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THE EFFECT OF A ROLE SUPPLEMENTATION PROGRAM FOR CARDIAC PATIENTS AND SPOUSES ON MASTERY OF THE AT-RISK ROLE

by

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DISSERTATION

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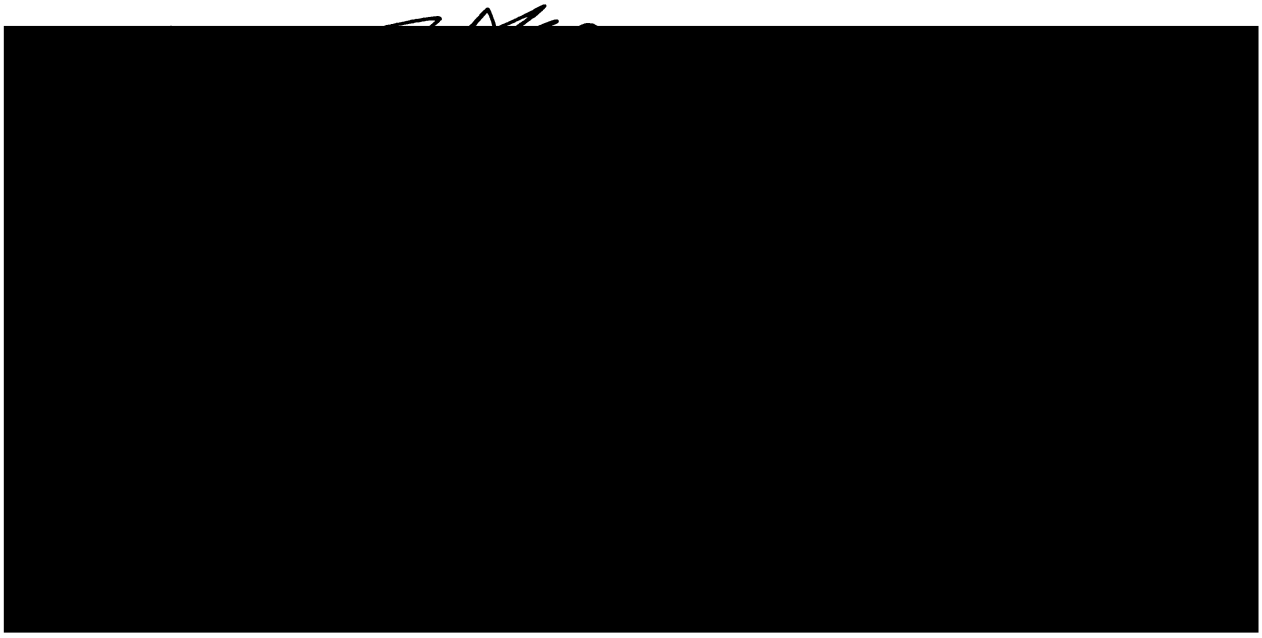

THE EFFECT OF A ROLE SUPPLEMENTATION PROGRAM FOR CARDIAC PATIENTS AND SPOUSES ON MASTERY OF THE AT-RISK ROLE

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ABSTRACT

This study evaluated the effects of a role supplementation program for cardiac patients and their spouses on mastery of the at-risk role. The major question posed for study was: would the inclusion of spouses in an experimental nursing intervention of role supplementation significantly alter the role mastery of cardiac patients and spouses? The sample consisted of 46 couples in which one of the partners had documented coronary atherosclerotic heart disease and was enrolled in an out-patient cardiac rehabilitation program. Three cardiac treatment centers participated.

The experimental intervention involved a ten week series of group sessions based on symbolic interactionist role theory. Three categories of outcome variables were measured: 1) psychosocial adaptation, 2) compliance to a cardiac risk factor regimen, and 3) changes in the

course of disease. The research used a quasi-experimental, three group, time series design in the following manner: Experimental Group 1 (N=32) consisted of patients and spouses who participated in a role supplementation program; Experimental Group 2 (N=30) consisted of patients and spouses, but only the patients participated in a role supplementation program; the control group (N=30) consisted of patients and spouses who did not participate in the role supplementation program. Data was collected at baseline, ten weeks, and six months using structured instruments.

Significant results were as follows: Experimental Group 1 patients reported significantly higher self esteem ($p<.05$) and feelings of personal worth ($p<.05$) at ten weeks and six months posttest than patients in the other two groups. Experimental Group 1 spouses reported significantly lower anxiety ($p<.05$) and significantly higher self esteem ($p<.05$). These same spouses also reported increased satisfaction with their behavior ($p<.05$), physical self concept ($p<.05$), moral-ethical self concept ($p<.05$), and family relationships ($p<.01$) at ten weeks and six months posttest than spouses in the other two groups. Experimental Group 1 patients had higher compliance in weight loss ($p<.01$). Finally, morbidity events only occurred in control group patients. Marital adjustment was not positively altered by the experimental intervention.

These results supported the efficacy of including spouses in a role supplementation program during cardiac rehabilitation.

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Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

The research presented in this dissertation evaluated the effects of a program of therapeutic group sessions on the psychosocial adaptation of postmyocardial infarction and post-cardiac surgical patients and their spouses. The therapeutic group sessions were conducted within a formal cardiovascular rehabilitation program.

Despite recent advances, cardiovascular disease continues to be the major cause of disability in the United States, affecting over 27 million people (Kannel, 1982). In the United States, coronary atherosclerotic heart disease is diagnosed in one out of 100 white male subjects every year (4 per 1,000 at ages 35-44, 10 per 1,000 at ages 45-54, and 20 per 1,000 at ages 55-64 years) (DiGirglamo & Schlant, 1977). In these subjects the death rate in the first year is approximately 20 to 30 percent. Since 1950, cardiovascular disease death rates have dropped over 35% and, most dramatic of all, over two-thirds of this decline has occured in the last ten years (Levy, 1981). Thus, the pool of candidates available for cardiovascular rehabilitation programs is continually growing.

The increasing number of patients who now survive a myocardial infarction is a reflection of advancements in both the medical and surgical treatment of cardiac patients. Advances in medical treatment include the use of coronary intensive care units with specially trained staff, more effective pharmacologic agents, sophisticated monitoring devises, and new treatment modalities, e.g., the intraaortic balloon pump.

During the past fifteen years dramatic surgical techniques have also been developed to treat selected patients with coronary artery disease. These techniques involve revascularization of the myocardium by means of vein grafts which bypass obstructed portions of the coronary arteries. They may also involve the repair of a ruptured ventricular septum or papillary muscle or resection of a ventricular aneurysm, which compromise the heart's ability to function as an effective pump. Thus, patients with coronary heart disease now are more likely to survive an acute event.

With the advances in the medical and surgical treatment of coronary heart disease, there has been an increasing awareness and commitment on the part of health professionals to the concept of cardiac rehabilitation. Formal cardiac rehabilitation programs are proliferating in hospitals and community centers, but such programs are expensive in terms of financial cost, time, personnel, and facilities. It is critical, therefore, that the factors in these programs which relate to increasing the patient and family's psychosocial adaptation to the disease, the patient's adherence to an appropriate medical regime, and the patient's ability and motivation to return to a maximum level of activity be identified and evaluated.

Significance of the Study

Significance to Nursing:

The California Nursing Practice Act defines the practice of nursing as ". . . those functions helping people cope with difficulties in daily living which are associated with their actual or potential health or

illness problems or the treatment thereof which require a substantial amount of scientific knowledge or technical skill . . . (1980, p. 9). Assisting patients and their families to cope with the difficulties (both physical and psychosocial) associated with coronary artery disease is clearly within the scope of nursing practice. Other health professions have recognized nursing's expertise in the area of cardiac rehabilitation by insisting that the coordinators of cardiac rehabilitation programs, both in the community (e.g., the YMCArdiac Therapy Programs) and in hospital settings, be a nurse. Frequently these coordinators hold masters degrees in cardiovascular nursing.

Currently nurses in these settings are doing individual and group counseling and health teaching (Baker & McCoy, 1979; Bean, 1974). Yet, four of the five studies reported in the literature that have evaluated the effectiveness of therapeutic groups for cardiac patients used psychiatrists, cardiologists, psychologists, or social workers as group leaders (Adsett & Bruhn, 1968; Ibrahim, Feldman, Sultz, Stairman, Young, & Dean, 1974; Mone, 1970; Rahe, Tuffli, Suchor, & Ransom, 1973; Suinn, 1974). If nursing is to expand its scientific base of practice, it must evaluate currently practiced nursing interventions using appropriate research methodologies. This study would provide nursing with data upon which future interventions in cardiac rehabilitation could be based.

Significance to Other Fields:

In the past two decades a number of fields other than nursing and medicine have become interested in the problems of cardiac rehabilitation and cardiac risk factor reduction programs. This interest was documented in 1974 when the National Heart and Lung

Institute sponsored a conference in Seattle, Washington entitled "Applying Behavioral Science to Cardiovascular Risk" (Enelow & Henderson, 1975). Twenty-three speakers from the disciplines of medicine, public health, psychology, and sociology (not nursing) addressed a variety of topics relating to risk factor reduction. In one of the papers presented at this conference, Stokols states, ". . . the establishment of (cardiac) patient reference groups may enhance adaptation to frustrating and stressful events by providing dissatisfied individuals with more realistic standards of social comparison" (1975, p. 142).

As yet, this intervention is untested in a cardiac rehabilitation setting. Since rehabilitation is a multi-disciplinary effort, the results of this dissertation study is of interest to all those in disciplines other than nursing who work with a population of cardiac patients and their families.

Significance in Terms of Population:

The psychological and social dysfunction which occurs in individuals as a result of coronary artery disease is well documented. Anxiety and depression have been reported by the majority of patients during the early stages of rehabilitation (Bruhn, 1969; Hackett & Cassem, 1978; Wishnie et al., 1971; Wynn, 1967). Moreover, these same affective states have been correlated with poor vocational adjustment (Nagle, Gangola, & Picton-Robinson, 1971; Wishnie, Hackett, & Cassem, 1971; Wynn, 1967) and increased morbidity and mortality (Bruhn, 1969; Garrity & Klein, 1975).

Besides its effect on the patient, an acute coronary event presents

a massive disruption in the psychodynamic balance of the family (Davidson, 1979). Marital conflict over the implications of coronary disease has been noted up to one year post-myocardial infarction (Mayou, Foster, & Williamson, 1978). Anxiety, depression, sleep and appetite disturbances, and psychosomatic symptoms have been documented in spouses of coronary patients (Croog & Fitzgerald, 1978; Dracup & Breu, 1978; Mayou et al., 1978; Skelton & Dominian, 1973; Wishnie et al., 1971).

Interventions that will reduce the psychosocial dysfunction experienced by cardiac patients and their spouses become especially significant. The increasing survival of coronary patients makes it imperative that such interventions undergo careful evaluation in controlled outcome studies.

The Proposed Study

Given the premise that the psychodynamic balance of the family is frequently disrupted by the diagnosis of coronary disease in one of its members, we can also assume that this disruption may have negative consequences in the areas of patient recovery. The question then arises as whether or not the involvement of the spouse of the coronary patient in the rehabilitation process may facilitate the psychosocial adaptation of both patient and spouse to the problems created by coronary disease and increase the compliance of the patient to the medical regimen.

This research effort evaluated the effects of a ten week series of guided group sessions for coronary patients and their spouses offered within a formal outpatient cardiac rehabilitation program. Three cardiac treatment centers in the Los Angeles area participated. The

evaluation was carried out by means of a three group time series design which varied the inclusion of spouses. Three major categories of outcome variables were studied: (1) the psychosocial adaptation of patients and spouses, (2) the adherence of patients to their prescribed medical regimen, and (3) the changes in the course of the disease, i.e., in the morbidity/mortality of patients. The content and process of the group sessions were based on interactionist role theory, with the goal being an increase in the communication and problem-solving skills of coronary patients and their spouses during a period of role transition. A number of questions were posed for study that related to the theoretical framework of interactionist role theory.

Organization of the Dissertation

The presentation of the research is organized in the following manner. Chapter Two contains a review of the pertinent literature relating to coronary heart disease and its psychosocial sequallae. Intervention studies directed toward reducing such sequallae are critically reviewed. The gaps in our scientific knowledge are then identified as they relate to the clinical problem addressed in this dissertation.

In Chapter Three, the theoretical framework which guided the study is presented. The major concepts and propositions of interactionist role theory are reviewed, as well as the findings of previous researchers.

The purpose of the dissertation study and its related research questions are posed in Chapter Four. The variables are defined

conceptually and operationally and hypotheses and subhypotheses are formulated.

In Chapter Five, the methods and rationale used to collect and analyze the data are described. Chapter Six contains the presentation of the results by: 1) sample characteristics, 2) study attrition, 3) participant evaluation of the experimental program, and 4) data pertaining to the individual subhypotheses. The significance and meaning of these findings are discussed in Chapter Seven, particularly as they relate to the conceptual framework and the research findings of other investigators. The limitations of the study are also reviewed.

Chapter Eight contains a summary of the present study and major conclusions drawn. Finally, implications for future reseach are discussed.

CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter describes the pathophysiology and treatment of coronary heart disease and presents the scientific evidence accumulated to date about the psychosocial adjustment of cardiac patients and their spouses.

Coronary Heart Disease

Coronary atherosclerotic heart disease (CAHD) is a component of a systemic disease affecting the smooth lining (intima) of the arterial walls. It is a pathologic condition characterized by abnormal lipid and fibrous accumulation in the arterial vessel wall of the coronary arteries, with resulting disruption of vessel architecture and blood flow to the myocardium. The process is a combination of progressive changes in the arterial wall over time:

1. Superficial yellowish streaks of fat form along the intima of the arterial wall.
2. Fibrous plaques develop, involving a circumscribed, elevated thickening of the intima. They are firm and gray or pearly white.
3. Atherosclerotic plaques form ("atheromata") in which fatty softening is predominant.
4. Finally, complicated lesions develop in which additional changes such as thrombosis, hemorrhage, ulceration and calified deposits are present (VandenBelt, Ronan, & Bedynek, 1979).

As the atherosclerotic process progresses there is further narrowing of

the arterial lumen, with a reduction in flow or loss of the ability to increase flow to the myocardium when its oxygen demands increase, (e.g., during exercise).

The major manifestations of CAHD include angina pectoris, acute myocardial infarction and its sequelae, and sudden death.

Angina Pectoris. Angina is the symptom of chest pain or exertion perceived by the patient during transient myocardial ischemia. As the arterial lumen narrows, the capacity to increase coronary flow during periods of high oxygen demand is compromised. The resulting oxygen supply-demand imbalance causes myocardial ischemia. It usually occurs during exercise or in emotionally stressful situations (Gazes, 1975; Passamani, Frommer, & Levy, 1978).

The symptoms of angina include: chest pain which is usually substernal, but may radiate to other parts of the body and lasts for less than 20 minutes; exacerbation with stress or exercise; relief with rest or with less than three nitroglycerin tablets. Medical treatment of angina consists of drug therapy (nitrates and beta-blockers) and modification of risk factors, such as diet control, decreased smoking, increased exercise, etc. Coronary artery bypass grafts (CABG) are employed in cases where aggressive medical management of angina fails.

Myocardial Infarction. Myocardial infarction (MI) is the end result of the atherosclerotic process. Necrosis of the cardiac muscle occurs as a result of unrelieved ischemia (oxygen deprivation) caused by complete occlusion of a coronary artery or prolonged periods of high myocardial oxygen consumption.

Symptoms of myocardial infarction include: chest pain described as

burning, crushing or choking, with frequent radiation to the jaw, back, left shoulder or arm, or to the anterior chest. There is a subjective sense of impending doom or death. Ancillary clinical symptoms often described are: shortness of breath, nausea, vomiting, diaphoresis, and severe anxiety. Definitive electrocardiogram changes and a rise in the CPK-MB enzyme are diagnostic. Generally treatment takes place in a coronary care unit and consists of rest, oxygen, pain relief with nitrates and morphine, and observation for complications such as arrhythmias, heart failure, valvular disturbance, and sudden death (Vandenbelt, et al., 1979).

Coronary Risk Factors

Atherosclerosis is a multifactorial disease with genetic, aging, and sexual components. Persons with either parents or siblings in whom CAHD has been documented before the age of 50 years show a greater incidence than those persons with a negative family history. Caucasian males over the age of 45 years show a strong and consistent association of age and CAHD (Keyes, et al., 1972). Finally, caucasian males are more at risk for CAHD in the age group of 35 to 55 years as compared to females before menopause. After menopause the incidence in women rapidly increases until it equals that of the male population. Proposed reasons for the decreased incidence in premenopausal women are estrogen protection and less stressful life style (Wolinsky, 1979).

Family history, sex, and age are risk factors that cannot be modified. However, numerous epidemiological studies have established the existence of other risk factors for CAHD which are amenable to

change (Kannel, 1974; Kannel & Gordon, 1973; Keyes, et al, 1972; Jenkins, 1971; Rosenman, 1974; Russek, 1965). They are:

1. Hypercholesterolemia (serum cholesterol over 275 mg/100 ml)
2. Hypertension (systemic arterial pressure over 140/90 mm Hg)
3. Cigarette smoking
4. Obesity (over 15 to 20% of ideal body weight)
5. Physical inactivity
6. Diabetes Mellitus
7. Personality type
8. Psychosocial tensions

Data from the Framingham study (Kannel & Gordon, 1973) indicate that individuals with a single major risk factor (hypercholesterolemia, hypertension, or cigarette smoking) develop CAHD at 1.9 times the expected rate over a 10 year period. With two or three risk factors, this rate increases to 2.5 and 10.6 respectively (VanderBelt, et al., 1979). These findings highlight the importance of coronary risk factor reduction in the primary prevention of CHD. The role of risk factor reduction in secondary prevention is not as yet, well established but it is generally supported by physicians and nurses working in cardiac rehabilitation awaiting the accumulation of definitive scientific evidence (American Heart Association, 1980; International Society and Federation of Cardiology, 1981).

Cardiac Rehabilitation

Within the past decade, formal cardiac rehabilitation programs have become an important part of medical care. Although therapeutic exercise

serves as the focal point in cardiac rehabilitation programs, the goals of such programs are more inclusive. They are:

1. To help the individual return to activities important to the quality of his life prior to the onset of illness;
2. to prepare the individual and his family for healthy alternatives in lifestyle that might reduce the risk of occurrence (primary prevention) of coronary heart disease;
3. to prepare the individual and his family for health alternatives in lifestyle that might reduce the risk of recurrence (secondary prevention) of coronary heart disease;
4. to return the individual to optimal physiological function;
5. to reduce costs of health care through shortened treatment time and prevention of disability, and;
6. to reduce occupational losses caused by cardiovascular disease. (Erb, Fletcher, & Sheffield, 1980).

Candidates. Candidates for the cardiovascular exercise treatment programs include those with proven heart disease and those highly vulnerable to its development. Individuals with proven cardiovascular disease are those with either documented myocardial infarction or stable angina pectoris or who are post-operative cardiovascular surgical patients. The candidates are referred to the program by their private physician (Zohman & Tobias, 1970).

Generally, myocardial infarction patients may be admitted as early as three weeks following a myocardial infarction, at the discretion of the physician. Post-operative cardiovascular surgical patients are admitted approximately four to eight weeks following surgery or at the

discretion of the physician. Patients with stable angina pectoris may be admitted to the program at any time.

Personnel. The program is based on a multi-disciplinary approach that ideally involves the efforts of physicians, cardiovascular clinical nurse specialists, physical therapists, vocational counselors, dietitians, pharmacists, and medical social workers or psychologists. A cardiologist or thoracic surgeon usually serves as medical director. The program coordinator can be either a cardiovascular clinical nurse specialist or an exercise physiologist, but it is usually the former.

Duration of the Program. The majority of hospital-based outpatient programs provide a four to six month course of treatment based on evidence that this amount of time is required for appropriate physical therapeutic effects (Erb, et al., 1980). On completion of the program patients are referred to a long term community center (e.g., YMCA) or placed on a home maintenance program.

Components of an Outpatient Program. Following progressive low level activity in the hospital and basic educational and psychosocial support, patients with heart disease enter a prescribed outpatient cardiac rehabilitation program. An initial interview and orientation to the program is performed, usually by the cardiovascular clinical nurse specialist who serves as a coordinator for the program. The orientation and interview includes the patient's spouse whenever possible. Diagnostic tests may be performed, along with an exercise stress test, or these may be already done by the patient's private physician and reported to the rehabilitation staff. An exercise prescription is then devised from these data and the patient returns to the center three

times per week (on non-consecutive days) for exercise sessions lasting approximately one hour. The patient's spouse or other family members usually do not return to most centers after the initial interview.

