as measures of convalescence.

Further threats to the internal validity of this study were the instruments used to measure presurgical depression, anxiety and locus of control. Although all were reported to have adequate validity and reliability, they remain self-report instruments subject to deliberate falsification and distortion. It is difficult to be sure that patients were able to record their true feelings, particularly when denial of feelings has been found to be a major defense system a patient uses when faced with a life-threatening situation.

A threat to external validity was the nonrandom selection of patients. It was not feasible to randomly select patients from the various Michigan hospitals which

perform open heart surgery because of time, distance, and individual hospital policy limitations. Therefore, the findings cannot be generalized beyond this sample. However, the Cornfield-Tukey (1956) bridge argument allows us to infer that these findings might hold true for similar populations.

A concern relating to both the internal and external validity of the study was the pretesting of patients. The decision to pretest patients on measures of anxiety, depression and locus of control may have resulted in alerting the patients to the researcher's interest areas. Because the pretesting experience was the patients' first encounter with the experimental sequence, it is impossible to measure if and/or when that exposure might have affected their responses. Not only could the exposure have affected the impact of the psychiatric interview or the presurgical treatment, it is even more likely it may have affected the dependent variable of postsurgical depression. These possible reactive effects of pretesting could have controlled by including a no treatment control group which received no pretest; however, that would have required 18 additional subjects, inclusion of which were not within the scope of this study because of time limitations.

An even more serious limitation was the possibility of reactive effects of the experimental procedures.

The patients' awareness that they were participating in a study may have been responsible in part for their manner of convalescence. This consideration presented an intriguing problem. Since it was physically impossible to provide unobtrusive treatment, and it was ethically and legally impossible to provide treatment without a consent form, the patients were fully aware they were being studied and were told that the psychological aspects of surgery were of interest to the investigators. Unfortunately the impact of their knowing they were involved in a study as well as the focus of the study is unknown. Such an unknown lessens our ability to claim the effects of treatment would be the same for a group of subjects in a nonexperimental setting.

Another possible source of invalidity was that of the subjects' contemporary history. All patients were located on the same floor of the hospital both before and after surgery except for the few days each spent in the intensive care unit. There was no way to measure nor control for the impact the patients and their families might have had on each other. Further consideration of these limitations will be presented in the discussion of the results.

In summary, the validity and reliability of the dependent measures and the presurgical psychological tests were possible threats to the internal validity of this

study. These extraneous variables may themselves have produced effects which make the conclusions drawn less certain. Threats of both internal and external validity, which make generalization more difficult, included reactive effects of pretesting, reactive effects of the experimental procedure, contemporary history of the subjects and lack of random selection.

Discussion

Despite the claims of previous research that certain types of presurgical psychological intervention would be advantageous to the patient, there were no differences between the results of three presurgical treatments in this study. There are a variety of possible conclusions, the obvious being the acceptance of findings that the treatments used in this study had no impact. The treatments may not have been long enough. The presurgical time frame, however, did not permit a longer treatment. The patients usually were admitted no more than two and one-half days before surgery; as an example, a patient would ordinarily be admitted late Saturday afternoon for surgery early Tuesday morning. It would have been preferable to have had a longer relationship with each patient, and perhaps to have investigated the effects of family interaction on the patient's recovery.

Another possible conclusion is that the lack of differences between the treatments may have been related

to the sensitivity of the dependent variables to the treatment. As stated, all of the 12 dependent measures had been used in previous research to assess patient convalescence, however, their validity has not been assessed. It may be there are more appropriate measures of convalescence.

In addition to alternative measures of convalescence, it is also possible that more differences in recovery rates would be reflected in long-range data; long-range measures might also be helpful in describing more fully the total scope of convalescence. Most dependent variables in this study were collected through the fifth postsurgical day or for six days. It would be interesting to find out which persons went back to work as planned, how the patients evaluated the quality of their lives, which patients were readmitted for further medical problems, and what were the long-range mortality rates.

To aid in further interpreting the results, the actual findings should be considered. Statistics for amount of time spent in intensive care, total length of hospital stay from surgery to discharge and typical dosages of medication were not readily available from previous research. The averages of all three treatments were presented in Chapter III, and in Table 4.1 treatment

groups with the worst convalescence rates on four dependent variables are compared with McGoon's averages reported in 1969.