Cardiac rehabilitation programs attempt to provide a balance of physical conditioning, education, vocation counseling, risk factor modification, and psychological support. The exercise component is based on individualized exercise prescriptions and takes place within a format of exercise stations, some isotonic and some resistive, such as: warm-up, treadmill walking, arm crank ergometer, barbells, walking steps, dumbbells, rowing machine, bicycle ergometer. (Wilson, Fardy, & Froelicher, 1981).

The basic features of the exercise maintenance program are similar for all participants. The format incorporates a warm-up, consisting of flexion and extension exercises for 5 to 10 minutes, followed by a dynamic phase of approximately 15 to 30 minutes. A cool-down phase of 5 to 10 minutes is essential to prevent an unstable circulatory state during recovery. The cool-down phase consists of walking or stretching while the heart rate is returning toward baseline (Erb, et al., 1980; Wenger, 1981).

During the early post-hospital treatment (usually 3 to 12 weeks) electronic monitoring of the patients' cardiac rhythm during the exercise session is required. In addition to its physiologic value, monitoring is used to teach the patient his personal limits of performance and the prescription of physiologic work loads.

Education is an important component of cardiac rehabilitation programs, but the manner in which it is provided varies from center to

center. A combination of individual teaching sessions and risk factor modification groups is often used, supplemented with written and audiovidual teaching aids (Niccoli & Brammell, 1976; Wenger, 1981; Zohman & Tobias, 1970).

Patients are taught the basic pathophysiology of cardiovascular disease, the signs and symptoms associated with this disease process, and in particular the signals which might indicate a changing situation. They are also taught the reasons for the intervention methods used in cardiac rehabilitation, including benefits of physical activity in improving functional capacity, the importance of safe heart rate range and limiting symptoms during physical activity, the benefits of optimal nutrition in weight control and blood lipid control, and the importance of identifying and modifying personal stress and tension. The evaluation of the success of the educational process for each patient is determined by the staff either by personal evaluation of the patient or objective testing (Erb, et al., 1980).

Psychological support for both patients and families may be provided in individual and/or group counseling sessions led by nurses (Baker & McCoy, 1979), psychiatrists (Rahe et al., 1973), or psychologists (Mone, 1970). It is interesting to note, however, that a psychological component was omitted in the American Heart Association's recently published Standards for Supervised Cardiovascular Exercise Maintenance Program (Erb et al., 1980). The three components described in this document were: medical supervision, exercise, and education. Psychological support was not discussed and, indeed, is often excluded as a formal component of cardiac rehabilitation programs.

Evaluation of Cardiac Rehabilitation Programs

Investigators have shown that exercise training can be carried out safely in selected persons with coronary artery disease and the characteristic hemodynamic response of the trained state will be achieved (Barnard, MacAlpin, Kattus, & Buckberg, 1977; Clausen, 1976; Frick & Katila, 1968). The ability of these persons to tolerate physical stress is enhanced by the reduction of the resting heart rate and systolic blood pressure and a lesser increase in the heart rate and systolic blood pressure for any level of submaximal work that occurs with training. A high proportion of these patients can return to a more active life (Haskell, 1974; Kaufman & Anslow, 1966).

The scientific basis for exercise training has yet to be documented with respect to its effects on morbidity and mortality. Early studies by Gottheiner (1968) and Hellerstein (1969) supported the long-term benefit of physical training of coronary patients, but these were plagued by methodological problems, particularly in terms of patient selection. Although these studies reported reduced mortality (3.5% vs. 12% in a control group at 5 years in Gottheier's study of 1103 cardiac patients and 2% vs. 5% in a control group at 7 years in Hellerstein's study of 254 patients), there was a selection of a healthier patient group by the exclusion of those patients who could not tolerate an exercise program. Large clinical trials with randomized control groups have yet to be done to establish the physiological benefits of exercise training for cardiac patients on morbidity and mortality.

There are number of methodological problems inherent in performing these controlled trials. First, effective randomization can be

compromised by lack of adherence of participants to an exercise program with "cross-over" to the control group. Second, the exercise effect is difficult to evaluate when other cardiac risk factors are modified, as they are in most cardiac rehabilitation programs. Third, the exercise intervention needs to be consistent in terms of intensity, duration, and frequency, but exercise levels are frequently altered by the patient's medical status and/or motivation. Fourth, the end points of myocardial infarction, congestive heart failure, sudden death, etc. are often difficult to measure with any degree of reliability. The problems with diagnosis by death certificate are particularly well known (James, Patton, & Heslin, 1955; Moriyama, Baum, Haenszel, & Mattison, 1958).

Given the public's general acceptance of cardiac rehabilitation programs as beneficial, which makes randomization into a non-rehabilitation control group difficult, and the other methodological problems described previously, it may be best if nursing's future research efforts are directed toward evaluating the effects of individual components of the rehabilitative effort. Many of these components are under the direction of nurses. Nurses supervise early ambulation of patients, perform patient and family teaching, lead risk factor modification groups, and do individual and group counseling. The majority of these nursing interventions remain untested in the setting of cardiac rehabilitation programs. The potential effects of these interventions can be hypothesized, however, by reviewing the work of investigators who have delineated the variables predictive of recovery.

The Relationship between Physical Status, Psychological Status and Recovery

Recovery from an acute coronary event can be assessed in several ways. The most frequently studied outcome variables have been vocational adjustment (return to work), morale of the patient (assessed through self reports and clinical ratings), and mortality (Doehrman, 1977; Garrity, 1973b; Kallio, 1978).

Two major categories of predictor variables will be discussed: physical status and psychosocial status. It is postulated in this dissertation that recovery from an acute coronary event is influenced by both, but that in many cases the psychological response of the patient is more important than clinical severity in determining recovery, as judged by return to normal activity.

In early studies, physical status was identified as the most important predictor of recovery. For example, Croog, Levine, and Lurie (1968) identified the severity of the attack and the number of previous attacks as the major predictors of return to work. These findings were confirmed by Acker (1968) and Nagle and colleagues (1971). Somewhat at odds with these reports are the findings of Fisher (1970) from the prospective Framingham study. He reported that history of congestive heart failure, angina, and functional class according to the New York Heart Association criteria were not predictive of post-attack vocational activity.

Fisher's (1970) findings have been supported in both surgical and medical cardiac populations. For example, in two descriptive studies involving cardiac surgical patients, approximately 50% of the subjects reported poor vocational adjustment, disturbed psychological states

(depression, anxiety, somatic preoccupation, poor selfesteem), and impaired marital relationships one year following surgery, despite marked physical improvement (Blachley & Blachley, 1968; Heller, Frank, Kornfeld, Malm, & Bowman, 1974). Furthermore, Kimball (1969) found in a study of 90 cardiac surgical patients that patients classified as least depressed and best adjusted based on an interview prior to surgery evidenced the lowest morbidity and mortality. This finding was independent of physical status.

Studies of medical patients, i.e., post MI, have determined that vocational adjustment is primarily affected by anxiety and depression. Cay and colleagues (1972) found that failure to return to work after an MI was greatly influenced by the patients' own opinion of their physical status and extent of disability. These same findings corroborated the work of other investigators who found that in post MI patients unemployed for more than six months, the major reason for not returning to work was psychosocial, not medical or vocational (Wishnie, et al., 1971; Wynn, 1967).

There is some data to suggest that depression in cardiac patients may be correlated with increased morbidity-mortality (Bruhn, 1969; Moss, DeCamilla, Davis, & Bayer, 1976). Moss et al. (1976) found that 16% of post MI survivors evidencing depression had early mortality and 4% died within four months of discharge. Obier and colleagues (1977) found results that partially corroborated the work of Bruhn(1969) and Moss et al. (1976). They measured depression and pessimism in the CCU and at 3, 6, and 12 months post-infarct. Results indicated higher depression and pessimism in the 12 non-survivors (out of 57) at the follow-up periods,

although the groups did not differ on these measures during their CCU stay.

In a study of 62 MI patients, Garrity (1973a, 1973b) showed that the strongest predictor of post attack health morale and vocational adjustment at six months post-MI was not the patient's health status but his health perception. A further study by Garrity & Klein (1975) supported the contention that the way in which the patient views his health is the most important predictor of return to work and general morale. They divided patients into two large categories of "adjusted" and "nonadjusted," based on behaviors exhibited in C.C.U., with nonadjustment bahaviors being anxiety, depression, hostility, and withdrawal. They found that the pattern of bahavioral adjustment was a significant pedictor of six-month mortality, independent of clinical severity.

The patient's perception of his health identified by Garrity (1973a; 1973b) is viewed as an amalgamation of personal experiences, information communicated and understood, the view others have of him, and his emotional response to a coronary event. There may be a desire by health professionals to ignore the patient's perception in favor of external and concrete variables such as severity and number of MIs, intensity of symptoms, and functional class. But, in fact, actual health status may be improved by medical intervention while behavioral reactions to illness and vocational adjustment may remain poor (Croog, et al., 1968).

There are three major limitations inherent in the previously cited research on the recovery process that were taken into consideration in

designing this dissertation study:

1. As noted by Krantz (1980), there has been a lack of standardized instruments for measuring the outcome variables identified as manifestations of recovery, e.g., morale, vocational adjustment, etc.
2. Many variables which might be expected to effect the recovery outcome were not measured or controlled in these studies. For example, in several of the vocational adjustment studies (Nagle et al., 1971; Wishnie et al., 1971; Wynn, 1967) physician advice, variations in employability due to local economic conditions, or the socio-economic status of the subjects was not considered.
3. There has been a notable lack of the prospective investigation necessary to establish cause and effect relationships, with descriptive and correlational studies being dominant.

Despite these limitations, it now appears that the correlation between physical status and recovery has been overestimated. Instead, considerable evidence has been accumulated to substantiate the important role of psychological processes (e.g., perception of health, anxiety, depression) on vocational adjustment and recovery after a coronary event. Thus, if nursing interventions are to be effective in the cardiac rehabilitation process, they need to be directed toward identifying the psychological responses of patients and their spouses and facilitating psychological adaptation.

Psychological Responses of the Patient to Coronary Heart Disease

In-hospital Responses

The in-hospital course of the cardiac patient is characterized by severe emotional distress that is similar in character to that experienced by patients upon dishcarge (Klein, Dean, Wilson, & Bogdonoff, 1965; McLane, Krop, & Mehta, 1980). Following an acute coronary event (i.e., myocardial infarction or coronary artery bypass graft surgery) the patient's selfimage changes from feeling whole to feeling damaged, from feeling competent and selfsufficient to feeling incompetent and dependent on others. In the coronary care unit these changes are manifested by feelings of anxiety, fear of death, and depression in approximately 80% of the patients (Cassem & Hackett, 1971; Granger, 1974; Hackett & Cassem, 1968; Hayward & Obier, 1971; Pranulis, 1975; Scalzi, 1973; Wishnie et al., 1971). Excessive denial, sexual aggressive behavior, and hostile-dependent conflicts with staff have been noted in approximately 20% of coronary care unit patients (Cassem & Hackett, 1971; Gentry, Foster & Haney, 1972). Such behaviors can be viewed as attempts on the part of the patient to regain control over his environment and deal with the awesome anxiety experienced in this unfamiliar environment (Bigos, 1981; Cook, 1979; Froese, Hackett, & Cassem, 1974). These attempts not withstanding, the majority of hospitalized cardiac patients experience anxiety and depression that is characterized by a preoccupation with the limitations imposed by cardiac illness and a fear of death, pain, dysrhythmias, and future heart attacks.

Although such psychological dysfunction has been well documented,

and no conflicting data has been reported, limitations of the research in this area must be noted. Findings have been based on small sample sizes (usually less than 30). Biases affected the selection of patients and the conduct of interviews; e.g., patients over 60 years of age or with subnormal psychological adjustment were excluded in one nursing study (Graham, 1969); interviews were terminated at the first sign of distress in another (Hackett, Cassem, & Wishnie, 1968); and most investigators reported that physicians did not give permission to interview patients they deemed "too anxious" (Bruhn, 1969; Stern, Pascale, & McLoone, 1976; Wynn, 1967). These biases may have distorted the findings in a direction that minimized the occurance of emotional distress.

Given the physiological instability of hospitalized cardiac patients, it is doubtful if these limitations will be addressed in future studies. However, the consistency of the findings support the previously described proposition that emotional distress in the form of anxiety and depression is experienced by the majority of hospitalized cardiac patients.

Post-Discharge Responses

A second proposition tested by previous investigators is that the emotional distress experienced by cardiac patients continues, and in some cases intensifies, upon discharge to home (Bigos, 1981; Froese et al., 1974; Gentry et al., 1972; Hackett & Cassem, 1974). Although most patients experience anxiety and depression while in the hospital, it is now clear that many have yet to feel and comprehend the complete effects

of this illness. These individuals are temporarily at home all day, faced with problems of home routines, dealing with an oversolicitous, anxious spouse, and trying to cope with the noise and conflicts of their children. In view of these domestic problems, together with the multitude of instructions regarding medicine, diet, and physical activities and their attempts to adjust to the vocational, social, and financial ramifications of the illness, it is not surprising that emotional problems continue to be experienced.

Such emotional problems have been consistently documented up to two years following a coronary event, with the primary affective states again being anxiety and depression. Specifically, 88% of patients reported anxiety and depression at three months post-discharge (Wishnie, et al., 1971), 50% at six months (McGrath & Robinson, 1973), and 20% at six to twelve months (Stern et al., 1976).

In the study reported by Wishnie and colleagues (1971), 18 of the 24 patients interviewed had families and all 18 reported moderate to severe family disturbances secondary to the emotional disequilibrium they experienced and the role changes necessitated by the disease. Therefore, the emotional responses of family members, particularly spouses, must also be considered.

Psychological Responses of Spouses

The diagnosis of coronary heart disease may produce long-standing repercussions extending beyond the patients to involve the spouse and other family members. Although this fact is frequently noted in the cardiac rehabilitation literature, there is a surprising paucity of

scientific data regarding the response of spouses (and other family members). Furthermore, there is no scientific basis for the frequent admonitions to involve the patient's spouse or family members in the rehabilitative process.

Nurse theorists are relatively unique among the health professions in their identification of the family as the unit of study. Illness is recognized as a family event, not a patient event (Miller & Winstead-Fry, 1982), and it thus is essential that nursing theory be developed to explain and predict the response of the family system to an acute coronary event. Such theory can guide the development of appropriate nursing interventions.

The following proposition can be formulated: the spouses of cardiac patients experience emotional distress in the form of anxiety and depression that is similar to that of their mates following an acute coronary event. This relationship was described by Davidson (1979) when he noted that ". . . an acute ischemic event presents a massive disruption in the psychodynamic balance of the family" (p. 253). This statement is supported by the data of Wishnie et al. (1971). In their interviews with 18 patients and their families three to nine months following the patient's hospitalization for myocardial infarction, all of the families interviewed demonstrated significant anxiety about the patient's recuperation and their role in promoting or retarding the process. A steady, eroding conflict over the implications of the illness was noted in all 18 families. Wives in the sample ". . .tended to overprotect their husbands in an aggressive way. They felt guilty at having been somehow instrumental in the genesis of the heart attack and

were frustrated at being unable to express grievances and anger lest such action bring on another M.I." (p. 1294). The interpersonal conflicts between patient and family in this study occurred even when the premorbid relationships had been stable. In marriages with long-standing problems, the relationships deteriorated.

Since Wishnie's (1971) initial investigation, four other studies have been reported in this area: their findings supported those of Wishnie. Skelton & Dominian (1973) found that 25 wives of the 65 interviewed at three months following their husbands' hospitalization suffered from feelings of great anxiety, depression, tension, sleep disturbance, appetite disturbance, and (in some) psychosomatic symptoms. Of these 25 wives, 22 experienced a severe grief reaction while their husband was in the hospital. The grief reaction was also reported by Dracup & Breu (1978). All 26 of their sample of spouses interviewed 72 hours following admission of their mates to C.C.U. identified their needs to be the same as those studied by Hampe (1975) of spouses of terminally ill cancer patients.

In a British study (Mayou et al., 1978), 82 wives of men suffering a first myocardial infarction reported considerable psychological distress at one year following their husband's hospitalization. Eighteen reported severe mental disturbance, and 19 reported moderate mental disturbance. Twenty percent of the marriages, according to both husband and wife, had deteriorated.

The largest and most carefully designed study was done by Croog and Fitzgerald (1978). They attempted to identify the wife's level of subjective stress at one year following her husband's hospitalization

for a first myocardial infarction. In their sample of 263 wives, there was no association between the wife's stress score and the degree of illness and impairment of her husband, as rated by his physician. Other variables such as socioeconomic status, employment of wife, and age did not aid in explaining the levels of subjective stress experienced by these subjects. Higher education seemed to correlate with lower stress levels, although this correlation was not statistically significant. They concluded that the subjective stress level in the wives of coronary patients may be less associated with external circumstances than with personality orientation and capacity for coping.

In summarizing these studies, it is apparent that the response of the spouse of the coronary patient is a grief response characterized by anxiety and depression. It involves complex phenomena related to styles of coping, personality traits, available social support systems, and the degree of premorbid marital harmony. It can be proposed that if the rehabilitative process is to be successful, the psychological disequilibrium experienced by spouses must also be addressed in nursing interventions. Unfortunately, no study has yet been done to document the effect of nursing interventions directed toward spouses of cardiac patients.

Treatment Approaches

A variety of interventions have been employed in cardiac rehabilitation programs to help the patient deal with the psychosocial problems created by coronary disease. These interventions, which serve as an adjunct to medical management, fall into three broad categories:

educational programs, exercise training, and group psychotherapy.

Educational Programs

Several studies have suggested that patient and family education alleviates depression and anxiety and facilitates return to work (Cay et al., 1972; Rahe et al., 1973; Woodward & Gauthier, 1972). However, other investigators found education insufficient in relieving emotional problems (Stern et al., 1976; Scalzi & Burke, 1980), or paradoxically it increased anxiety (Wallace & Wallace, 1977).

Educational programs related to risk factor modification have shown promise in teaching coronary prone individuals, as well as those already diagnosed as having coronary heart disease, how to change certain aspects of their behavior. Relaxation techniques have been effective in decreasing blood pressure (Agras & Jacobs, 1979; Reeves & Victor, in press). Friedman (1979) has described how individuals can alter Type A behaviors (e.g., impatience, time urgency, competiveness) by using avoidance and response cost techniques. Suinn (1974) described use of relaxation training, stress management, and imaginal rehearsal in a group of 10 cardiac patients as an adjunct to a cardiac rehabilitation program. The subjects had a statistically significant decrease in serum cholesterol and serum triglyceride when compared to a control group and the treated patients all reported psychological benefits.

The major limitation of the nursing studies evaluating cardiac educational programs has been the lack of a systematic description of the independent variable, thus eliminating the potential for replication. The inconsistencies of the findings may be traced to a

difference in program content, timing, delivery, and inclusion of family members. The studies examining specific risk factor modification programs (e.g., Agras & Jacobs, 1979; Suinn, 1974) did employ a systematic treatment, but they did not identify the effect of the program on the psychological state of the patient or spouse. Therefore, it is still not clear what effect education has on the psychological status of cardiac patients and their spouses.

Physical Exercise

Since all patients in a cardiac rehabilitation program undergo a graduated exercise program, it is important to identify the psychological benefit that might be derived from exercise alone. The following proposition can be made based on available research results: regular exercise alone decreases the psychological dysfunction noted in patients following an acute coronary event. Data supporting this relationship has been obtained from both healthy and cardiac populations.

In several controlled trials involving subjects without documented coronary disease, the positive psychological effects of regular exercise have been well supported, with exercising subjects reporting significant decreases in anxiety, depression, and sleep disturbances and increased self esteem (Folkins, 1976; Folkins, Lynch, & Gardner, 1972; Ismail & Young, 1973; Pyorala et al., 1971). In discussing these findings, Folkins and Amsterdam (1977) noted that the greatest psychological benefit seemed to accrue to those individuals who initially were least fit, physically or psychologically. Therefore, it can be postulated

that coronary patients might benefit psychologically even more than normal subjects.

Despite the growing body of data documenting the physiological effects of exercise programs for cardiac patients, relatively little experimental attention has been paid to its psychological effects. Only three studies have been completed to date, but the findings were similar in all three. Subjects reported that participation in physical activity programs led to an increased sense of wellbeing and a decrease in anxiety, depression, and sleep disturbances (McPherson, Paivio, Yuhasz, Rechnitzer, Pickard, & Lefcoe, 1967; Naughton, Bruhn & Lategola, 1968; Prosser, Carson, Gelson, Neopsytou, Phillips, & Simpson, 1978).

A partial explanation for these positive findings is provided by the work of Banister and colleagues (1973). They measured plasma catecholamine levels in a sample of post-infarction, male patients before and following a graduated exercise program. Catecholamine levels were significantly decreased both at rest and during exercise following the program, and this physical change may account for the decreased anxiety seen in the earlier studies.

From a psychological framework, Hackett and Cassem (1978) have postulated that physical conditioning counters the anxiety and depression that normally follows an acute coronary event by restoring self esteem and increasing feelings of independence, self sufficiency, and accomplishment. Thus, the positive effects of exercise can be seen as a somatopsychic phenomena, with physiological and psychological effects being interrelated (Folkins & Amsterdam, 1977).

Group Therapy

The psychological benefits of exercise may be augmented by the use of group therapy as part of a total rehabilitation program. Although this assumption is frequently found in the cardiac rehabilitation literature (Baker & McCoy, 1979; Myrtek, 1980; Wenger, 1981), no systematic study of the effects of group therapy administered within a formal cardiac rehabilitation program has been performed to date.

There have been, however, four studies done which evaluated the effects of group therapy on the psychosocial adjustment of post myocardial infarction patients. The participants in all four studies were not involved in any type of exercise program, but were similar to patients enrolled in such a program in that they had recently (within the last six months) suffered a cardiac event. The results of these four studies will be decribed here.

In the earliest study (Adsett & Bruhn, 1968), six male myocardial infarction patients met for ten biweekly 75 minute group therapy sessions. Their wives met in a separate group on alternate weeks, and jointly with the patients in a final session. Although the complete M.M.P.I. was administered to both the subjects and matched controls, no comparative data were reported. The authors did state that ". . . patients and their wives appeared to achieve an improved psychosocial adaptation" (p. 583). An interesting note was the authors' recommendation that patients and spouses should meet in separate groups in the future because patients would feel constrained with spouses present. The authors were not specific about what the consequences of such constraints might be, since the patients and spouses met separately

in this investigation. However, the authors expressed concern that patients and spouses would not feel free to express their feelings and concerns in the presence of their mates.

In a second uncontrolled trial (Mone, 1970), 14 male and female post-myocardial infarction patients met weekly for ten consecutive 90 minute sessions. The sessions were unstructured and open-ended, and they were led by the investigator, a psychologist. Measurements of hypocondriasis and depression before the start of the ten sessions and again after completion noted a decrease in both.

The utility of group therapy was tested in the first randomized controlled trial by Rahe and associates (1973). Thirtysix post-myocardial infarction patients attended six biweekly 90 minute group sessions during the first few months following hospital discharge. Twentyone patients comprised the control group. Short-term benefits for the experimental group included adherence to a home exercise program, cessation of smoking, and patients' feelings about having their concerns attended. Follow-up observations revealed a decreased prevalence of angina reports, usage of nitroglycerine, and rehospitalization for coronary disease.

Of the studies done, the most carefully designed was that by Ibrahim and colleagues (1974). Their design provided a large scale controlled group outcome study in which 58 post-myocardial infarction patients were placed in five therapy groups of 11 to 12 patients each. These patients, led by clinical psychologists, met in weekly sessions for one year, while 60 matched controls were periodically assessed. Patients were matched for severity of illness as well as for various

socio-economic factors (i.e., age, sex, education, occupation, and income). The group format was based on an unstructured psychotherapeutic format, without any stated theoretical framework.

Although the results did not reach a standard level of significance at the end of one year of treatment, there were more deaths at the end of the treatment period in the control group than among the treated group. Moreover, at the end of a six month follow-up (18 months from the beginning of the study), there had been twice as many deaths among the control subjects as among the treated subjects. Additionally, there was a statistically significant effect among the more seriously ill patients. The patients taking part in treatment who had high Peel indices (a measure of cardiovascular dysfunction) showed a higher survival rate than the comparably ill controls, 93% compared to 74% respectively.

Ibrahim et al. (1974) used a social functioning questionnaire to measure areas of social behavior such as competition, social alienation and cynicism, job involvement, family and recreational activities, and marital harmony. Results of a comparison between treatment patients and their spouses as opposed to control patients and their spouses suggested that group therapy lessens social alienation and cynicism. Spouses of the treatment patients were significantly more alienated than their mates ($p < .05$). Between the control patients and their spouses, however, there were no differences in these parameters. Of the other social behaviors measured there was no statistical difference between the treatment and control groups. In his conclusion, Ibrahim states, ". . . the lack of improvement in marital harmony suggests that the spouses

should probably have been included in the group process -- another strategy yet to be tested" (1974, p. 268).

A review of these four studies reveals a number of problems:

1. The philosophy and theoretical framework has differed in each study and/or was poorly defined by the investigator. All four studies used a psychotherapeutic, open-ended format that precludes any possibility of replication.
2. The leadership of the groups was extremely diverse, including cardiologists, psychiatrists, clinical psychologists, and nurses.
3. In three of the four studies (Adsett & Bruhn, 1968; Mone, 1970; Rahe et al., 1973), the individuals who led the groups also performed the data collection, thereby introducing a possible bias in the results.
4. The sample size, with the exception of the study of Ibrahim et al. (1974), precludes generalizing the results to the larger population.
5. The criterion variables described by each investigator varied from study to study. Moreover, the rationale for the outcome variables chosen by each investigator was not described in any of the studies, and many tools were used but their results not reported, e.g., the M.M.P.I. by Adsett & Bruhn (1968) and the Jackson Personality Inventory by Ibrahim et al. (1974).

Thus, although the benefits of a group approach have been described, these benefits cannot be seen as conclusively supporting the benefits of a group psychotherapy approach. A number of critical questions remained to be answered: What is the effect of an exercise program alone (i.e., without a counseling component) on the psychological status of coronary patients? Do such programs provide a

support group or reference group that is sufficient to meet the majority of patients' emotional needs? Does such an exercise program have a "ripple effect" on the spouses of patients or do they need to be included in certain aspects of the rehabilitation program? What effect, if any, would the inclusion of spouses in guided group sessions have on both patients and spouses? What should be included in the group sessions? What criterion variables are affected by such groups? The answers to these questions have not been established by previous research efforts and they formed the basis for this dissertation study. Moreover, each of the five limitations discussed above were addressed in this study's design and analysis of data.

Summary

The review of the literature identified general agreement among investigators regarding the responses of patients and spouses to a cardiac event. Anxiety, depression, low self esteem, marital and sexual dysfunction, and psychosomatic symptoms have been consistently documented in this population up to one year following a myocardial infarction or cardiac surgery. Although the patient's physiological status sets limits on the potential level of recovery, psychosocial variables are now recognized as playing a critical role in the rehabilitation process for both patients and their families.

Treatment strategies directed toward facilitating psychological and social adaptation of cardiac patients and their spouses have been reported. Unfortunately these studies are difficult to interpret because of the major methodological problems described in the preceding

section. To date, no treatment strategy has been tested which involves the spouse or family members of cardiac patients in an integral manner.

It can be hypothesized that a treatment strategy involving the cardiac patient's spouse might facilitate the psychosocial adaptation of both patient and spouse more than when patients meet alone. Although Adsett & Bruhn (1968) counseled against including spouses, this admonition was not based on their experience, but derived from their belief that patients and spouses were afraid to share their fears with each other. In the clinical experience of this author, the identification and sharing of fears between couples after a coronary event decreases, not increases, the normal anxiety and anger they feel. It is also this author's experience that most cardiac patients and their spouses are reluctant to see a psychotherapist to achieve increased communication. This fact is validated in the research of Ibrahim (1976) and Rahe et al. (1973). Both sets of investigators reported that, the subjects in their studies were reluctant to engage in candid self-exploration during group sessions, but instead provided each other information, support, and reinforcement. The emphasis on psychodynamics provided by a psychotherapy model may prove threatening for cardiac patients while a strategy that is directed toward increasing communication between couples and clarifying the various role changes each experience after a coronary event may prove an effective intervention.

The literature suggests that a major source of the psychosocial discomfort experienced by both patients and spouses is a result of role changes and alterations in self concept, changes that necessarily follow

a cardiac event. This proposition is supported by a recent two year follow-up study of 210 patients who participated in a cardiac rehabilitation clinic. The investigator concluded that

> There were no substantial correlations between physiological and psychological variables. These findings support the important role of intervening cognitive variables such as "self concept" or "illness behavior." Therefore a strictly somatically oriented therapy will not guarantee the desired outcome (Myrtek, 1980, p. 538).

The cognitive variables identified by Myrtek (1980) are well explicated in role theory; thus, a critical review of this theory may provide the basis for nursing interventions aimed toward decreasing the psychosocial dysfunction experienced by cardiac patients and their spouses during the period of cardiac rehabilitation. Such interventions would serve as an important adjunct to the physical conditioning program inherent in all cardiac rehabilitation programs.

CHAPTER THREE

THEORETICAL FRAMEWORK

Interactionist role theory, which served as the theoretical basis for the research study described here, is reviewed in this chapter.

A number of paradigms other than role theory have been used to describe, explain, and predict the psychosocial responses of cardiac patients during the rehabilitation process; e.g., psychoanalytic, developmental, systems, and adaptation theories. The rationale for choosing interactionist role theory lies in an analysis of the cardiac rehabilitation setting.

When the coronary patient enters a cardiac rehabilitation program, many of the roles related to an illness position must be altered or abandoned and new roles must be assumed. Some of the new roles may be those previously played by the patient prior to his hospitalization, while others are related to his position as a patient in a cardiac rehabilitation program. These changes in roles demand reciprocal changes on the part of the spouse. Thus, a patient's entry into a cardiac rehabilitation program involves a period of severe role transition for both the patient and his or her spouse.

Behavioral manifestations of the disruption and conflict which attends the role transition period following discharge from the hospital and entry into a cardiac rehabilitation program are well documented in the literature. They are anxiety, depression, hostility, low self esteem, passive dependency, and impaired marital and social functioning (Cassem & Hacket, 1973,; Granger, 1974; Krantz, 1980; Lloyd & Cawley,

1982; Mayou, 1978; Stern, Pascale, & Ackerman, 1977). Similar behaviors and feelings have been documented in the spouses of post-myocardial infarction patients (Croog & Fitzgerald, 1978; Mayou et al., 1978).

The concepts of role and role transition are therefore critical in any exploration of the dynamics of cardiac rehabilitation. Interactionist role theory, as conceptualized by Mead (1934), Blumer (1969), Stryker (1964), and Turner (1956), was utilized in this dissertation to: 1) describe the problems and the phenomena associated with the role transition period which occurs during cardiac rehabilitation, 2) determine the research protocol and the nature of the experimental variables used in this research effort, and 3) aid in the interpretation of the research findings.

The following section is divided into: 1) an overview of role theory and, 2) a discussion of its major concepts. An overview of the theory is essential for understanding the diverse meanings found for similar concepts in role theory literature. Unlike other theories used in nursing research (e.g., systems theory, psychoanalytic theory, or field theory), role theory has developed as the result of the work of independent investigators who "discovered" the need for such synoptic concepts as self, role, and interaction (Sarbin, 1954). Therefore, its history is not directly traceable to a single theorist.

Role Theory: An Overview

In a review of more than 80 sources in which the concept of "role" was used, Neiman and Hughes concluded that the concept was ". . . at present still rather vague, nebulous, and nondefinitive" (1951, p.

149). Although this criticism was written 30 years ago, a current review of the literature still reveals many ambiguities surrounding the concept of role. Some of the conceptual confusion can be traced to the development of role theory by two different schools of thought: the structuralist school of cultural determinism, espoused by Dahrendorf (1960), Linton (1936), and Merton (1957), and the interactionist school developed in the writings of Mead (1934), Blumer (1969), Turner (1956, 1962, 1968, 1978), and Lindesmith, Strauss, and Denzin (1975).

In the structuralist view, role has been used to indicate the relationship of individual activities to the larger organization of society. It has been developed primarily by anthropologists and those sociologists who are interested in the cultural determinants of behavior and the interrelationships of institutions. Role in this view is directly linked with status and position, i.e., for every position in society there is a corresponding role. A position (and in this view, position and status are usually interchangeable) is a collection of rights and duties designated by a single term, e.g., father, nurse, patient, wife. Each position, then, is conjoined with a role. A role, in turn, is defined in terms of the actions performed by the person to validate his occupancy of the position. If the individual occupying the position does not enact the expected behaviors of the role, then society will formally or informally deliver sanctions (Dahrendorf, 1960). For example, the father who does not provide for his children can be charged in court with non-support, and the patient who does not comply with his medical regime can be discharged from the care of his physician. Sanctions are an integral part of the structuralist view of role.

The interactionist view of role was initially conceptualized by Mead (1934). Followers of this school have criticized the structuralist view of role as being too static and as negating the importance of interaction in the acquisition and enactment of roles. According to Thornton and Nardi (1975), the structuralist view does not take into account the fact that people do not always conform to roles, but in fact modify them. It also does not explain the great variations seen empirically in the acquisition and performance of the same type of role by different individuals.

Turner (1962) levels a similar criticism at the structuralist view of role, which has individuals playing roles in conformity with guiding rules or norms. He stresses the fluid character of interaction:

> The idea of role-taking shifts emphasis away from the simple process of enacting a prescribed role to devising a performance on the basis of an imputed other-role. The actor is not the occupant of a position for which there is a neat set of rules--a culture or set of norms--but a person who must act in the perspective supplied in part by his relationship to others whose actions reflect roles that he must identify. Since the role of alter can only be inferred rather than directly known by ego, testing inferences about the role of alter is a continuing element in interaction. Hence the tentative character of the individual's own role definition and performance is never totally suspended (1962, p. 23).

Thus, the interactionist position stresses the reciprocal interrelationships between roles, as each actor adjusts his behavior and reactions to what he thinks the other is going to do. Symbolic interactionism does not discard the belief that structure influences the behavior of individuals within a social system. Rather, it holds that structure alone cannot explain or predict how persons will act in a set of specified circumstances.

In her differentiation of these two approaches to role theory, Conway (1978) notes that the interactionist approach has clearly taken precedence over the structuralist view because of the contributions of psychology. Through the work of Sullivan (1953), Piaget (1968), and others, we have become increasingly aware of the influence of individual personality and early socialization experiences on the subsequent adaptive and nonadaptive behavior of individuals. Thus, social structure and norms are no longer seen as the sole determinants of behavior.

The broad conceptual units of interactionist role theory have been identified by Sarbin (1954) as: role, the unit of culture; position, the unit of society; and self, the unit of personality. Two other concepts integral to this research, namely, role transition and role insufficiency, will be briefly discussed along with the above three concepts. Also, the nursing intervention of role supplementation will be described.

Definition of Role

In the interactionist view, role is defined as a patterned sequence of learned actions or deeds performed by a person in an interaction setting (Turner, 1956). A role is a constellation of behaviors, and is defined in terms of the goals, values, and/or sentiments governing the interaction at a given point in time (Hadley, 1967).

This definition of role is further elaborated by Lindesmith and Strauss (1968), who state that the enactment of a role involves four essential components:

1. identification of self,

2. behaviors in given situations which are appropriate to this identification,

3. a background of related acts by others (counter-roles) which serve as cues to guide specific performance, and

4. an evaluation by the individual, and by others, of the role enactment.

The behaviors of cardiovascular patients and their spouses can be viewed as reflecting the goals, values, and/or sentiments of the roles which they play and the positions which they occupy. Cottrell (1942) has cautioned that viewing human behavior in terms of roles requires that any item of behavior must always be placed in some specified self-other context. This statement again emphasizes the idea of the reciprocity of roles, which is an essential component of the symbolic interactionists's view of role.

The process of role adjustment via interaction with others is called role-taking by Turner (1956). In role-taking, the ego (actor) imaginatively assumes the point of view of another person (the alter), and thereby makes predictions about the other's behavior. An individual then alters his performance in a given role by this prediction, i.e., by the roles he imputes to others. He also alters his role performance by his own past performance in other roles. Thus, the idea of role-taking shifts the emphasis away from simply enacting prescribed roles to devising a role performance on the basis of an imputed other-role. Role definitions, such as that of patient, lover, protector, are always tenative and role definitions are continually reaffirmed and redefined through interaction with others in reciprocal roles.

Although the role-taking process is basic to the interactionist view of role, little is known, as yet, about these role-taking processes and their complex interrelationships. The way in which a person calculates or senses different signs of intent, self-feeling, or feelings towards others during the course of an evolving interaction is not clearly understood (Strauss, 1977).

Position

Position refers to a person's location in a system of interaction (Hadley, 1967). Unlike the structuralists, the interactionist views every position as having a multitude of roles. For example, the position of husband may include the roles of protector, friend, lover, etc., but these roles only exist in relation to complementary roles in the spouse. If the spouse does not affirm the roles of "protector" or "lover" then these roles are altered or abandoned via the role-taking process previously described.

Sarbin, an interactionist, has defined position as ". . . a system of role expectations" (1954 p. 223). The interactionist view acknowledges the existence of role expectations, but emphasizes that these expectations are constantly altered and redefined through interactions with significant others. They do not rely for their existence on societal norms.

Self

A central concept of social interactionism is self. Mead theorized that there are two aspects of the self: an "I" and a "me." The "I"

represents the impulsive side of behavior. Frequently the individual is as surprised as everyone else with the behavior generated by this aspect of self. The "me" represents the internalized values and expectations of the community. It represents the more rational, controlled aspect of the individual.

The "I" and the "me" are in a continuous dialectic and merge in a person's self conception. This self conception is a reflection of the total repertoire of roles which he or she plays. It is more enduring than the self image, which may change from moment to moment and which is an expression of the role(s) played at a given moment in time. The self conception, according to Turner (1968), is the sense of "the real me"--"I, myself as I really am." It consists of ". . . a selective organization of values and standards, edited to form a workable anchorage for social interaction" (Turner, 1968, p. 105). The self conception results from the way in which an individual perceives the responses of others toward him (Epstein, 1973). It reflects an individual's life priorities, his family and social roles, and his sociocultural response to wellness/illness. As such, it is an extremely important variable in the response of both patients and spouses to cardiac rehabilitation.

How does self conception influence the patient's decision to comply with a prescribed regimen? The patient may reject the attributes and responsibilities of the sick role or the "at risk" role because they are at variance with his self conception, i.e., with the repertoire of other roles which he feels accurately reflect "the real me." For example, the coronary-prone individual may reject the sick role and continue smoking

and leading a sedentary life because he cannot comfortably acknowledge that he has a chronic, life-threatening disease and incorporate this sick role with his other roles of decision-maker, breadwinner, businessman, etc. Comnpliance to a new medical regimen requires that a person's self-conception be altered to incorporate the at risk role.

Role Transition

The term "role transition" was initially coined by Cottrell (1942). It refers to the process of moving in and out of roles in a social system. According to Burr (1972), role transition may involve the addition (role acquisition) or termination (role loss) of a role without any change in other roles; or it may demand the termination of one or more roles and the concommitant beginning of another. Burr (1972) further elaborates that although the concept is not included in Biddle and Thomas' (1966) well-known inventory of concepts used in role theory, it has been widely use in the literature.

Meleis (1975) suggests three categories of role transitions:

1. developmental transitions, which occur in the normal course of growth and development;
2. situational transitions, which involve the addition or substraction of persons in a preexisting constellation of roles and complements;
3. health-illness transitions, which occur when an individual moves from a well state to an acute or chronic illness state, or from an illness state to a well state.

In this dissertation, patients were assumed to be undergoing health-illness transitions related to their discharge from an acute care setting to a cardiac rehabilitation program with its emphasis on

wellness.

In the acute care setting, the patient who has suffered a myocardial infarction or undergone myocardial revascularization surgery occupies an illness position. Both his physiological state and the cues he receives via the role taking process support his enactment of a sick role. The behaviors of this role were described by Parsons (1951) in his classic description of the sick role. Although his view of role is based on the structuralist position, his conception of sick role behavior illuminates the experience of the hospitalized cardiac patient.

Parsons (1951) views illness as a socially accepted form of deviance which society will tolerate as long as the individual accepts certain conditions of the sick role. His four components of the sick role are:

1. The sick person is exempted from certain of the normal social obligations.
2. The sick person is unable to recover by an act of conscious will.
3. The sick person is obligated to want to get well, to cooperate with the physician in achieving recovery, and to accept protection of the sick role only so long as it is therapeutically necessary.
4. The sick person is regarded as in need of technically competent help.

Thus a cardiac event means that the patient must assume new roles, e.g. the sick role, and alter or abandon former roles, e.g., role of provider, sexual partner, nurturer. These role changes on the part of the patient demand complementary role changes on the part of the spouse. For example, if the patient is traditionally the decision-maker

for the family unit, the spouse has to assume this role temporarily while the patient plays the sick role. Thus, for both patient and spouse, hospitalization requires a period of role transition.

Once the patient leaves the acute care setting and enters a cardiovascular rehabilitation program the goals of cardiac rehabilitation again force a period of role transition. More specifically, the patient must relinquish the sick role and resume many of his previous roles, roles which demand a high degree of independence and autonomy.