Table 4.1

Comparison of Average Convalescence Data

Dependent Measure	McGoon	ERH	
Average number of days from surgery to discharge	10-21 days	11.61	(T I)
Anti anxiety medication (Valium)	2-8 mg/day	5.2 mg/day	(T I)
Time spent in ICU	Less than 5 days	4 1/4 days	(T II)
Analgesic medication (Morphine)	3-12 mg/day	20 mg/day	(T II)

It can be seen that even the patients in Treatment I who had an average length of stay in the hospital after surgery of 11.61 days were within the average of 10-21 days cited by McGoon. The Treatment I anti-anxiety medication average of 5.2 mg/day was also within the 2-8 mg/day average cited. Treatment II subjects stayed an average of 4 1/4 days, below the 5-day average maximum time spent in ICU. The only measure on which the patients in this study exceeded McGoon's suggested average was analgesic (pain) medication received, at 20 mg/day in Treatment II versus McGoon's average of 3-12 mg/day. Although this figure is somewhat imprecise due to equating all analgesics

administered, including Darvon, Tylenol and Emperim II, with morphine, the results may be attributable to the patients having been told by the administrator that they had much control over the amount and intensity of the pain they experienced, and their having been directly instructed by the administrator to ask for pain medication when they needed it.

Postsurgical measures of depression indicate that even the groups scoring highest on both the Beck Depression Inventory and the Zung Self Rating Depression Scale had relatively low scores of depression. Treatment I had the highest average BDI score, 9.06. A score of 18.7 was reported to indicate mild depression. Similarly, Treatment I had the highest average score on the SDS, 37.11. Zung reported average scores of below 40 are indicative of no psychopathology or evidence of depression. It appears, therefore, on the basis of these tests that even the groups which score highest on the depression indices were not depressed after surgery.

These findings are clearly in conflict with the majority of the literature reviewed in Chapter I in which it was suggested that patients were likely to experience depression postsurgically.

In Chapter III it was shown that the Treatment III group did better on 8 of the 12 postsurgical measures. Although that difference was not significant, the

possibility exists that those scores might reflect the lack of interference with the patient's denial. In both Treatment I and Treatment II the patient's impending surgery was overtly discussed. In Treatment III that discussion was not facilitated by the interviewer and may have allowed the patient to use denial, which can be an effective coping device.

Let us further examine the environment in which the patients were treated. As stated, hospital policy did not allow the patients to be treated without full knowledge of participation. More important was the unfeasibility of controlling the interest of the staff. It was necessary that the surgeons be supportive of the project before its inception since their permission was necessary. The surgeons, therefore, were alerted to the intent of the study. It is difficult to believe they were not affected by the proposed interest of the researchers; it is also possible their knowledge could have affected the way they treated their patients.

The natural curiosity of the nursing staff was also impossible to avoid. The patients, often delighted to be so well informed and attended to by the researchers, often shared the details of the experimental experience with the nurses. Informal conversations between the nurses and researchers indicated that the patients, in addition to relating the focus of the presurgical tests

to the nurses, reported they were both "fascinated" by the psychiatrist's interview and "intrigued" by the pre-surgical treatment offered by the counselor or social worker. In this very direct manner the nurses also became alerted to the focus of the study.

The entire staff appeared to become attuned to the psychological implications for the patients, and were eager to be a part of the impact. Although that sort of participation could have been an ultimate goal of any team approach, it made it impossible to ferret out those elements of presurgical attention which might be responsible for helping the patient cope with the stress of surgery.

On the other hand, it is possible that no single treatment or service can itself make a difference in a patient's response to surgery. It may be that just having had someone pay special attention to their need could have been responsible for the patients' similar convalescence rates. The lack of differences between groups, overall low incidences of medical and psychiatric complications combined with the normal amounts of medication received could be a result of an effective package or atmosphere which developed over the course of the study--that of caring closely for the patient in a way which enhances his responses to surgery.

In addition to the surgeons' and nurses' involvement, the small size of the hospital facilitated patient interaction and involvement in the study. The floor on which the patients spent the majority of their time had 17 rooms, 20 beds, and one lounge where patients admitted for open heart surgery inevitably met with each other. As the study progressed the patients who were admitted on Monday for surgery on Thursday met the patients who had been admitted Saturday for surgery on Tuesday. Those patients in the hospital since Saturday usually informed newcomers about the extensive care to be received, the attention being offered, and frequently filled in the new patient on what to expect. Presurgical patients also met postsurgical patients who offered an entirely different perspective. It is interesting to note that in the supplemental analysis conducted to see if there were differences between those admitted early or late in the week, there were no differences. A probable explanation is that once the surgery schedule became regular, there were virtually always pre- and postsurgical patients on the floor regardless of the day of the week.