A rehabilitation program also requires the acquisition of a new role for the patient. It is not a "sick role," and yet it is not really a "well role" since coronary artery disease is a chronic condition. Baric (1969) has called this role the at risk role. The patient is identified as being at high risk for having a myocardial infarction and, as such, he or she is exhorted to modify all coronary risk factors. Such a modification presents a number of life style changes for the patient and his/her spouse. The patient has to modify what he eats, how much he exercises, what medication he does or does not take, and what stressors he allows in his life and his manner of dealing with them. The spouse, in turn, is asked to support his or her mate in these life style changes and is encouraged to make similar changes in his or her own risk factors.

Baric (1969) eloquently describes the problems involved in acquiring and enacting the at risk role. Unlike the sick role, the at risk role:

1. is not institutionalized;

2. has only duties attached to it, but no privileges such as reduced social obligation;

3. has an indefinite time span;

4. lacks continuous reinforcement from health professionals and the social environment;

5. lacks the feedback provided by changes in symptomatology and in treatment procedure.

In the cardiac rehabilitation setting, the first three components of the at risk role always apply. However, the patient may or may not receive continuous reinforcement from health professionals and the environment depending on a number of other variables: the philosophy and availability of the members of the rehabilitation team, the structure of the program and the types of interventions used, and the degree of support provided by the patient's spouse, other family members, employer, friends, etc. The feedback provided by changes in symptomatology and in the treatment procedure depends on the physiological status of the patient and on his response to the exercise prescription.

The at risk role is an extremely difficult one for cardiac patients to acquire and for spouses to support appropriately by complementary roles because the role demands changes in almost every aspect of one's life. Moreover, the patient and spouse know that these changes must be permanent.

Our understanding of the at risk role is enhanced by differentiating the concept of identity from that of role performance. Blasi (1971, 1972) states that when the self interacts with circumstances it takes on the nuance of role performance. Role performance can be

active, i.e., situating oneself in an environment and playing the called for role, or it can be passive, i.e., adjusting to the demands of a situation by conforming to the expected role(s). Both of these types of role performance are temporary and do not disrupt the self. However, when the self interacts with specific expectations found in the environment, it takes on the nuance of identity according to Blasi (1971, 1972). "An identity is more permanent than mere role-performance; it carries over behaviorally from one circumstantial set to another" (p. 456). Moreover, such a change in identity involves the disruption of the personal system. This concept of identity described by Blasi is called "role merger" by Turner (1978). Blasi's comparison of role performance and identity can be used both to explain the behavioral manifestations of patients prior to entering a cardiac rehabilitation program, and the problems encountered by patients when confronted with others' expectations of the at risk role.

The diagnosis of coronary atherosclerosis, particularly if it is accompanied by a catostrophic event (e.g., myocardial infarction or coronary revascularization), demands a permanent change in the individual's sense of identity. Life feels more tenuous; there is a sense of diminished control over events and circumstances and an increased feeling of vulnerability.

In summary, the cardiac patient and his/her spouse experience two periods of role transitions, as described in Figure 3-1.

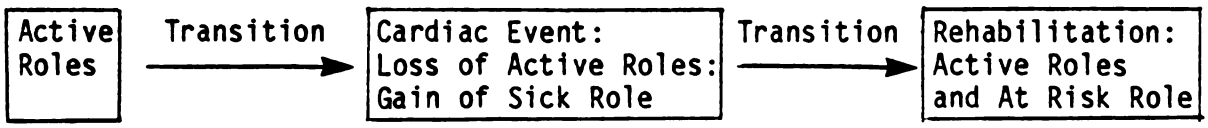


Figure 3-1: Health-illness Transitions following a Cardiac Event

This figure implies two assumptions:

1. It is assumed that prior to hospitalization for a cardiac event, patients enact a constellation of roles related to a well state, e.g., worker, husband or wife, sexual partner, etc. No study has been performed to date detailing the role behavior of cardiac patients either prior to or following a cardiac event; therefore, there is no data to substantiate this assumption. One recent study (Lloyd & Cawley, 1982) indirectly sheds light on the issue, however. Of 100 post-myocardial infarction patients interviewed during hospitalization, 84 were judged to have a good adjustment at work and in social activities prior to their cardiac event. Thus, 84% could be assumed to be enacting a variety of active roles. Significant problems in work, social life and marital relationships were documented in the remaining 16% prior to hospitalization.
2. It is assumed that upon entry into a cardiac rehabilitation program, the patient and spouse exerience some degree of role insufficiency. The patient gradually assumes active roles once again, including the new at risk role. Complementary role changes are demanded of the spouse. Symptoms of role insufficiency (discussed in the following section) have been documented during this six month period, which extends from hospital discharge to

completion of a rehabilitation program, in both patients (Cay et al., 1972; Garrity & Klein, 1975; Hackett & Cassem, 1978; Mayou, 1978) and spouses (Croog & Fitzgerald, 1978; Mayou et al., 1978).

The focus of this dissertation was on the second period of role transition, which is experienced on entry into a cardiac rehabilitation program.

Role Insufficiency

Due to role transition, patients enter a formal cardiac rehabilitation program with marked changes in their role repertoires, secondary to the diagnosis of coronary artery disease. This diagnosis, combined with the catastrophic event of myocardial infarction or surgery, can cause problems in role enactment for both patient and spouse, and ultimately the disruption of the personal system.

Problems in role enactment have been described as role conflict or role incompatibility (Burr, 1972), role strain (Goode, 1960), role stress (Hardy, 1978), role failure (Fisher and Warren, 1972) and role insufficiency (Meleis, 1975). Hardy, who appears to derive the majority of her assumptions from a structuralist perspective but nonetheless will be mentioned here, states: "Role problems may be grouped into six general areas--role ambiguity, role conflict, role incongruity, role overload, role incompetence, and role overqualification" (p. 81). With this kind of conceptual menagerie, it is difficult to define the basic phenomena in question. In a review of the pertinent literature, three terms seem to be the most universally applicable. These three - role

conflict, role strain, and role insufficiency - are frequently used interchangeably. Therefore, they will be defined here.

The first concept, role conflict, is used in a variety of different ways in the literature. Burr (1972) states that role conflict occurs in the presence of conflicting definitions about one role, e.g., patients should be passive, trusting and not ask too many questions vs. patients should be active and information-seeking in regards to their own health care. This type of conflict is intra-role conflict and may occur in the cardiac patient if he meets different expectations and behavioral cues in the acute care setting and cardiac rehabilitation program.

Role conflict can also denote conflict between two or more roles (Gross, Mason, & McEachern, 1958). This type of role incompatibility is inter-role conflict, rather than intra-role conflict. Frequently seen examples of this type of role conflict are the coronary patient who is playing the sick role and the family decision-maker role, and the married woman, who has the triple roles of wife, mother, and professional career woman. Role conflict occurs in these examples when the enacted roles are seen by the individual as being incompatible.

Role strain is a term used by Goode (1960) to denote the stress generated within a person when he either cannot comply or has difficulty complying with the expectations of a role or set of roles. As used by Goode (1960), it seems to be a product of role conflict, rather than vice versa.

Finally, role insufficiency seems to encompass both the concepts of role conflict and role strain. Meleis defines role insufficiency as ". . . any difficulty in the cognizance and/or performance of a role of

the sentiments and goals associated with the role behavior as perceived by the self or by significant others." (1975, p.266). Role insufficiency denotes both ". . . the incongruity of the self-concept and the role anticipations of others as seen by self or other . . ." (i.e., role conflict) and ". . . the perception of role performance as inadequate by the self and/or significant other, and the behavior and sentiment associated with such perception . . . " (i.e., role strain) (Meleis, 1975, p. 266). Therefore, for purposes of this research, the term role insufficiency was used in lieu of role conflict and/or role strain.

The concept of role insufficiency is complex, based as it is on interactional processes which do not lend themselves easily to empirical testing. The concept has not, as yet, been confirmed in the scientific literature. A quantitative approach was used by Meleis and Swendsen (1978) in an investigation of expectant parents. Based on the literature about pregnancy, they chose several psychological states as manifestations of role insufficiency and evaluated various nursing strategies directed toward decreasing this insufficiency. This study is the only one to date performed on a clinical population. All other studies by nurse investigators describing this concept have focused on nursing staff rather than patients (Davis, 1974; Hardy, 1978; Miller & Miller, 1976).

The definition of role insufficiency by Meleis (1975) was adopted for this dissertation. In her view, role insufficiency is manifested in the following emotional states and behaviors: anxiety, depression, apathy, frustration, grief, powerlessness, unhappiness, aggression, and

hostility. As previously discussed in Chapter Two, there is ample documentation that these emotional states and behaviors are present in both cardiac patients and spouses on entry into cardiac rehabilitation program. Based on the work of these previous investigators, five states were identified by this researcher as manifestations of role insufficiency: anxiety, depression, hostility, lowered self esteem, and decreased marital satisfaction. The conceptual definitions of each are presented in the following chapter.

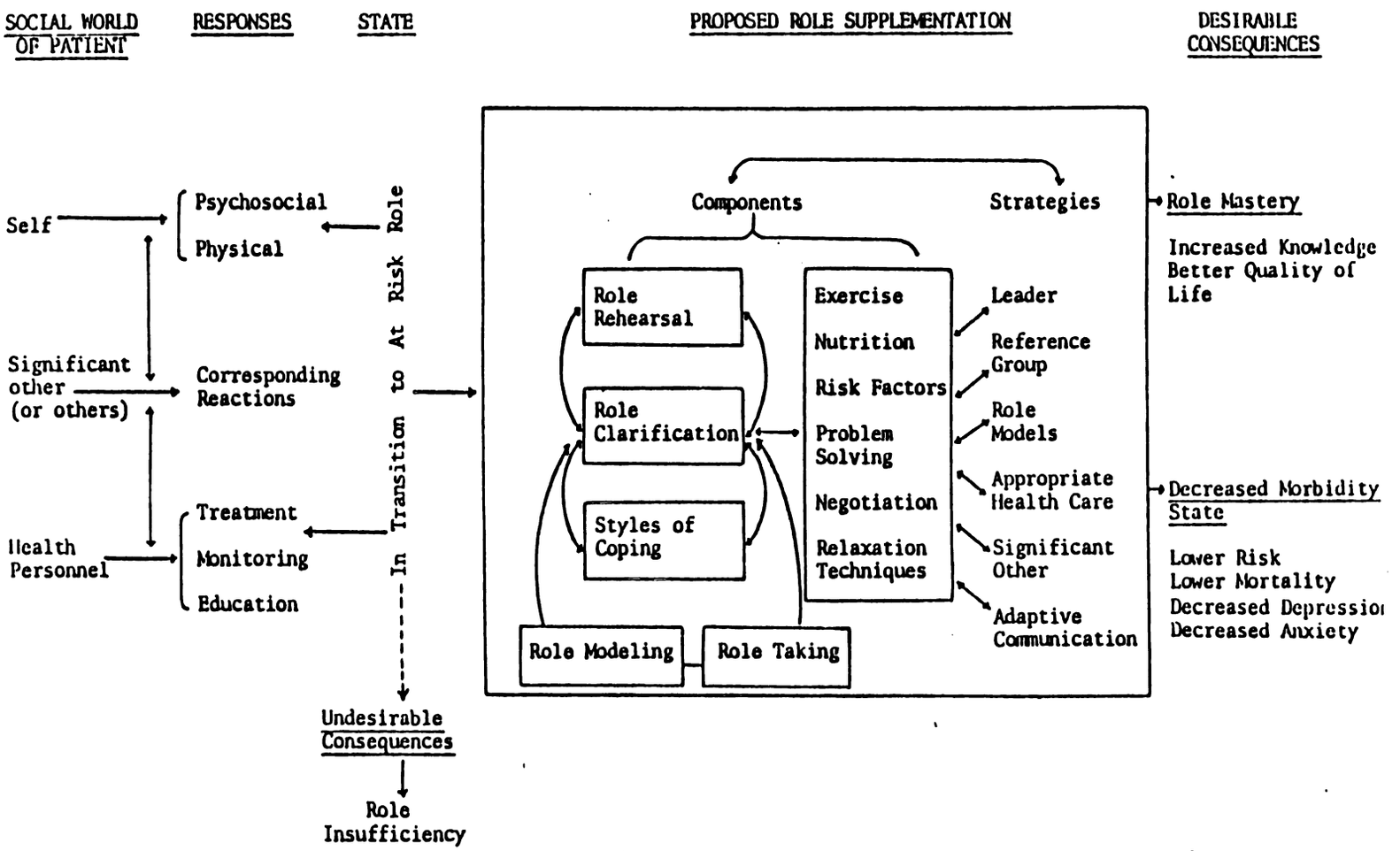
Role Supplementation

Within an interactist framework it can be hypothesized that a nursing intervention implemented to decrease role insufficiency will lead to both role mastery of the at risk role for the cardiac patient, with mastery of its reciprocal role on the part of the spouse, and increased mastery of other roles which have been altered by the occurrence of disease. This intervention, described by Meleis as "role supplementation," should also result in more positive self-concepts for both the patient and his/her spouse.

The conceptual linkage of role insufficiency and role supplementation in the setting used in this research is described in Figure 3-2.

Role supplementation as proposed by Meleis (1975), is an intervention that attempts to develop role clarification and role rehearsal skills in clients, to sharpen their styles of coping, and to provide them with a framework for continuous analysis of new experience and identification of roles and counter-roles in the transition

Figure 3-2: Role Supplementation for Cardiovascular Rehabilitation



situation. Role mastery is achieved through the development of congruency between perceived roles by those who enact the roles and the roles imputed by significant others. The assumption is that if the conditions and process surrounding role transitions are well defined and well rehearsed, and if resources to facilitate role transition are available and identified by the individuals experiencing alteration in roles, role transitions can be accomplished more smoothly and role mastery can be achieved (Burr, 1972).

A role supplementation program involves five components: a reference group, the role taking process, role clarification, role modeling, and role rehearsal. Role taking has been previously described as the process by which an individual plans and enacts his or her role by vicariously assuming the role of another (Meleis, Swendsen, & Jones, 1980). The other four components will be defined conceptually in the following section.

Components of a Role Supplementation Program

Reference Group:

Groups serve as a frame of reference for defining and explaining role expectations. Members of a reference group provide social support, positive and negative reinforcement for behavior, and a forum for explaining the meaning of life changes inherent in a period of role transition (Meleis et al., 1980; Turner & Shosid, 1976).

In a cardiac rehabilitation setting reference groups are important because both patients and spouses frequently feel isolated in their experience, as if they are the only ones who have ever grappled with the

issue of being "a cardiac patient" or "being married to a 'cardiac'". By sharing their concerns and problems, they can overcome their feelings of isolation and begin the problem solving process. As the reference group grows in cohesiveness, values become shared, individual needs are identified and met, and anxiety decreases.

In the social psychology literature the term reference group has a variety of meanings. They range from a narrow "identification group," from which an individual derives his source of values (Sherif, 1961; Shibutani, 1955), to a broad "interaction group," composed of individuals who may or may not be part of his membership group but whom the actor takes into account in his role enactment.

Role Clarification:

Successful transition to a new role also demands that one acquire the knowledge and skill needed for that specific role. Role clarification is the process whereby a person learns the social boundaries of a role and the behavioral expectations held by significant others in regard to the role, as well as develops an awareness of the mutual expectations in the complementary role (Meleis, 1975). Role clarification can come from four sources: society, similar-role others, reciprocal-role others, and self (Thornton & Nardi, 1975).

The two strategies used in a role supplementation program to enhance both role taking and role clarification are role modeling and role reheaarsal.

Role Modeling:

This strategy is based on the principles of social learning theory eloquently articulated by Bandura (1962, 1965, 1971). In contrast to traditional learning theorists, Bandura (1971) contends that new behaviors can be learned through imitation in the absence of directly experienced reinforcements, and that symbolic processes play a crucial role in the regulation of human behavior. This form of learning involves four components: attentional, retentional, motoric-reproductive, and incentive-motivational. Each will be defined.

For the observer to learn, he must first attend to the model's activities. Variables affecting the attentiveness of the learner are: attractiveness of the model, frequency of interaction, and the meaning and/or value of the learner of the model's actions. Long term retention of modeled activities involve imaginal or verbal coding mechanisms. The most significant variable enhancing the retentional process is the frequency of rehearsals of modeled stimuli.

The motoric-reproduction component of modeling involves the learner's ability to assemble a sequence of responses according to the modeled pattern. Finally, incentives and reinforcements are required for observational learning to occur.

All four processes occur in a role modeling situation. The relative importance of each depends on the intrinsic motivations and capabilities of the learner, as well as on the type of information being learned. In a cardiac rehabilitation setting specific skills (e.g. relaxation) are learned, but perhaps even more importantly, effective coping mechanisms for dealing with a chronic illness are identified and practiced.

Related Research

Only one study has been reported that tested the effects of a role supplementation program on a clinical population (Meleis & Swendsen, 1978). Subjects in this study were couples experiencing a first pregnancy. A quasi-experimental design was used with couples divided into three groups: role supplementation (N=12), FamCap (N=10), and control (N=36). The role supplementation program tested consisted of two prenatal home visits, a series of eight weekly two hour group meetings held during the last trimester of pregnancy and based on the program components described above, and a series of three to ten post-partum home visits.

The Fam Cap intervention was a prenatal preparation program consisting of one prenatal home visit, prenatal classes (e.g., LaMaze), and early hospital discharge.

The role supplementation program was effective in lowering the postnatal anxiety of husbands ($p < .01$). The wives' anxiety in all three groups increased, but the increase was least for the role supplementation group. This group of wives also showed significant differences in their perceptions and attitudes toward ignoring the infant, protectiveness of the infant, and responsiveness to infants' needs ($p < .01$). Participation in the experimental program did not increase communication skills, role taking skills, or role perception congruency between the husbands and wives.

Despite the limitations of this study related to sample size and lack of randomization, it served as an important first effort in testing the effects of nursing interventions based on interactionist role

theory. The question asked in this dissertation research is whether similar nursing interventions can be used in a cardiac rehabilitation setting to decrease the role insufficiency experienced by cardiac patients and their spouses and increase the patients' mastery of the at risk role.

Summary

The relationships among role insufficiency, role supplementation and role mastery have been graphically described as they relate to other components of a cardiac rehabilitation program (Figure 3-2). The goal of a role supplementation program is congruent with the goal of all cardiac rehabilitation programs, i.e. the restoration of patients with heart disease to an enjoyable and productive life. In addition, the goal of role supplementation is that of role mastery through the development of congruency between perceived roles by those who enact the roles and roles imputed by significant others.

Within this framework, intervention modalities directed toward decreasing role insufficiency and increasing role mastery are presently lacking in cardiac rehabilitation programs. As currently defined, rehabilitation programs primarily focus on the physical conditioning of the cardiac patient. Indirectly a progressive exercise program may decrease the patient's and spouse's role insufficiency, as it increases the patient's confidence and sense of well-being. However, the role transitions experienced by couples are not addressed.

The purpose of this dissertation was fourfold:

1) to determine if nursing interventions based on interactionist

role theory could be used to decrease the pyschological and social dysfunction experienced by cardiac patients and their spouses;

2) to further elucidate the manifestations of role insufficiency and role mastery in a clinical population;
3) to further define the nursing strategies used in a role supplementation program;
4) to outline a role supplementation protocol that could be replicated by other investigators in future studies.

These purposes, which are clinical, conceptual, and methodological in nature, are reflected in the study hypothesis described in the following chapter.

CHAPTER FOUR

PROBLEM STATEMENT AND HYPOTHESES

The theoretical framework served as a guide for the development of the purpose, the research questions, and the hypotheses to be tested. Moreover, it provided the structure for the role supplementation program implemented in the research settings. In this chapter, the purpose, research questions, variables, and hypotheses are presented.

The purpose was to determine the effects of a role supplementation program on 1) the role insufficiency experienced by cardiac patients and their spouses, 2) the mastery of the at risk role on the part of patients, and 3) changes in the course of the patients' cardiac disease. Given that, conceptually, spouses of patients in a cardiac rehabilitation program must undergo role changes that are complementary to those of their mates, it was hypothesized that role clarification and role mastery would be enhanced if both patients and spouses participated in the treatment intervention.

Research Questions

The major research question addressed was the following: Does participation in conjoint group sessions based on a role supplementation model and administered within an out-patient cardiac rehabilitation program decrease the role insufficiency experienced by cardiac patients and their spouses and increase the role mastery of patients?

The specific research questions were:

1. Does participation in a role supplementation program decrease

the role insufficiency experienced by cardiac patients?

2. Does the inclusion of spouses in a role supplementation program decrease the amount of role insufficiency experienced by patients more than when patients meet alone, i.e., without spouse present?
3. Does the participation in a role supplementation program decrease the amount of role insufficiency experienced by spouses of cardiac patients?
4. Does participation in a role supplementation program increase the mastery of the at risk role on the part of cardiac patients?
5. Does the inclusion of spouses in a role supplementation program increase cardiac patients' mastery of the at risk role more than when patients meet alone, i.e., without spouses present?
6. Is there a relationship between participation in a role supplementation program and the morbidity and mortality at six months of cardiac patients?

Variables Identified for Study

Independent Variables

Based on the framework of symbolic interactionist theory, the independent variables were 1) guided group sessions based on a model of role supplementation, and 2) inclusion of spouses in a role supplementation program. The independent variables were operationalized by having both patients and spouses attend a role supplementation program in one group (Experimental Group 1) and by having only patients

attend a role supplementation program in a second group (Experimental Group 2).

Role Supplementation Program

The conceptual basis for the role supplementation program tested in this dissertation has been described in the previous chapter. The program involved ten weekly 90 minute group sessions administered as part of a formal cardiac rehabilitation program. The content of the ten group sessions is described in Appendix A 1; it was derived from the theoretical framework of symbolic interactionism.

The manner in which the specific components and strategies of role supplementation were operationalized in the study protocol will now be discussed.

Reference Group:

The term reference group was used by this researcher in the restricted sense, i.e., an identification group of significant others. However, the reference group was altered within this study by using two experimental groups. In Experimental Group 1 both patients and their spouses met for all ten sessions, while in Experimental Group 2 only patients met in the ten sessions. The same role supplementation protocol (as described in Appendix A 1) was followed in both of the experimental groups.

Within the research protocol, two other members were also added to the reference group. These were the group leaders or facilitators. In each of the research settings all the group sessions were led by: 1)

the cardiovascular nurse coordinator of the rehabilitation program, and 2) a nurse consultant who held a masters degree in psychiatric nursing. The nurse coordinator saw the patient and his or her spouse for an extensive assessment interview at the initiation of the cardiac rehabilitation program. The nurse also saw the patient three times a week in the exercise sessions, and therefore had a significant amount of data on which to base her interventions within the role supplementation program. Given the limited duration of the experimental program (10 weeks), it was hypothesized that the nurse coordinator's relationships with patients might prove an asset in decreasing the amount of time required for trust-building in the group sessions and, ultimately, increase the effectiveness of the experimental intervention.

The second group leader brought knowledge and skills in the areas of group dynamics and crisis theory. Thus, both nurses served as "significant others" within the reference group because of their knowledge of clinical cardiology and psychological issues. They were able to answer questions about diet, medications, exercise effects, and pathophysiology, as well as identify and explore the sources of anxiety expressed by patients and spouses.

Role Taking:

The role taking process was facilitated throughout the experimental program. In the first and second sessions, the subjects were asked to describe their expectations of their spouses following the diagnosis of heart disease. They were encouraged to imagine themselves "in the other spouses' shoes", as it were, and to describe the anxieties they felt

related to the new at risk role.

In the patient-spouse group (Experimental Group 1) the role taking process was enhanced by the presence of the spouses. Open communication of expectations and fears was encouraged by the group leaders. In sessions three through eight, specific information related to stress management, diet, medications, and sexual activity was communicated to facilitate the spouses' understanding of the at risk role and to allow them to react to these modifications.

Throughout the ten sessions the group leaders encouraged social interaction among the group members to facilitate role taking. In the patient-only group (Experimental Group 2), role taking was directed toward other members of the reference group, while in the patient-spouse groups role-taking was facilitated between and among the couples. In both groups, all formal presentation of content was limited to 30 minutes so that the group members might have a full hour to discuss their feelings and concerns. It was assumed that role taking would be enhanced by the open expression of ideas and feelings, increasing the opportunity for feedback, reinforcement, and effective problem solving.

Role Clarification:

Successful transition to a new role also demands that one acquire the knowledge and skill needed for that specific role. As already stated, the majority of the sessions focused on providing information related to the at risk role. For example, progressive relaxation was taught in session 5 as a stress management technique (Appendix A 2). Stress dots were used during the same session to sensitize the

participants to their changing stress levels. The mechanism of these is also explained in Appendix A 2. The participants were asked to practice the response over the following week, and they discussed their success and/or failure in the sixth session.

Therefore, role clarification was enhanced in two ways within the research protocol: 1) specific information about cardiac risk factors was given and (when possible) implemented by the participants, and 2) feelings and expectations about the new at risk role and the spouse's complementary role were discussed at each session.

Role Modeling:

In the role supplementation program participants found role models from three sources: 1) from patients in the group who had been diagnosed with coronary arteriosclerotic heart disease for an extended period prior to joining the cardiac rehabilitation program and who had an opportunity to master the at risk role; 2) from patients (and their spouses) in the group who, although newly diagnosed as having cardiac disease, had a high degree of role mastery in the roles they enact; 3) from a patient and his/her spouse who were introduced into one of the group sessions because they have already completed three months or more of the cardiac rehabilitation program, and who, by sharing their feelings, served as role-models for the current group participants.

Role modeling from the first two sources occured in each of the ten sessions. The third source was provided in Session 4. A couple who had previously graduated from the cardiac rehabilitation program was invited to share their experiences and feelings with the group. The group

leaders attempted to choose a couple who was articulate and open in their expression of feelings and who evidenced superior role mastery by the end of the rehabilitation program. The "role models" were asked to describe their experiences and concerns during their transition to new roles (i.e., during the rehabilitation program) and in their current life situation. They suggested coping mechanisms and resources that had been instrumental in their successful transition to new roles. The session was structured with approximately 30 minutes for "formal presentation" by the couple, so that the remaining hour could be used by the group members to exchange their thoughts and feelings with the identified role models.

Role Rehearsal:

Role rehearsal was incorporated into each group session by the leaders who suggested a variety of situations relating to the "at risk" role. This provided the participants a safe place to rehearse their response to situations involving high stress, requests to abandon a diet or exercise program, etc. In Experimental Group 1 it also provided the opportunity for the spouses to react with their mates in imagined situations, and a chance to discuss their feelings relating to the reciprocal roles they enacted.

One of the early sessions, Session 3, was specifically directed toward role rehearsal. A five step problem solving process was presented to the group, followed by an example of an imagined stressful situation (see Appendix A 3). The group was then asked to discuss each of the five steps in relation to the imaginary situation. Solutions most appropriate to the at risk role were then rehearsed. This exercise

was followed by several examples of stressful situations (real or imaginary) provided by individual group members. The same five step process was applied and behaviors appropriate to the at risk role were rehearsed.

Inclusion of Spouses

The rationale for widening the reference group to include spouses of patients can be derived from the interactionist framework. Although support can be given to patients in the group for enacting the "at risk" role, behavioral changes must take place in the patient's world outside of the group setting. Spouses must learn the importance of their complementary roles and discover the universality of feeling and response among other spouses in similar situations. The inclusion of spouses in a role supplementation program is critical for several reasons:

1. Such inclusion provides a reference group for spouses as well as opportunities for role modeling and role rehearsal for the reciprocal roles required of spouses of cardiac patients. These strategies assist spouses in the role-taking process and facilitates their mastery of the required reciprocal roles.
2. Patients in cardiac rehabilitation programs are asked to make many life-style changes which profoundly affect their daily lives. Enlisting the support of spouses provides the day-to-day positive reinforcement required if such changes are to occur and be maintained.
3. A common dynamic frequently seen in the cardiac rehabilitation

setting is the assignment of the spouse to a "watch dog" role. He or she is covertly asked to make certain that patient complies with all aspects of the at risk role. The spouse then becomes accountable for the patient and any transgressions which may occur from the prescribed medical regimen. This dynamic increases stress and needs to be discussed in a group setting where both patients and spouse can clarify their responsibilities and roles.

Dependent Variables:

The dependent variables affected by a role supplementation program fell into three categories: 1) signs and symptoms of role insufficiency, 2) behaviors indicating adherence to the medical regimen, i.e., mastery of the at risk role, and 3) changes in the natural course of the disease. Each of these dependent variables now will be defined.

Components of Role Insufficiency:

Unfortunately little empirical work has been done on the concept of role insufficiency, and therefore the signs and symptoms indicating this state have not been conclusively established. Meleis (1975) states that anxiety, depression, apathy, frustration, grief, powerlessness, unhappiness, aggression, and hostility are common manifestations. Five of these were used in this study, and they served as the constellation of proxy variables by which role insufficiency was manifested.

Anxiety is the product of any threat to the security of an individual. According to Peplau (1963), anxiety can be categorized into

threats to biological integrity and threats to the self-esteem or way of behaving. This second category describes the threats which occur with role insufficiency, when the individual perceives that there is a disparity between his role behavior and the expectations of self and others. Operationally, anxiety was measured by the subjects' self-report on the Multiple Affect Adjective Check List.

Depression is the feeling of despondency which follows loss (real or imagined) of a particular person, function, capacity, object, dream, belief or value to which one is normally or inordinately attached (Drake & Price, 1975). Many of the losses described here accompany changes in role, and therefore are felt by the individual in a period of role transition when role insufficiency is experienced. Most theorists assert that feelings of apathy, guilt, grief, and powerlessness are experienced as part of depression and are an integral part of the depression dynamics (Mendels, 1968). Therefore, a tool which adequately measures depression should also reflect these other feeling states. Depression was measured in this study by the subjects' self-report on the Multiple Affect Adjective Check List.

Anger is a complex process that begins with a perceived anxiety. It consists of feelings of displeasure, high arousal (both emotional and physiological), and dominance. If only the first two factors exist, displeasure and arousal, anxiety continues to be experienced, accompanied by feelings of impotence and passivity. But if the individual perceives the threatening situation as one which can or should be managed through overpowering thoughts or actions, e.g., physical aggression, subtle opposition and/or verbal attack, then anger

will be experienced as the dominant feeling state (Russell & Mehrabian, 1974; Thomas, 1967; Thomas, Baker, & Estes, 1970).

When an individual experiences role insufficiency, anxiety may be expressed as a need for dominance, and hostility and aggression will result. Therefore, it was assumed by this researcher that a tool which adequately measures feelings of anger will also reflect the hostility and aggression experienced by an individual with role insufficiency. Subjects' self-report of anger was measured by the Multiple Affect Adjective Check List.

Decreased Marital Satisfaction: A cardiac event necessitates changes in many of the roles associated with being a husband or wife. The changes in this role necessitate reciprocal role changes by the mate and a strain in the marital relationship may occur. Although this strain has not been adequately discussed in the literature, it is this researcher's clinical experience that patients and their spouses enter a cardiac rehabilitation program with varying degrees of insufficiency in the roles related to their marital relationship. Thus, marital dysfunction may also be a sign of role insufficiency, and a tool which adequately measures marital or dyadic adjustment will measure this aspect of role insufficiency. The self-reports of the subjects' satisfaction with their marital relationship was measured by the Spanier Dyadic Adjustment Scale. The total numerical figure reflected four subscales of concensus, affection, satisfaction, and cohesion.

Decreased Self Esteem: As described within this framework, changes in self concept occur in periods of role transition, since self concept is derived from the repertoire of roles one enacts. Self concept is the

cognitive awareness of the self, derived from interactions with significant others. Thus, the self concept of both the cardiac patient and his/her spouse is affected by the experience of role insufficiency. A disruption in the self concept (self conception) occurs as a result of role insufficiency. One can then expect that a tool which effectively measures self concept would reflect changes in the presence or absence of role insufficiency.

For purposes of this study, self-reports of feelings of altered self concept were measured by the Tennessee Self Concept Scale. The scale encompasses eight areas of self concept.

1. Identity - The individual's perception of his basic identity and views of himself.
2. Self satisfaction - the degree to which the subject accepts the self he perceives.
3. Behavior - the individual's perception of his behavior as appropriate and adequate.
4. Physical Self - the individual's perception of his state of health, physical appearance, and sexuality.
5. Moral-Ethical Self - the individual's satisfaction with his religious beliefs and his perception of his moral worth, i.e. goodness.
6. Personal Self - the individual's perception of his personal worth, his feeling of adequacy as a person, and his evaluation of his personality apart from his body or his relationships to others.
7. Family Self - the individual's perception of self in reference

to his nucleus and extended family. The score reflects one's feelings of adequacy, worth, and value as a family member.

8. Social Self - the individual's sense of adequacy and worth in this social interactions with people outside his family.

A final score, termed "Total Positive Score," reflects the subject's overall level of self esteem. It is a measure of the subject's general feelings of value and worth.

In summary, five dependent variables were measured to reflect the presence of role insufficiency and its resolution following a role supplementation program: anxiety, depression, hostility, decreased marital satisfaction, and decreased self esteem.

Components of Role Mastery

The second category of dependent variables are those which relate to patient behaviors indicating role mastery of the at risk role. There are five variables in this category: smoking behavior, obesity, systolic and diastolic blood pressure, and hours of exercise performed each week. These variables were chosen because, unlike the other significant risk factors for coronary artery disease identified by Hurst & Logue (1974) (e.g., sex, age, family history), they are subject to patient choice and reflect compliance to the cardiac medical regimen.

Smoking. Self-reports of tobacco use was measured by the Risk Factor Index using five structured responses, ranging from none to greater than 40 cigarettes per day.

Systolic Blood Pressure. For purposes of this study, systolic blood pressure was defined as the measurement of pressure in the

arterial system during cardiac systole. It was measured in millimeters of mercury over the brachial artery using a portable sypghnomenometer and stethescope.

Diastolic Blood Pressure. For the purposes of this study, diastolic blood pressure was defined as the measurement of pressure in the arterial system during cardiac diastole. It was measured in millimeters of mercury over the brachial artery using a portable sypghnomenometer and stethescope.

Obesity. Weight loss was measured in the double layer of skin and subcutaneous fat at the triceps of the left arm in millimeters using the Harpenden Skinfold Calipers.

Weekly Exercise. Exercise levels were measured by self-reports of the number of hours per week the subject exercised at his target heart rate, as set by the cardiac rehabilitation program and/or as determined by the formula 0.7 x 210-age in years (Mead, 1977).

Components of Disease Progression

Finally, three dependent variables were identified which do not directly measure role insufficiency/role mastery. It was hypothesized by this researcher that increasing role mastery would decrease the anxiety and stress experienced by patients, and ultimately this decrease would be reflected in decreased morbidity-mortality rates of patient subjects. The basis for this hypothesis is the vast amount of research reported in the literature substantiating the role of stress in the epidemiology of heart disease (House, 1975; Rosenman, 1974).

The three outcome variables chosen to indicate change in the

natural course of the disease were: mortality, reinfarction, and rehospitalization. These were chosen on the basis of previous investigations that showed significant differences in these variables in cardiac patients who had participated in group therapy when compared to control patients (Ibrahim et al., 1974; Rahe et al., 1973). Since few events could be anticipated within the six-month follow-up period, this category did not generate hypotheses. Rather, their evaluation will be merely described.

Intervening Variables

Demographic Factors

Eleven demographic variables were identified as having potential effects on the relationship of the independent and dependent variables and were therefore measured.

Years married. Self-reports of the number of years the couples were married to each other at the time of study entry, as measured by the research questionnaire using an open-ended question.

Number of previous marriages. Self-reports of the number of previous marriages the subject had prior to their present marriage, as measured by the research questionnaire using an open-ended question.

Number of Children. Self-reports of the number of children each subject had, as measured by the research questionnaire using an open-ended question.

Number of Children in Residence. Self-reports of the number of children living at home with the study subjects, as measured by the research questionnaire using an open-ended question.

Religion. Self-reports of one's religious affiliation, as measured by the research questionnaire, using a total of five structured responses representing 4 different religious categories and one category of "none".

Age. Self-reports of one's chronological age, as measured by the research questionnaire using an open-ended question.

Sex. Self-reports of one's sex, as measured by the research questionnaire using the two structural responses of male & female.

Education. Self-reports of one's last completed educational degree, as measured by the research questionnaire using a total of five structural responses representing five different educational categories ranging from grammar school diploma to graduate degree.

Income. Self-reports of household income (joint and shared), as measured by the research questionnaire using six structured categories ranging from less than $5,000/year to greater than $60,000/year.

Occupation. Self-reports of one's occupation as measured by the research questionnaire using an open-ended question. Responses were then assigned to one of twelve categories based on the Occupation and Industry Classification (Appendix B) or to the category of "housewife".

Employment Status. Self-reports of the number of hours one worked the preceeding week.

Medical Status

Several investigators have established a direct relationship between cardiac patient's clinical status and psychological recovery from an acute event (Acker, 1968; Cay et al., 1972; Croog et al.,

1968). As previously described in Chapter II, the causal relationship of these two factors is questionable, based on the data of Fisher (1970), Blachley and Blachley (1968), Heller and colleagues (1974), and Kimball(1969). Nevertheless, a review of the research in this area indicates that the severity of a patient's heart disease can influence ultimate morbidity and mortality (Humphries, 1977) and (to some degree) his or her psychological response. For purposes of this dissertation, then, it was considered important to identify those variables that reflect clinical severity, since the degree of myocardial impairment of a cardiac patient experiences may affect the dependent variables identified for study.

The issue of clinical severity has been addressed by medical investigators primarily by way of prognosis. That is, criteria for severity of illness have been established retrospectively by documenting morbidity and mortality events, following an acute myocardial infarction or coronary revascularization surgery. Various combinations of clinical descriptors, such as number of diseased coronary vessels, presence of congestive heart failure, level of ventricular function, blood pressure, blood urea nitrogen levels, and occurence and type of arrhythmias, have been used to construct prognostic indices for survival (Bigger, Heller, Wenger & Weld, 1978; Harris, Harrel, Lee, Behar, & Rosat, 1979; Humphries, 1977; Luria, Knoke, Margolis, Hendricks, & Kuplic, 1976; Norris-Mercer, 1973; Peel, Semple, Wang, Lancaster, & Dall, 1962).

In this study the investigator was less interested in prognosis than in the psychological and social impact of cardiac disease and the patient's perception of severity (i.e., limitations). Since no index of

disease severity exists for the population studied in this dissertation, variables were identified that might indicate clinical severity and/or the amount of life disruption attendant to the disease process. The variables chosen by this investigator upon consultation with a cardiologist were operationalized as follows:

History of Myocardial Ischemia. For purposes of this study, the history of myocardial ischemia was defined as the presence or absence of angina pectoris experienced prior to admission to the cardiac rehabilitation program, as documented in the patient's medical record.

History of Myocardial Infarction. For purposes of this study, the history of myocardial infarction was defined as the number of muyocardial infarctions the patient had suffered prior to entering the research study as documented in the patient's medical record.

Functional Capacity. For purposes of this study, functional capacity was defined as the activity level the patient could tolerate without angina upon entry into the research study, using the New York Heart Association's four categories:

Functional Class I. - Patients who have heart disease without limitation of physical activity. Ordinary activity does not cause symptoms.

Functional Class II. - Patients with heart disease with slight limitation of physical activity. Ordinary physical activity causes fatigue, dyspnea, palpitation or angina pectoris.

Functional Class III. - Patients with heart disease who have marked limitation of activity and experience symptoms with less than ordinary activity. They do not have symptoms at rest.

Functional Class IV. - Patients who cannot engage in any physical activity without symptoms and may have symptoms at rest (Vandenbelt et al., 1979).

History of Congestive Heart Failure. For purposes of this study, the history of congestive heart failure was defined as the presence or absence of documented episodes of congestive heart failure as reported by the patient's physician in the medical record.

Positive Treadmill Test. For purposes of this study, a positive treadmill test was defined as one which documented ischemic changes during exercise testing, i.e., horizontal or downward sloping S-T segment depression of 0.1 mv or more (Merril and Froelicher, 1977), as reported in the patient's medical record.

History of Coronary Artery Bypass Graft Surgery. For purposes of this study, a history of coronary artery bypass graft surgery was defined as the number of revascularization surgeries performed prior to entering the research study, as documented in the patient's medical record.

Statement of Hypothesis

It was hypothesized that, given the necessity of spousal interaction for role change, the involvement of the spouse in a role supplementation program would increase the role mastery of cardiac patients and decrease the role insufficiency experienced by both cardiac patients and their spouses. Thus, the major hypothesis tested in this dissertation was the following:

Subjects who participate in a role supplementation program for both patients and spouses (Experimental Group 1) will achieve higher

scores on a variety of outcome varibles when compared to subjects who participate in a role supplementation program for patients alone (Experimental Group 2). In turn, subjects who participate in a role supplementation without spouses (Experimental Group 2) will achieve higher scores on a variety of outcome variables when compared to subjects who do not participate in a role supplementation program (Control Group).

Subhypotheses

The six research questions were addressed in 31 subhypotheses. Their relationship is described in Figure 4-1.