More interference arose on the day before surgery when each patient and his wife were given a tour of the intensive care unit. More often than not at least one of the patients in ICU was an open heart surgery patient whom the touring patient had met previously on the floor.

A tradition spontaneously evolved in which the ICU patient gave the touring patient the "high sign" to indicate that all was well. During post-testing the counselor frequently was told that the "high sign" was a very impactful incident in the presurgical period. Another important experience for a presurgical patient was watching the postsurgical patient taking his daily exercise walk around the floor while giving encouragement to the patients awaiting surgery. These examples are indicative of the type of patient interaction for which it was impossible to control.

Therefore, implications for future researchers are many. Generally, the role of the psychological preoperative attitudes or coping styles, operative measures, and age of the patient need to be explored further. If they are in fact responsible for any differences in the convalescence of patients, the variables used in this study were not adequate to detect those differences. Moreover, the treatments themselves need to be evaluated more comprehensively. Perhaps a comparison of longer treatments versus shorter treatments or even treatments including families would provide more conclusive evidence of their effectiveness. Long-term convalescence data also need to be examined.

Finally, to avoid diluting the results of a study, conducting research simultaneously in several hospitals or

in a large hospital with as little staff involvement in the study as possible is essential. Only then can we begin to differentiate between that which sounds intuitively appealing to the researchers and that which actually proves to be useful or beneficial to the patient.

APPENDICES

APPENDIX A

INTERVIEWER STATEMENT AND CONSENT FORM

APPENDIX A

INTERVIEWER STATEMENT

I am Andrea Van Steenhouse, part of the Cardiac Surgery Team which includes the surgeons, nursing staff, a social worker and a psychiatrist. Perhaps your doctor has mentioned to you that we are looking at how patients respond to Open Heart Surgery. We are interested in finding ways to better prepare patients for surgery and to help make that experience as comfortable as possible.

This will involve talking with a social worker and psychiatrist, as all open heart surgery patients do. The additional involvement is your filling out these three psychological inventories now and two others postoperatively. These are to give us an idea of how you feel approaching surgery. Later today the social worker or I will stop in briefly and ask you a few questions. The day prior to surgery the psychiatrist will come in on his regular visit with patients. That same day, either the social worker or I will come back and you will have an opportunity to discuss your surgery and any concerns you might have.

Of course all information resulting from our contacts is confidential. If at any time you change your mind about participating, please let us know.

This is the consent form. It describes what will be taking place and that you will have access to the study results once we are finished. Do you have any questions? How do you feel about participating?

CONSENT FORM

I have been informed that Dr. Sumer Verma is conducting a study on the psychological aspects of open heart surgery. I freely consent to take part in this study. The study has been explained to me; I understand the explanation that has been given. I understand that my participation will involve completing three psychological inventories prior to surgery and two after surgery; two interviews with a psychiatrist, one before and one after surgery; and two interviews with a social worker prior to surgery. I further understand that:

1. I am free to discontinue my participation in the study at any time without penalty.

2. the results of the study will be treated in strict confidence and that I will remain anonymous (within these restrictions results of the study will be made available to me at my request).

3. my participation in the study does not and cannot guarantee any beneficial results to me.

4. at my request, I can receive additional explanation of the study after my participation is completed.

_____
Signature

_____
Date

APPENDIX B

PRESURGICAL TREATMENT CONTENTS AND CHECKLISTS

APPENDIX B

PRESURGICAL TREATMENT I

	Outline Checklist 1 2 3 4 5
1. Introduce self	_____
2. Ask patient how decision for surgery evolved	_____
3. Discussed initial feelings regarding surgery	_____
4. Discussed current feelings regarding surgery:	
a. issue of death	_____
b. issue of pain	_____
c. other (list)_____	_____
5. Ask patient his expectations from surgery	_____
6. Gave patient opportunity to ask questions	_____
7. Closing - thanked patient	_____

TREATMENT I

Hello, I am Andrea Van Steenhouse/Evelyn Koenig with the Cardiac Surgery Team. As I/Andrea explained, one of us would stop by to talk with you about your surgery.