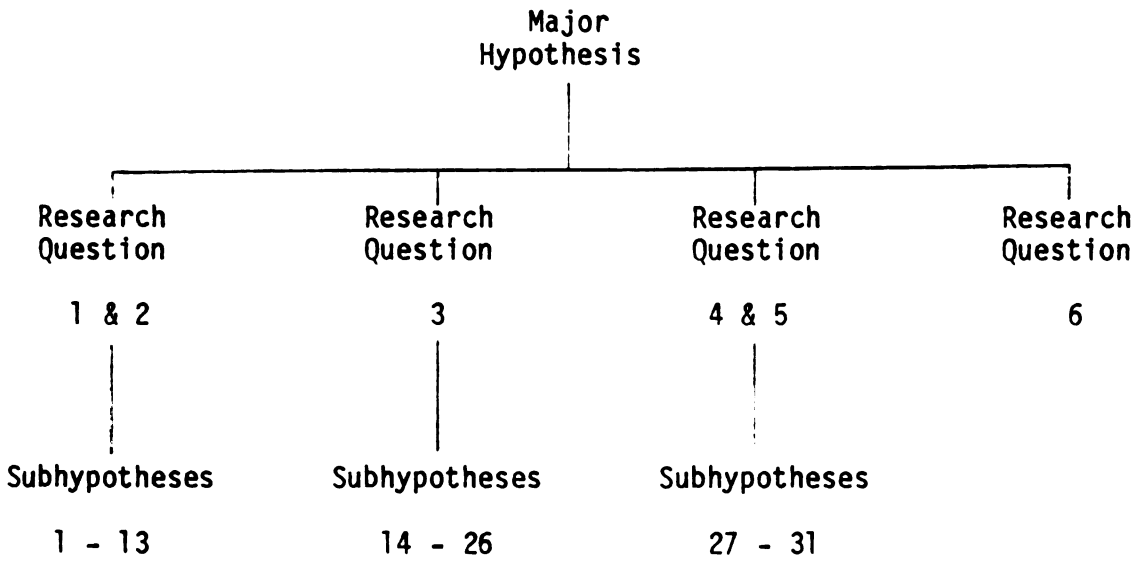


Figure 4-1: Relationship of Research Questions and Subhypotheses

Subhypotheses Related to Role Insufficiency of Patient Subjects

1. Patients in Experimental Group 1 will report lower anxiety scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental

Group 2 will report lower anxiety scores at posttest than at pretest when compared to patients in the Control Group.

2. Patients in Experimental Group 1 will report lower depression scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Grou 2 will report lower depression scores at posttest than at pretest when compared to patients in the Control Group.
3. Patients in Experimental Group 1 will report lower hostility scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower hostility scores at posttest than at pretest when compared to patients in the Control Group.
4. Patients in Experimental Group 1 will report higher marital adjustment scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher marital adjustment scores at posttest than at pretest when compared to patients in the Control Group.
5. Patients in Experimental Group 1 will report higher positive self esteem scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher positive self esteem scores at posttest than at pretest when compared to patients in the Control Group.
6. Patients in Experimental Group 1 will report higher identity scores at posttest than at pretest when compared to patients in

Experimental Group 2. Furthermore, patients in Experimental Group 2 sill report higher identity scores at posttest than at pretest when compared to patients in the Control Group.

7. Patients in Experimental Group 1 will report higher self satisfaction scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher self satisfaction scores at posttest than at pretest when compared to patients in the Control Group.
8. Patients in Experimental Group 1 will report higher behavior scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher behavior scores at posttest than at pretest when compared to patients in the Control Group.
9. Patients in Experimental Group 1 will report higher physical self scores at posttest than at pretest when compared to patients in Experimental group 2. Furthermore, patients in Experimental Group 2 will report higher physical self scores at posttest than at pretest when compared to patients in the Control Group.
10. Patients in Experimental Group 1 will report higher moral-ethical self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher moral-ethical self scores at posttest than at pretest when compared to patients in the Control Group.

11. Patients in Experimental Group 1 will report higher personal self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher personal self scores at posttest than at pretest when compared to patients in the Control Group.
12. Patients in Experimental Group 1 will report higher family self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher family self scores at posttest than at pretest when compared to patients in the Control Group.
13. Patients in Expermental Group 1 will report higher social self scores at posttest than at pretest when compared to patients in Expermental Group 2. Furthermore, patients in Experimental Group 2 will report higher social self scores at posttest than at pretest when compared to patients in the Control Group.

Subhypotheses Related to Role Insufficiency of Spouse Subjects

14. Spouses in Experimental Group 1 will report lower anxiety scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
15. Spouses in Experimental Group 1 will report lower depression scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
16. Spouses in Experimental Group 1 will report lower hostility scores at posttest than at pretest when compared to spouses in

Experimental Group 2 and in the Control Group.

17. Spouses in Experimental Group 1 will report higher marital adjustment scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
18. Spouses in Experimental Group 1 will report higher positive self esteem at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
19. Spouses in Experimental Group 1 will report higher identity scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
20. Spouses in Experimental Group 1 will report higher self satisfaction at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
21. Spouses in Experimental Group 1 will report higher behavior scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
22. Spouses in Experimental Group 1 will report higher physical self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
23. Spouses in Experimental Group 1 will report higher moral ethical self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
24. Spouses in Experimental Group 1 will report higher personal self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.
25. Spouses in Experimental Group 1 will report higher family self

scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

26. Spouses in Experimental Group 1 will report higher social self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

Subhypotheses Related to Role Mastery of Patient Subjects

27. Patients in Experimental Group 1 will report lower cigarette use at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower cigarette use at posttest than at pretest when compared to patients in the Control Group.

28. Patients in Experimental Group 1 will report lower triceps skin fold measurements at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower triceps skin fold measurement at posttest than at pretest when compared to patients in the Control Group.

29. Patients in Experimental Group 1 will report lower systolic blood pressure at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower systolic blood pressure at posttest than at pretest when compared to patients in the Control Group.

30. Patients in Experimental Group 1 will report lower diastolic blood pressure at posttest than at pretest when compared to

patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower diastolic blood presure at posttest than at pretest when compared to patients in the Control Group.

31. Patients in Experimental Group 1 will report higher hours of exercise per week at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher hours of exercise per week at posttest than at pretest when compared to patients in the Control Group.

CHAPTER FIVE

METHODS OF DATA COLLECTION AND DATA ANALYSIS

The purpose of this chapter is to describe the methods and rationale used to collect and analyse the data in this study. The rationale for the study design will be discussed. Characteristics of the three study centers used as settings for data collection will be presented. Finally, the instruments used in the research, along with the methods of data collection and analysis, will be described.

Design and Rationale

In program evalutation where the essential question is, "Does the program make any difference?" experimental approaches hold the greatest potential for systematically identifying cause and effect (Overton & Stinson, 1977). Since this dissertation examined the effectiveness of a role supplementation program within a cardiac rehabilitation setting, a controlled group, quasi-experimental design was chosen. Three groups were contrasted:

1) Experimental Group 1 consisted of cardiac patients and their spouses who meet in the 10 weekly group sessions of a role supplementation program.
2) Experimental Group 2 consisted of cardiac patients and their spouses. Only the patients met in the 10 weekly group sessions of a role supplementation program.
3) Control Group consisted of patients and their spouses who did not attend the experimental program.

Three settings were used and in each setting two experimental groups and a control group were conducted. Thus, the research design consisted of nine subject groups (Table 5-1).

Table 5-1

Research Design Format

Rehabilitation Setting	Experimental 1 (X_{e_1})	Experimental 2 (X_{e_2})	Control (X_c)
1			
2		Y measures	
3			

Each participating rehabilitation center offered the two experimental groups and a control group in the following sequence:

Setting 1 and 2

1. Patient-Spouse Group (Experimental 1)
2. Control Group
3. Patient-only Group (Experimental 2)

Setting 3

1. Patient-only Group (Experimental 2)
2. Control Group
3. Patient-Spouse Group (Experimental 1)

The sequence of the two experimental groups in each setting was determined by coin toss. By sequencing the groups in a time series, it

was hoped that two purposes would be achieved. First, a form of randomization by time was accomplished. Secondly, it was hoped that the insertion of the control group between two experimental groups would provide a "washout effect" for the learning on the part of the group leaders. Such learning may have occurred during the first experimental group series.

The optimal method of ensuring the external validity of this study would have been to randomize the subjects on entry into one of the three groups. Randomization in this manner was not possible for two reasons:

1. The enrollment of new patients each month into the three settings would not support more than one group of six to seven patients at any one time.
2. The problem of contamination of the patients in various groups could skew the results. Contamination could occur because the research subjects in all three settings attended exercise sessions three times per week. If more than one group was maintained at any one time, patients from the various experimental and control groups would be mixed during exercise sessions and "contamination" would occur. Such contamination weakens the effects of the independent variable (Diers, 1979). Therefore, a design was selected in which only one research group at a time was conducted at the center to ensure that patients in the three treatment groups would not socialize together during the ten week period of group sessions. Mixing of patients from different treatment groups was avoided by initiating a new group at every three month interval.

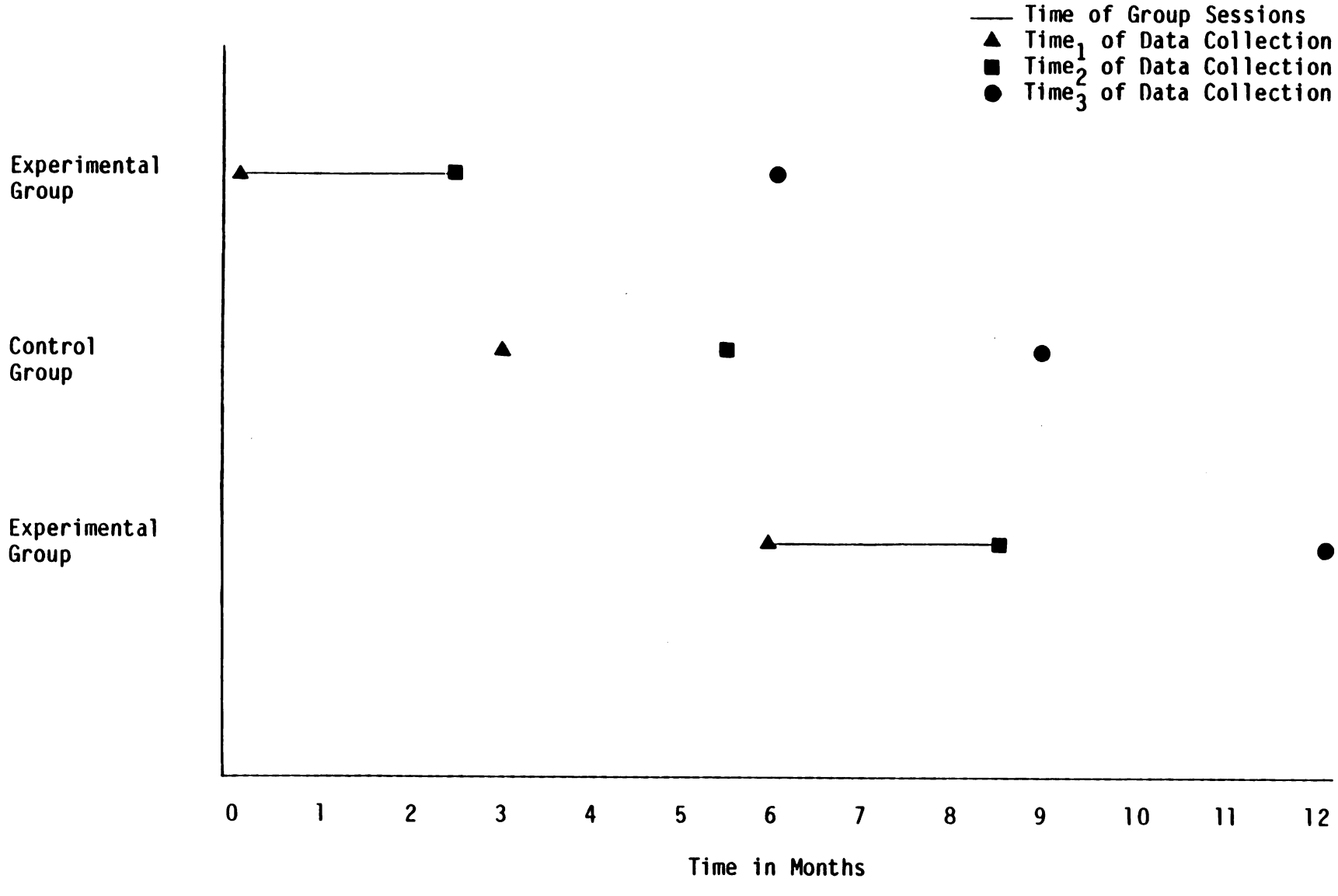
The entire sequence of groups and follow-up testing took one year to accomplish in each setting as described in Figure 5-1. Also, as indicated in Figure 5-1, the method of measuring the effects of the two experimental treatments, was a pretest-posttest control group design. Data were collected at three points: at baseline (Time 1), at ten weeks (Time 2), and at six months (Time 3).

This design was chosen to control for the effects of history, maturation, and testing, in that all three should have been manifested equally in experimental and control groups (Campbell and Stanley, 1963). The inability of this investigator to randomly assign subjects to simultaneous groups remains a significant limitation of the study design. However, this limitation to external validity was decreased by two approaches. First, the groups were randomized in a time sequence. This form of randomization was selected to decrease the biases that result from differential selection of subjects for the comparison groups. Second, the experimental programs were conducted in multiple settings. According to Kerlinger (1973), external validity is increased when the hypothesized relations hold up over repeated testing in various settings. The design also allowed for an estimation of the variance due to the differences among the participating rehabilitation centers.

Settings

All three rehabilitation centers used in the research study were located in a large Western metropolitan city. Two were affiliated with private community hospitals: Setting 1 had a 550 hospital bed capacity, and Setting 2 had a 400 bed capacity. The third setting was at YMCA

Figure 5-1: Research Design for One Setting



facility. The three research settings were within a five mile radius of each other, and therefore drew patients from the same geographic area. The similarities and differences among the three settings will be described.

Similarities.

The settings were similar in the following: 1) program philosophy, 2) criteria for admission, 3) components of treatment, and 4) staff. First, the philosophy of all three programs was in accord with the general philosophy and goals of all cardiac rehabilitation programs previously described. All three programs were designed to help the patient achieve realistically optimal physiologic improvement, to attain an acceptable level of self-care, and to achieve an adequate activity level in the home and/or work environment. Secondary prevention of cardiac events was emphasized by promoting a reduction of the known cardiac risk factors.

Second, the criteria for admission to all three programs was documented coronary heart disease and referral to the program by the patient's private physician. The second criteria insured that patients admitted to the program would be able to exercise at an appropriate level without futher compromising their cardiovascular status.

Third, the components of the three programs consisted of a prescribed exercise program, risk factor assessment, education, and individual counseling. Patients attended each center three times weekly (not on successive days) for one hour of exercise training. Each patient had an individualized prescription for exercise, including the

duration, intensity, and specific type of exercise to be performed. The prescription was based on the patient's medical history and the results of standardized diagnostic tests, particularly the exercise stress test. Individual education was provided on various topics related to coronary heart disease, particularly on cardiac risk factors. Vocational training/counseling was not provided in any of the three research settings, nor was there any formal involvement of family members.

Finally, in each of the three settings there was a full time nurse coordinator. The support staff in each program consisted of two registered nurses and a medical director, who was a cardiologist. A psychiatrist and a dietician were available to all three settings for staff consultations on an as needed basis.

Differences

There were two major differences among the programs: the duration of the program and the presence or absence of cardiac monitoring facilities. First, in terms of duration, the YMCA program was a "lifetime" program. That is, the program was designed on the expectation that participants would attend exercise sessions three times weekly as long as they lived in the geographic area. This expectation was reflected in the absence of exit criteria for graduation from the program. Some of the participants at the time of study, had attended the program for the eight year duration of its existence. In contrast, the other two programs involved in the research study were based on a three to six month model. At the completion of the program, patients

were given a home exercise program to follow or were referred to a long-term community facility.

The second difference reflected the "acute" vs "chronic" nature of the programs. The two centers affiliated with a hospital provided continuous cardiac monitoring of all patients during the exercise sessions using standard telemetry units. Patients were monitored for changes in heart rate and the presence of cardiac dysrhythmias (e.g., premature ventricular contractions), and constant feedback to each patient was provided by one of the nurses. At the third setting, patients were taught to take their own pulse rate during different phases of the exercise session. No cardiac monitoring equipment was used. If the patient noted an irregular heart beat at any point during exercise, a 12 lead electrocardigram was performed by one of the nursing staff.

Because of the difference among the three settings, the subjects (both patients and spouses) were compared at baseline on the demographic and dependent variables identified for study, using a two way analysis of variance. The two factors used in the analysis were "center" (i.e., setting) and "group." The findings of these comparisons are described in Chapter Six.

Study Sample

Sample criteria. The intent of the sample criteria was the selection of individuals representative of patients enrolled in out-patient cardiac rehabilitation programs. The sample criteria were:

1. Patients must have coronary artery disease documented by prior

coronary angiogram, exercise test, nuclear imaging study, electrocardiogram or cardiac enzyme elevation.

2. Patients must be officially enrolled in a formal cardiac rehabilitation program at one of the three centers described previously.

3. Patients must be legally married or currently living in the same household with a partner in a nonmarital cohabitation (both spouses and partners of cohabitation will be referred to as "spouses" in the remainder of this dissertation).

4. Both patient and spouse must consent to participate in the study.

5. Both patient and spouse must be able to speak, read, and write English.

Recruitment of subjects. Two methods were used to recruit subjects. The first method was used for subjects who were just entering the rehabilitation program at the time of the study and capitalized on the initial intake interview of the patient referred to the program and his/her spouse. The purpose of this interview was to explain the goal and activities of the rehabilitation program and to review the patient's individual history and risk profile. The cardiovascular nurse specialist explained the purpose of the study at this time (i.e., a study to evaluate different types of therapeutic groups within a cardiac rehabilitation program). Both patient and spouse were asked if they would be willing to be interviewed by the researcher and fill out questionnaires at the beginning of their participation in the study, at three months, and again at six months following the first interview.

Patients already enrolled in the program prior to the research

program beginning were recruited by means of a poster in the exercise room. If they expressed an interest in participating they were given a form which briefly described the research study. The forms were adapted to each of the three phases of the study and were identical in all three settings. For purposes of illustration, an example of one used during the patient-only phase is provided in Appendix B.

In regard to their participation in weekly therapeutic group sessions, the patient and spouse were assigned to a treatment or control group based on the time of entry into the cardiac rehabilitation program and the sequence of groups in the center. Those subjects assigned to one of the two experimental groups were asked if they would be willing to participate in weekly therapeutic group sessions as part of the total rehabilitation program. Whether or not spouses were asked to join a group depended on the experimental group to which they were assigned.

Patients and their spouses who agreed to participate in the study were then asked to sign a consent form (Appendices C 1-6). They were not compensated monetarily for their participation in the research study.

Thus, patients and their spouses were assigned to one of the three research groups until the group had a membership of four to seven patients. Experimental Group 1 (patient-spouse group) consisted of four to seven patients and their spouses, while Experimental Group 2 (patient-only group) consisted of four to seven patients only, since their spouses did not meet in the groups.

The number of subjects recruited for each treatment group was based on the population of the three cardiac rehabilitation programs and the

number of subjects thought to be optimal for a group experience. Based on research studies on the effectiveness of group psychotherapy (Ryle, 1979; Marram, 1973; Yalom, 1970) the minimum and maximum values of four and fourteen were set for group membership. The actual numbers achieved in each of the treatment groups fell within this range, as can be seen in Table 5-2.

As previously described, 92 subjects were enrolled in the study sample: 32 in the patient-spouse groups; 30 in the patient-only groups, and 30 in the control group.

Protection of Research Subjects

A proposal for the research study described here was reviewed by the following committees:

1. the UCSF Committee on Human Research,
2. the UCLA Committee on Human Research (prior to an application to N.I.H. for funding),
3. the Committee on Human Research of Setting 1,
4. the Medical Executive Committee of Setting 2,
5. the Medical Advisory Board of Setting 3.

The review was primarily to ensure that subjects who participated would not be exposed to harmful risks. All five committees granted approval.

The risk-benefit ratio for such research cannot be quantified precisely. Based on the review of a previous investigation in this area (Meleis and Swendson, 1978) it was anticipated that the benefits of a role supplementation program would outweigh the risks, and that the

Table 5-2

Number of Subjects Enrolled in the Study Sample by Rehabilitation Centers and Treatment Groups

Treatment Group	Setting 1		Setting 2		Setting 3		Total	
	Patient	Spouse	Patient	Spouse	Patient	Spouse	Patient	Spouse
Experimental 1	7	7	4	4	5	5	16	16
Experimental 2	6	6	4	4	5	5	15	15
Control	6	6	5	5	4	4	15	15
Total	19	19	13	13	14	14	46	46

risks would be negligible.