1. Can you tell me how you happened to come in for surgery: what kind of problem have you been having (get patient to lead up to surgery decision).

   Response: empathic to above facts

2. How did you feel when they told you you had to have surgery?

3. How do you feel about that now?

4. Heart surgery is a major kind of surgery and most patients feel pretty frightened--have you experienced that? (Reassure patient that it is a normal feelng and nothing for them to be ashamed or embarrassed about)

5. What do you expect from surgery/what do you hope for? How did you handle that, feel about that--when patient responds to how it came about.

6. Are there any special feelings or concerns that you have that we haven't discussed?

7. I appreciate your talking with me. Thank you.

PRESURGICAL TREATMENT II

	Outline Checklist				
	1	2	3	4	5
1. Alerted patient to psychological possibilities					
a. depression					
b. delerium (auditory or visual hallucinations)					
c. disorientation--time, place, erson					
d. temporary difficulty with memory					
2. ICU activity					
a. patient equipment monitored					
b. large numbers of people on rounds					
3. Steps of progress					
a. trach tube out					
b. chest tubes out					
c. arterial line out					
d. levine tube out					
e. foley pulled out					
4. Asking questions is good					
5. Patient can communicate by signals					
6. Patient will have pain and discomfort but can ask for pain medication (don't wait too long)					
7. Patient can discuss perceptual disturbances, confusion or depression with nurses					

8. Teach patient to refocus attention

   a. assisted patient in thinking of positive aspects of surgery _____

   b. using analogies, helped patient learn to concentrate on other than physican condition _____

TREATMENT II

Hello, I am Andrea Van Steenhouse/Evelyn Koenig with the Cardiac Surgery Team. As I/Andrea explained, one of us would stop by to talk with you about your surgery.

When you have surgery you go directly to surgery which is on the second floor. From surgery you are taken to the Intensive Care Unit rather than the recovery room like most surgical patients. Once you get to the ICU, you will find that you will be attached to a lot of equipment (if specific types come up refer to nurse). They will come out a step at a time as your condition warrants. All patients are attached to the same equipment. There will be a lot of treatments going on continually and you will be awakened frequently for those treatments. You will also notice that there will be a large number of people coming in--doctors, nurses, respiratory people, lab and tray, etc., and that too is done for all patients.

Given the fact that you have been through major surgery you have had a lot of medication and you are in an environment where you cannot tell the time of day, etc., and you are awakened frequently. Some patients tend to become a little confused--they won't know exactly where they are or what things have happened recently. This happens because of all of the environmental things, it usually passes quickly, and is nothing to be concerned about. Sometimes a few days after surgery you may begin to feel quite depressed. This again is temporary and nothing to be concerned about.

There are some things that you can do to help make yourself more comfortable. First you can ask questions any time about anything that is happening. People are sometimes reluctant to ask questions because the doctors seem too busy or they are afraid it will sound silly or they are afriad that the doctor might become angry with them. The doctors and nurses here encourage you to ask questions whenever you have them.

Since you will have some pain and discomfort, let the nurses know when this occurs. Pain medication will be ordered for you and you can ask the nurses for it when you need it. It is better to ask before the pain becomes too severe. If you should experience any confusion, let the nurses know and they will assist you with that.

Should you need to communicate these things while the tube is still in your mouth, you can communicate with the

nurse by signals with your hand. The nurse is always in the room and is used to anticipating patients' needs and will respond to any attempt to communicate.

In addition to the above, it sometimes helps if you have pain or discomfort to refocus your attention on positive things. For example, if you are really interested in doing something and sustain a minor cut you usually don't notice it until after you are finished. In a similar way, you c ould be less uncomfortable if you concentrate on things besides your feelings of pain. Can you think of things--either positive aspects of surgery or things norma-ly pleasant--for you to think about which you could sort of plan ahead to use?

Do you have any questions?

PRESURGICAL TREATMENT III

		Outline Checklist 1 2 3 4 5
1.	Can you tell me how you came to be here for surgery?	
2.	Have you ever been in the hospital before?	
3.	What kinds of illnesses did you have?	
4.	When did you go back to work?	
5.	What kinds of activities have you been able to do?	
6.	What kind of activities have you been able to continue?	
7.	When was the decision to have surgery made?	
8.	How did you decide to have surgery?	
9.	What has the physician told you about your surgery?	
10.	What have the nurses told you?	
11.	Do you have any questions?	

REFERENCES

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