Potential benefits for subjects participating in the treatment intervention included the following: enhanced knowledge of cardiac risk factors and the pathophysiology of heart disease, alleviation of depression and anxiety, improved interpersonal and psychosocial adaptation, and improved marital relationships. No obvious benefits to those subjects who did not attend the group sessions were identified.

Potential risks were identified related to: 1) attendance at the group sessions and, 2) the research questionnaires. In relation to the first category, it was thought that subjects participating in the experimental groups might become anxious or depressed as issues related to disability and death emerged. The group leaders, by their education and clinical experience, were trained to assess participants for such changes and refer them to appropriate therapy. No such referrals were required.

A second risk related to the filling out of the questionnaires. Although they were standard psychological tests and generally required less than thirty minutes to fill out, it was believed that subjects might feel embarrassment at some of the questions. To insure confidentiality, all subjects (patients and spouses) were given a code number that was used on the questionnaires and interview forms throughout the study. A list of the subjects' names, addresses and phone numbers, with their corresponding code numbers, was kept in a locked file cabinet, accessible only to this researcher. At the completion of the study, this list was destroyed and all questionnaires and interview forms are now kept under lock and key, identified only by

code number. When the results of the study are published, the identities of the participants will remain anonymous. Finally, subjects were instructed to discontinue answering the questionnaires if they become fatigued. No subject expressed fatigue during the course of the study and all questionnaires were completed.

To insure that a patient's medical history or physical status would not be a contraindication to participation, each subject's cardiologist was informed of the purpose and nature of the study. When verbal permission was obtained from the private physician, a letter and study summary was mailed for confirmation (Appendix D 1-2).

Research Instruments and Data Collection

Table 5-3 summarizes the relationship between the dependent variables and the research instruments. It also categorizes the data to be obtained, the time of data collection, and the methods of statistical analysis.

Information about the nine demographic variables identified for study was obtained by means of the Demographic Data Form (Appendix E 1). The form was constructed by this researcher and had face validity. It was completed by each participant upon entry into the study.

Information about the patients' medical status was obtained by medical chart review. All patient charts were reviewed by this investigator at the participating settings using the Medical Data Form (Appendix E 2). This instrument was constructed by this researcher. Content validity was established by a judge panel of three cardiologists

Table 5-3

Measurement of Dependent Variables

Category	Variable	Subject	Instrument			Type of Data	Method of Analysis	Time Tested
			Title	Validity	Reliability			
Signs and Symptoms of Role Insufficiency	Anxiety	Patient Spouse	Multiple Affect Adjective Check List	Content Concurrent	0.79	Normative Data (0-21)	Two-way Analysis of Variance	Baseline
							Repeated Measures Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	Depression	Patient Spouse	Multiple Affect Adjective Check List	Content Concurrent	0.92	Normative Data (0-40)	Two-way Analysis Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	Hostility	Patient Spouse	Multiple Affect Adjective Check List	Content Concurrent	0.90	Normative Data (0-28)	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	Self-Esteem (including sub-scales)	Patient Spouse	Tennessee Self-Concept Scale	Content Concurrent Criterion-related	0.88	Normative Data	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months

Table 5-3 (continued)

Category	Variable	Subject	Instrument: Title	Instrument: Validity	Instrument: Reliability	Type of Data	Method of Analysis	Time Tested
Signs and Symptoms of Role Insufficiency (continued)	Marital Satisfaction	Patient Spouse	Spanier Dynamic Adjustment Scale	Content Concurrent Criterion-related	0.96	Normative Data (0-150)	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
Mastery of "At Risk"	Weekly exercise	Patient	Risk Factor Index			Interval Data	Two-way Analysis of Variance	Baseline
							Repeated Measures Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	Smoking	Patient	Risk Factor Index	Accepted	Accepted	Interval Data	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	% Body Weight	Patient	Risk Factor Index	Accepted	Accepted	Interval Data	Two-way Analysis of Variance	Baseline
							Repeated Measures Analysis of Variance & Covariance	Baseline, 3 months, 6 months

Table 5-3 (continued)

Category	Variable	Subject	Instrument			Type of Data	Method of Analysis	Time Tested
			Title	Validity	Reliability			
Mastery of "At Risk" (continued)	Systolic Blood Pressure	Patient	Risk Factor Index	Accepted	Accepted	Interval Data	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
	Diastolic Blood Pressure	Patient	Risk Factor Index	Accepted	Accepted	Interval Data	Two-way Analysis of Variance	Baseline
							Repeated Measured Analysis of Variance & Covariance	Baseline, 3 months, 6 months
Change in Course of Disease	Mortality	Patient	Spouse Interview	Not Necessary	Not Necessary	Interval Data	Frequency Count	6 months
	Reinfarction	Patient	Patient Interview	"	"	Interval Data	Frequency Count	6 months
	Rehospitalization	Patient	Patient Interview, Progress Notes	Not Necessary	Not Necessary	Interval Data	Frequency Count	6 months

who critiqued the instrument to determine if the items were: 1) relevant measures of cardiac status, 2) consistent with other measures of cardiovascular disease severity in the literature, and 3) appropriately worded with fixed choice responses. Reliability was not established.

The medical data form was constructed in lieu of an accepted index of disease severity. No such index could be found in a review of the literature. The two most commonly used indices are the Peel Index (Peel et al., 1962) and the Norris Prognostic Index (Norris & Mercer, 1970). Both can only be used with post-myocardial infarction patients. Since the research sample in this dissertation consisted of some patients who had not suffered a myocardial infarction, the two indices were excluded from use.

Measurement of Role Insufficiency:

Five variables were identified as manifestations of role insufficiency: anxiety, depression, hostility, decreased marital satisfaction, and decreased self-esteem. Eight sub-scales of the last variable, self-esteem, were also measured: identity, self-satisfaction, behavior, physical self, moral-ethical self, personal self, family self, and social self. Thus, a total of thirteen variables were measured in the category of role insufficiency.

Three paper and pencil tests were used as the pretest, posttest measures of role insufficiency. They were given to both the patients and spouses participating in the study prior to initiating the groups (baseline), again at the completion of the group sessions (10-12 weeks); and, finally, at six months following entry into the study.

Anxiety, depression, and anger/hostility were measured by the Multiple Affect Adjective Check List (Zuckerman, Lubin, & Robins, 1965) (Appendix E 3). A numerical score is obtained by adding the number of positive items checked for a particular affect (e.g., anxiety) and the number of negative items not checked. The scores provided normative data.

Validity. Concurrent validity was established by the author of the instrument and was accepted by this investigator. It was achieved by correlating the three affect scales with a variety of established instruments (Zuckerman & Lubin, 1965), including the Taylor Manifest Anxiety Scale ($r = 0.69$, $p. = 0.01$), Rosen Anxiety Reaction Scale ($r = 0.47$, $p = 0.01$), and Lubin Depression Scale ($r = 0.44$, $p = 0.05$). Criterion-related validity was also established through several clinical trials by Zuckerman et al. (1964; 1965). For example, they found that all three affect scales were significantly elevated in a sample of college students on days when a surprise examination was announced (Zuckerman & Lubin, 1965).

Reliability. The internal reliability of the instrument was established by Zuckerman and Lubin (1965) by assessing item intercorrelation in a group of college students ($N = 46$). Results were as follows: anxiety ($r = 0.73$, $p = 0.01$), depression ($r = 0.65$, $p = 0.01$), hostility ($r = 0.90$, $p = 0.01$). Retest reliability measured on the seventh day following the first initial administration showed poor reliability correlations (0.21, 0.21, and 0.15 for the three respective scales). Since the instrument purports to measure daily changes in affective status, high test-retest reliability was not anticipated.

Marital adjustment was measured by the Spanier Dyadic Adjustment Scale (Appendix E4). The 32-item scale was designed for use with either married or unmarried cohabiting couples. It yields normative data.

Validity. Validity was established by a three member judge panel, who reviewed all items to determine if they were: 1) relevant measures of dyadiac adjustment, 2) consistent with nominal definitions for adjustment in the past literature, and 3) appropriately worded with fixed choice responses (Spanier, 1976).

Criterion-related validity was established by the author of the instrument (Spanier, 1976). He administered the tool to a married sample (N = 218) and a divorced sample (N = 94). Each of the 32 items in the scale correlated significantly with the external criterion of marital status when a t-test was used to measure differences between the means of the two samples ($p < 0.001$).

Concurrent validity was established by using the Locke-Wallace Marital Adjustment Scale (Locke & Wallace, 1959), which is a well accepted marital adjustment scale. The correlation between these scales was 0.86 among married respondents and 0.88 among divorced respondents ($p < .001$) (Spanier, 1976).

Reliability. The instrument purports to measure the quality of a dyadic relationship. Specific components measured are: satisfaction, dyadic cohesion, concensus, and affectional expression. A measure of internal consistency reliability was made using Cronbach's Coefficient Alpha (Cronback, 1951), which is a variant of the basic Kuder-Richardson formula (Anastasi, 1968). The reliability coefficient for the total scale was 0.96 (Spanier, 1976).

Self concept was measured by the Tennessee Self Concept Scale (Appendix E 5). The instrument is composed of 100 self-descriptive items. For each item, the respondent chooses one of five response options labeled from "completely false" to "completely true." Thirty scores are derived, but only nine of them directly reflect self esteem. Eight are aspects of the self: Identity, Self-satisfaction, Behavior, Physical Self, Moral-ethical Self, Personal Self, Family Self, and Social Self. The ninth score is the Total Positive Score, reflecting the overall level of self esteem. The remaining 21 scores were not used in this dissertation because they only reflect self esteem indirectly. Briefly, they are: Variability Scores, reflecting the amount of consistency from one area of self perception to another; Distribution Score, a measure of extremity response style, True-False Ratio, a second measure of response style; Net Conflict Score, reflecting responses to positive vs. negative items; Empirical Scales for group discrimination, and Number of Deviant Signs Score, a count of the number of deviant features on all other scores.

Validity: Content validity was established during initial construction of the instrument. The items in the original pool were derived from surveys of the literature on the self concept and from analyses of patient self-reports. The final items were selected by seven clinical psychologists who were asked to classify each item as to its fit with defined constructs. The final items included only those on which all seven of the judges agreed (Fitts, 1965).

Criterion related validity was established by several studies that tested the effects of a significant experience (e.g., psychotherapy,

hospitalization, etc.). These experiences did indeed alter the self concept scores significantly (Fitts, 1965). For example, in one study of the effects of psychotherapy on self concept an experimental group (N = 30) received 6 months of treatment. When compared to a control group (N = 24) on a test-retest basis, the therapy group changed significantly and in the expected direction on 18 of the 22 variables studied, while the control group only changed on two variables (Ashcraft & Fitts, 1964).

Finally, construct validity was tested by Vacchiano and Strauss (1968) and Bertinetti and Fabry (1977), among others. Both sets of investigators reported findings that concurred with the construct of self concept as delineated by Fitts.

Reliability. Reliability was established by test-retest with 60 college students over a two week period. The reliability coefficients for the various scales ranged from 0.67 to 0.92, with a median of 0.88 (Fitts, 1965). These reliability data are sufficiently high to warrant confidence in individual differences in measurement.

Strength and Weaknesses. A major criticism of the instrument is that it does not allow the subject to describe himself in his own words. Thus, it is not phenomenological and may not capture all the self concept variables in each individual. However, its strengths lie in its standardization and relative ease of administration.

Measurement of Mastery of the At Risk Role

The level of mastery of the at risk role was measured through changes in five variables designated by the International Society and

Federation of Cardiology (1981) as high risk variables. These are: smoking, elevated systolic blood pressure, elevated diastolic blood pressure, obesity, and lack of physical exercise. Level of mastery was defined as decreased cigarette use, decreased systolic and diastolic blood pressure, weight loss, and increased habitual physical exercise.

To obtain data on level of mastery, patient subjects were interviewed at baseline, at completion of the role supplementation program, and at six months. Data regarding each variable was recorded on a Risk Factor Index Form constructed by this investigator (Appendix E 6). They were collected through the following methods:

Smoking: Patient subjects were asked the question, "Over the past two weeks, approximately how many cigarettes per day have you smoked?" The question was always asked in the presence of the patient's spouse, in the belief that the truthfulness of this self-report would be strengthened.

Blood Pressure: Systolic and diastolic blood pressure measurements were obtained by the same investigator throughout the study to eliminate inter-observer variation. To prevent the minor fluctuations which occur from arm to arm, the same arm was used in each subject for all measurements. One sygnomenometer was used throughout the duration of the study and calibration was frequently checked to insure reliable measurements.

Obesity: Fatfold measurement has been frequently used in nutrition surveys as an indirect measure of body fat (Frisancho. 1974). It consists of measuring a double layer of skin and subcutaneous fat at a specific body site with skinfold calipers. The most common sites used

are the triceps (back of the upper arm) and subscapular (below the shoulder blades), but the former has the advantage of being easily accessible (Grant, 1979).

Reliable skinfold calipers share the following: 1) they exert a constant pressure of ten grams/mm^2, 2) they provide a range of at least 2 to 40 mm, 3) they have a contact surface of 20 to 40 mm, and 4) they are accurate to 0.1 mm. Calipers meeting these requirements are the Lange skinfold calipers and the Harpenden skinfold calipers (Grant, 1979).

Triceps skin fold measurements were obtained by use of a Harpenden skinfold calipers. A picture of this instrument is provided in Appendix F. The same calipers was used throughout the study. Three readings were taken and the average of the three was used as a final value. The site of measurement was the left triceps, which is halfway down the arm between the tip of the acromon and the top of the radius. The skin fold was picked up in a line passing directly up the arm from the tip of the olecranon process. A measuring tape was used to establish the midpoint for measurement. All measurements were taken with the subject's arm hanging relaxed at his/her side. Reported accuracy of this measurement is $\pm$ 5% with repeated measures (Tanner, 1959).

Lack of Physical Exercise: Patient subjects were asked the question, "Over the past two weeks, approximately how many minutes per day have you exercised at your target heart rate?" Again, this question was asked in the presence of spouses to strengthen the self-report method of obtaining data.

Measurement of Change in Course of Disease

The three dependent variables relating to morbidity-mortality, i.e., mortality, reinfarction, and rehospitalization, were measured by reviewing the progress notes of the cardiac rehabilitation center as well as by telephone calls by the researcher to the patient and spouse and, when appropriate, the patient's private physician.

Subjective Evaluation of Role Supplementation Program

Finally, an evaluation form was developed by Ibrahim (1974) for use in a study evaluating the effect of group psychotherapy for post-myocardial infarction patients. It was given to all subjects (patients and spouses) who participated in the experimental groups sessions. The tool measured subjects' perceptions of various aspects of the group experience (Appendix G). It was given following the final group session. Subjects were instructed not to put their names or code numbers on the form. By guaranteeing anonymity it was anticipated that subjects would feel free to be critical about the experimental program.

Method of Data Collection

Testing Schedule: All patient and subject participants were seen upon entry into the study by this investigator. The purpose of the study and its risks and benefits were explained and they were asked to sign consent forms. Following their consent, the participants were given a packet of four questionnaires to complete. The patient subjects were then interviewed regarding their cardiac risk factors, as described previously. For participants in the experimental groups, this baseline

data was collected on the evening of the first group session. For participants in the control group, a meeting was arranged either at the setting or in their home to collect baseline data since they did not meet as a group. The first posttest data was collected immediately following the last group session. The participants were given a packet of questionnaires identical to that of the pretest packet, but the program evaluation form replaced the Demographic Data Form. The patient subjects were again interviewed about their cardiac risk factors. Control group subjects were interviewed at ten weeks to obtain the second set of data.

Finally, the patients and the patients and spouses were called by the researcher just prior to the six month data collection. An appointment was made for the participants to meet with the investigator to fill out questionnaires and be interviewed regarding risk factors. If the couple was unable to come to the setting for any reason, the researcher arranged to meet them in their home.

A summary of the data collection schedule, with a list of the questionnaires administered at each fnterval, is presented in Table 5-4.

Responsibilities of the Investigator and Group Facilitators

The investigator was responsible for all aspects of data collection. She administered questionnaires, interviewed the patient subjects, and measured blood pressure and triceps skin fold measurements at the various time intervals. The group facilitators were excluded from data collection. This decision was made to decrease their potential influence on the participants, who may have felt a need to

Table 5-4

Schedule for Data Collection

Time	Subjects	
	Patient	Spouse
$Time_1$ (baseline)	1) Demographic Data Form 2) Multiple Affect Adjective Check List 3) Tennessee Self-Concept Scale 4) Dyadic Adjustment Scale 5) Risk Factor Index	1) Demographic Data Form 2) Multiple Affect Adjective Check List 3) Tennessee Self-Concept Scale 4) Dyadic Adjustment Scale
$Time_2$ (ten weeks)	1) Multiple Affect Adjective check List 2) Tennessee Self-Concept Scale 3) Dyadic Adjustment Scale 4) Risk Factor Index 5) Post Session Evaluation (Experimental Groups 1 & 2)	1) Multiple Affect Adjective Check List 2) Tennessee Self-Concept Scale 3) Dyadic Adjustment Scale 4) Post Session Evaluation (Experimental Group 1 only)
$Time_3$ (Six months)	1) Multiple Affect Adjective Check List 2) Tennessee Self-Concept Scale 3) Dyadic Adjustmant Scale 4) Risk Factor Index 5) Interview re: morbidity 6) Medical Data Forum	1) Multiple Affect Adjective Check List 2) Tennessee Self-Concept Scale 3) Dyadic Adjustment Scale

please the facilitators by their responses. Also, patient and spouse subjects were asked to refer all questions about the research study to the investigator to reinforce the separation of the experimental program from the data collection process.

The group facilitators were responsible for implementing the role supplementation program. The investigator was never present at the group session, but rather met with the two facilitators after each session. In these meetings the theoretical basis for the protocol was reviewed and the progress of the group assessed.

Statistical Analysis

Analysis of the data was done in two stages. First, a two-way factorial design was used to compare the three study groups (i.e., two treatment and one control) in each of the three centers at baseline. The computer program BMDP7D was used for this analysis (UCLA, Biomathematics, 1981). The analysis was performed to determine the comparability of the three treatment groups at entry into the study and the possible joint effect of center and treatment. Since more than two groups were involved, the appropriate statistical test was an analysis of variance rather than the simple t-test (Wallenstein, Zuker, & Fleiss, 1980). A brief description of this statistical method follows.

The analysis of variance partitions the total variability in an experiment (the total sum of squares) into components (sums of squares) due to between-treatment and within-treatment variability. These sums of squares are then both divided by the appropriate degrees of freedom to yield a mean square between groups and a mean square within groups.

The latter mean square is an average of the variances within each of the groups and is a measure of variability. The ratio of the mean square between groups to the mean square within groups is a measure of differences among groups. This ratio is the F-statistic. If there are no real differences among the three groups, the value of the F-statistic for each variable studied should be 1.0. If the F-value is larger than the appropriate critical value, it is unlikely that the observed differences are due to chance alone (Dunn & Clark, 1974; Matteson, 1981).

A two-way analysis of variance was performed on each of the nine demographic variables, on the variables relating to the medical status of patient subjects, and on the eighteen dependent variables identified for study. The results of these analyses will be discussed in the following chapter. Thus, the subjects were analysed at baseline along a variety of demographic and dependent variables on two factors: treatment group and center. The data consisted of observations on each variable for 9 different combinations, i.e. 3 centers x 3 treatments. This design allowed for the effective study of the two factors in combination. A lack of interaction between center and group effects was viewed as substantiating the similarities among centers in each group.

There are three assumptions required when using an analysis of variance:

1. that the measurements are obtained under independent conditions,
2. that the data is distributed normally, and

3. that each group has the same underlying standard deviation (Dunn & Clark, 1974).

Most experts agree that these assumptions are rarely met in real experiments (Matteson, 1981), and this investigator is aware that the method of subject selection could have provided an important (and difficult) bias in the study.

The second stage of analysis involved an evaluation of the three experimental groups in each center on the basis of their differences over time. The computer program BMDP2V was used to provide an analysis of variance and covariance for repeated measures with respect to time (UCLA, Biomathematics, 1981). The three times measured were at baseline, at ten weeks, and at six months. The time trends of the dependent variables were summarized for each experimental group by two quantities: the mean of all measurements and the slope or the trend. Tests for differences between the treatment groups with respect to the means and the slopes were computed.

In using the repeated measures analysis of variance and covariance during the second stage of analysis, two problems were recognized. First, this test theoretically requires that the correlations between all the time points be the same, but this assumption is rarely met in practice (Wallerstein et al., 1980). Second, with multiplicity of testing the opportunity for making a Type I error (i.e., false positive) increases. Greenhouse and Geisser (1954) have provided a conservative procedure which uses the same test statistic but requires a much larger critical value to reach significance. Thus, the Greenhouse-Geisser method for determining probability values was used. This value will be

reported in each case.

The results of the two analyses will be described in the following chapter.

CHAPTER SIX

RESULTS

The results of this study are presented in five sections:

1. Initial sample characteristics; a comparison among settings and treatment groups.
2. Initial state of dependent variables; a comparison among settings and treatment groups.
3. Subjects' participation and attrition.
4. Review of research questions and results of subhypotheses.
5. Subjective evaluation of role supplementation program by participants.

Section 1: Sample Characteristics and Comparison Among Setting and Treatment Groups

The characteristics of the study sample (N = 92) were obtained through self-reported responses on the Demographic Data Questionnaire and a review of the patients' medical record (N = 46).

Demographic Characteristics

Demographic characteristics included the following variables: sex, age, number of years married, number of children, number of children currently in residence, level of education, income, occupation, and number of hours currently working. Analysis of the demographic data is presented in Tables 6-1 through 6-8.

Thirtynine of the 46 patients in the study sample were men (Table

6-1). Thus, 85% of the patient sample were male, while 7 or 15% of the patient sample were female. Since all the partners in the study were heterosexual couples, the reverse statistics apply to the spouse sample. Experimental Group 2 had the highest percentage of male patients (100%), compared to Experimental Group 1 (69%) and the control group (87%).

The subjects ranged in age between 33 and 73 years. Mean ages for the three study groups ranged between 58.4 and 59.2 years, with the spouses' mean ages approximately 1 to 2 years lower than the patients' mean ages in each of the three groups (Table 6-2).

In terms of years married, the couples had been married from 1 to 50 years. The mean years married in Experimental Group 1 was 26.1 years; in Experimental Group 2 it was 28.4 years; and in the Control Group it was 32.1 years (Table 6-3). Sixtyfive of the 92 subjects (70%) were in their first marriage. Twentyone subjects (23%) had one previous marriage, while the remaining 6 subjects (7%) had two or more previous marriages.

The couples had a mean of 2.1 children, but, reflecting their ages, the majority of couples (32 or 70%) had no children still living at home. Data for the absolute number of children and the number of children in residence in each of the treatment groups are presented in Tables 6-4 and 6-5.

Of the racial and ethnic categories represented, 99% of the subjects were Caucasian, with only one subject being Asian. The lack of representation from other categories reflects the relative homogenity of the West Los Angeles area from which the sample was drawn. Religious

Table 6-1

Number and Sex of Study Sample by Treatment Groups

Treatment Group	Patients		Spouses		Total
	male	female	male	female	
	N (%)	N (%)	N (%)	N (%)	N
Experimental 1	11 (69)	5 (31)	5 (31)	11 (69)	32
Experimental 2	15 (100)	0 (0%)	0 (0%)	15 (100)	30
Control	13 (87)	2 (13)	2 (13)	13 (87)	30
Total	39 (85)	7 (15)	7 (15)	39 (85)	92

Table 6-2

Mean, Standard Deviation (S.D.) and Range of
Age of Study Sample by Treatment Groups in All Centers

Treatment Group	Patients			Spouses		
	Mean	S.D.	Range	Mean	S.D.	Range
Experimental 1	59.2	5.6	47 - 73	58.1	10.5	33 - 73
Experimental 2	58.4	7.3	49 - 68	55.0	8.0	43 - 66
Control	58.7	4.6	48 - 66	57.3	7.4	38 - 68

Table 6-3

Mean, Standard Deviation (S.D.) and Range of Years Married for Couples in Study Sample by Treatment Groups

Treatment Group	Mean	S.D.	Range
Experimental 1	26.1	13.9	4-50
Experimental 2	28.4	10.9	1-46
Control Group	32.1	8.9	13-46

Table 6-4

Frequency Distribution of Couples with Children by Treatment Group

Total Number of Children	Experimental 1	Experimental 2	Control	Total Number of Couples
0	3	0	1	4
1	1	4	4	9
2	6	7	6	19
3	5	2	3	10
4 or >	1	2	1	4
Total Number of Couples	16	15	15	46

Table 6-5

Frequency Distribution of Couples with Children in Residence by Treatment Groups

Number of Children	Experimental 1	Experimental 2	Control	Total
0	13	7	12	32
1	2	7	2	11
2	1	0	0	1
3	0	1	1	2
4 or >	0	0	0	0
Total number of Couples	16	15	15	46

preference responses indicated that 20.7% were Protestant, 18.5% Catholic, 47.8% Jewish, 12% Agnostic, and 1% Mormon. The high percentage of Jewish subjects reflects both the high incidence of heart disease in this ethnic group and the population distribution of the West Los Angeles area.

In terms of education, 39% of the patient sample had a high school diploma; 13% completed two years of college; 30.4% completed a college degree; and 15.2% held a graduate degree. The spouse sample had less education; 1% had not completed high school; 56.5% held a high school diploma; 10.9% finished two years of college; 24% held a college degree; and only 6.5% held a graduate degree. Experimental Group 2 had the most years of education when compared to the other two groups (Table 6-6). Eighty-seven percent of the patients in Group 2 held college and graduate degrees, compared to only 25% in Experimental Group 1 and 33% in the Control Group.

Reports of joint annual income (Table 6-7) showed that 11% of the couples made between $10,000-$19,999, 29% between $20,000-$39,999, 28% between $40,000-$59,999, and 22% over $60,000. The relative affluence of the study sample again reflects the geographic area in which they lived; i.e., an upper middle class residential area on the Los Angeles Westside.

The Duncan Socioeconomic Index (Appendix H) was used to categorize subjects in the study sample by occupation. The category of "other" included the occupation of "housewife," was added to the Index, and the highest number of spouses (33%) were in this category. The occupational distribution of the sample is presented in Table 6-8.

Table 6-6

Frequency Distribution of Subjects' Level of Education by Treatment Groups

Level of Education	Experimental 1		Experimental 2		Control	
	Patient	Spouse	Patient	Spouse	Patient	Spouse
High School	0	1	0	0	0	0
High School Diploma	9	8	1	7	8	11
Associate Degree	3	3	1	1	2	1
College Degree	1	2	11	6	2	3
Graduate Degree	3	2	2	1	3	0

Table 6-7

Comparison of Joint Annual Income for Couples in Study Sample by Treatment Groups

Joint Annual Income	Experimental 1	Expeimental 2	Control
<$5,000	0	0	0
$5,000-9,999	0	0	0
$10,000-19,999	4	0	1
$20,000-39.999	3	8	8
$40,000-59.999	6	2	4
>$60,000	3	5	2

Table 6-8

Occupational Distribution of Study Sample by Treatment Groups

	Experimental Group 1		Experimental Group 2		Control		Percent of Subjects in Total Sample	
	Patient	Spouse	Patient	Spouse	Patient	Spouse	Patient	Spouse
Professional, technical, & Kindred workers	4	4	6	3	5	2	35%	19%
Managers & Administrators	1	2	7	4	1	3	19%	19%
Sales workers	4	2	0	0	2	1	13%	7%
Clerical & Kindred workers	1	3	0	2	1	1	2%	13%
Craftsman & Kindred workers	3	0	0	0	1	0	9%	0%
Transport Operative	0	0	0	0	1	0	2%	0%
Service Worker	0	1	2	0	2	3	9%	9%
Other	3	4	0	6	2	5	11%	33%
Total	16	16	15	15	15	15	100%	100%

The majority of patients were employed (59%). Approximately two-fifths of the patients (22%) were retired at the time of the study. Data was not obtained to determine if retirement was contingent on the cardiac event. The majority of the spouses were not working outside the home (55%).

In summary, the sample was relatively homogeneous with respect to demographic characteristics. The participating couples were upper-middle or middle class caucasians, middle-aged, and in long-term first marriages.

Medical Status

The medical status of the patient subjects was evaluated by six variables. The frequency distribution and statistical analyses for the first five - positive history of angina pectoris, myocardial infarction, coronary artery bypass graft surgery, congestive heart failure, and positive treadmill - are presented in Table 6-9. For three of the five clinical variables, the patient subjects in Experimental Group 1 had experienced greater clinical severity than the subjects in the other two groups. These patients were more likely to have experienced angina and congestive heart failure prior to entering the rehabilitation program. They also had a higher incidence of ischemic changes during exercise testing than patients in Experimental Group 2 or the control group (56% vs. 40% and 27% respectively).

In contrast, patients in Experimental Group 2 had the highest incidence of myocardial infarction (67% compared to 50% and 53% in the other two groups). Approximately one-half the entire sample had

Table 6-9

Frequency Distribution and Chi-Square for Variables Reflecting Clinical Severity of Patient Subjects' Coronary Heart Disease

Variable	Experimental 1		Experimental 2		Control		Total		Statistical Tests		
	N	%	N	%	N	%	N	%	df	x^2	P
A.P.	12	(75%)	9	(60%)	10	(67%)	31	(67%)	2	5.07	NS
M.I.	8	(50%)	10	(67%)	8	(53%)	26	(57%)	2	8.93	NS
C.A.B.G.	8	(50%)	7	(47%)	10	(67%)	25	(54%)	2	11.07	NS
C.H.F.	5	(31%)	3	(20%)	3	(20%)	11	(24%)	2	8.93	NS
Positive Treadmill	9	(56%)	6	(40%)	4	(27%)	19	(41%)	2	18.52	NS

Legend: A.P. = History of Angina Pectoris
M.I. = History of Myocardial Infarction
C.A.B.G. = History of Coronary Artery Bypass Graft Surgery
C.H.F. = History of Congestive Heart Failure

undergone coronary revascularization surgery, with the highest percentage (67%) being in the control group. However, a Chi-Square analysis established no significant differences among the three treatment groups on any of the five variables previously discussed.

Data related to the sixth variable, functional class upon entry into the research study, are presented in Table 6-10. A Chi-Square analysis established a statistically significant difference among the three treatment groups on this variable ($df = 2$, $x^2 = 0.0115$, $p < 0.01$). In examining the data, the difference stems from the high proportion of control group patients in Functional Class I.

Comparison of Sample Characteristics Among Settings and Treatment Groups

Given the inability of the investigator to randomize subjects into treatment groups, it was conceivable that the results of the study might be attributed to differences among the three treatment groups on one or more varibles extraneous to the experimental intervention. Study biases might also be introduced by differences of the subjects from one setting to another, although this was considered a lesser danger (as discussed in Chapter Five). To identify potential biases, a two way analysis of variance was performed with the Bonferroni test for multiple comparisons using "treatment groups' and "research setting" as the two identified factors. The results of this analysis on the nine demographic variables previously described are summarized in Table 6-11.

Settings. There was a significant difference for patient subjects among the three settings on only one of the nine demographic variables

Table 6-11

Frequency Distribution of Patient Subjects' Functional Class at Time of Entry into Study by Treatment Group

Functional Class	Experimental 1		Experimental 2		Control		Total	
	N	%	N	%	N	%	N	%
1	5	(31%)	6	(40%)	12	(80%)	23	(50%)
2	5	(31%)	8	(53%)	2	(13%)	15	(33%)
3	6	(38%)	1	(7%)	1	(7%)	8	(17%)
4	0	(0%)	0	(0%)	0	(0%)	0	(0%)

analyzed. This variable was employment status. As seen in Table 6-12, more patients at the third setting were employed full-time than at the other two settings ($F = 3.57$, $df = 2/37$, $p = .04$). Work-status was also assessed by asking subjects about the number of hours they were currently working each week. Again, there was a significant difference among settings ($F = 3.19$, $df = 2/37$, $p = .05$), with the mean number of hours worked by patients in Setting 3 more than double the hours worked by patients in either of the other two settings.

This difference in employment status and hours worked per week reflects the "chronic" nature of the third setting. Patients in Setting 3 were further from their acute event and had, for the most part, returned to full-time employment. At the other two centers, patients were often still on sick leave or were only working part-time.

In summary, despite the differences noted among the settings in duration of the treatment program and use of cardiac monitoring, no significant pattern of differences emerged on the demographic variables of the participating subjects by setting.

Treatment Groups. There was a significant difference for patient subjects among the three treatment groups on only one of the nine demographic variables measured. Patients in Experimental Group 2 had significantly higher education than patients in the other test groups ($F = 4.19$, $df = 2/37$, $p = 0.2$). Data on this variable was presented previously (Table 6-6). No significant differences existed for spouse subjects among the three treatment groups on any of the demographic variables.

Table 6-11

Comparison of Sample Charateristics at Time 1 by Setting and Group

	Patient			Spouse		
	Setting	Group	Interaction	Setting	Group	Interaction
Sex	NS	NS	NS	NS	NS	NS
Age	NS	NS	NS	NS	NS	NS
Years Married	NS	NS	NS	NS	NS	NS
# Children	NS	NS	NS	NS	NS	NS
# Children -in-Residence	NS	NS	NS	NS	NS	NS
Education	NS	p=.02	NS	NS	NS	NS
Income	NS	NS	NS	NS	NS	NS
Employment	p=.04	NS	NS	NS	NS	NS
Occupation	NS	NS	NS	NS	NS	NS

Table 6-12

Patient Subjects' Employment Status by Setting at Time 1

Employment Status	Setting 1		Setting 2		Setting 3	
	N	%	N	%	N	%
Full-time	6	31.58	3	23.08	9	64.29
Part-Time	2	10.53	5	38.46	3	21.43
Unemployed	1	5.26	1	7.70	1	7.14
Retired	7	36.84	2	15.38	1	7.14
Sick Leave	3	15.79	2	15.38	0	0
Total	19	100.00	13	100.00	14	100.00

Section II: Initial State of Dependent Variables: A Comparison among Settings and Treatment Groups

The analysis of sample characteristics described in the previous section was extended to the 18 dependent variables identified for study. By performing the same two way analysis of variance on the dependent variables measured on entry into the study (Time 1), it was anticipated that initial differences among the subject groups and/or settings would be identified, thus revealing potential biases in sample selections. A summary of these findings is presented in Table 6-13. The data on which the analysis of variance was based is presented in Section IV, and to avoid duplication of tables that section is referenced in the following discussion.

Settings

A two-way analysis of variance revealed differences among the patients by setting on six of the nine variables related to self-concept: total positive self esteeem ($F = 5.47$, $df = 2/37$, $p = .01$), sense of identity ($F = 4.57$, $df = 2/37$, $p = .02$), behavioral self-concept ($F = 8.45$, $df = 2/37$, $p = .001$), physical self-concept ($F = 5.45$, $df = 2/37$, $p = .01$), personal self concept ($F = 4.53$, $df = 2/37$, $p = .02$); and social self ($F = 3.61$, $df = 2/37$, $p = .04$). The analysis of variance also established a within group variance on the variable of weekly exercise ($F = 3.79$, $2/38$, $p = .03$). In reviewing the data, the four patients in Experimental Group 1 at Setting 2 appear to be the source of the variance. The significance of this variance will be discussed in Chapter Seven.

Table 6-13

Two-way Analysis of Variance on Dependent Variables at Time 1 by Setting and Treatment Group

	Patient			Spouse		
Variable	Setting	Group	Interaction	Setting	Group	Interaction
Anxiety	NS	p=.05	NS	NS	NS	NS
Depression	NS	NS	NS	NS	p=.05	NS
Hostility	NS	NS	NS	NS	p=.01	NS
Marital Satisfaction	NS	NS	NS	NS	NS	NS
Self esteem	p=.01	NS	NS	NS	NS	NS
Identity	p=.02	NS	NS	NS	NS	NS
Satisfaction	NS	NS	NS	NS	NS	NS
Behavior	p=.001	NS	NS	NS	NS	NS
Physical	p=.01	NS	NS	NS	NS	NS
Moral-ethical	NS	NS	NS	NS	NS	NS
Personal	p=.02	NS	NS	NS	NS	NS
Family NS	NS	NS	NS	NS	NS	.04
Social	p=.04	NS	NS	NS	NS	NS
Smoking	NS	NS	NS			
S.B.P	NS	NS	NS			
D.B.P	NS	NS	NS			
T.S.F	NS	NS	NS			
Exercise	p=.03	NS	NS			

Interestingly, no differences were established for spouse subjects among the settings on any of the 13 dependent variables identified for study. Thus, the positive outlook reported by the Setting 1 patients in Experimental Group 1 were not shared equally by their mates.

Treatment Groups

The two way analysis of variance revealed few differences among the three treatment groups. At time of study entry, patients in the Control Group reported significantly lower anxiety than patients in either of the experimental groups ($F = 3.26$, $df = 2/37$, $p = .05$). This was the only difference among treatment groups for patients. Spouses in Experimental Group 1 reported significantly higher depression ($F = 3.33$, $df = 2/37$, $p = .05$) and hostility ($F = 5.01$, $df = 2/37$, $p = .01$) than spouses in either Experimental Group 2 or the control group. No other differences were established for spouses among treatment gorups.

Thus, at time of entry into the study the three treatment groups were relatively equivalent in relation to variables identified as manifestations of role insufficiently and mastery of the at risk role.

Summary

Despite the investigator's inability to randomly assign subjects to one of the three treatment groups, no significant biases were revealed among the three groups using a one-way analysis of variance test statistic for differences within-groups. Thus, the results of the experimental manipulations cannot be ascribed to individual differences among the treatment groups at baseline on either demographic

characteristics (i.e., intervening variables) or on the variables identified as manifestations of role insufficiency/mastery, but can be assumed to have occurred on the strength of the nursing interventions tested in this dissertation study.

Section III: Attrition of Subjects in Study Sample

Four couples dropped out of the study for a total attrition rate of 8.7%. Three couples of the four couples were in Experimental Group 1. One couple completed the role supplementation program at Center 1, but one week prior to the six month follow-up the couple separated. The wife was lost to follow-up and the husband refused to fill out the final set of questionnaires, stating that he was too distraught to do so. Two couples at Center 3 attended the first group meeting but then withdrew from the study. The first couple was approximately 20 years older than the other group participants and stated that this age difference made them uncomfortable. The second couple stated they were having severe marital problems and requested referral to a marriage counselor. They also withdrew from the study in the second week. The withdrawal of six subjects from the original 32 subjects in Experimental Group 1 equaled a 18.8% drop-out rate in this treatment group.

No subjects dropped out of Experimental Group 2. One couple in the control group dropped out after filling out the initial questionnaires. They were going to be out of the country at the times scheduled for the two post tests and, therefore, withdrew from participation. Twentyeight of the 30 subjects in the control group completed the study, giving a 6.7% drop-out rate.

In summary, eight of the 92 research subjects dropped out of the study for a total attrition rate of 8.7%. A comparison with previous studies of this type cannot be made, since a group intervention that involved both cardiac patients and their spouses has not been reported. However, in two studies that involved group intervention for cardiac patients, the investigatiors did describe drop-out rates. Rahe and colleagues (1973) reported that two patients dropped out of his study's experimental group of 38 (5.3%) and one dropped out of the control group of 22 (4.6%). In the study by Ibrahim and colleagues (1974), nine patients dropped out of the experimental group of 58 (15.5%) and 10 patients dropped out of the control group of 60 (16.6%). Thus, the drop-out rate in the study reported here was similar to those described by previous investigators.

Section IV: Testing of Hypotheses

Each of the 31 subhypothesis posed for testing were accepted or rejected based on a repeated measures analysis of variance and covariance, with a level of confidence set at .05. The statistical analysis provided information about the significance of the treatment effects over time. Given the large number of subhypotheses to be discussed in this section, a summary of significant findings is presented in Tables 6-14 and 6-15 to orient the reader. The statistical analyses on which these tables are based are summarized in Appendices I 1 and 2.

In this section each of the subhypotheses are presented. The data related to the subhypothesis is summarized in corresponding tables

placed in Appendices J 1-31. Each table provides mean scores and standard deviations for the three treatment groups at each center for the dependent variable measured. A combined total of the mean scores and standard deviations across treatment centers is also presented. A summary of the results of the repeated meausres analysis of variance and covariance for group effect is also included in the Appendix Section. In those cases where the F ratio is significant, a graph appears within this section to illustrate the direction of the significance. If an interaction occured between center and treatment group ($p<.05$), the results are graphed for each of the three centers, rather than for the pooled centers.

Research Questions Related to Role Insufficiency of Patients

The first two research question were:

1. Does participation in a role supplementation program decrease the role insufficiency experienced by cardiac patients?
2. Does the inclusion of spouses in a role supplementation program decrease the amount of role insufficiency experienced by patients more than when patients meet alone, i.e., without spouses present?

These two research questions were answered by 13 subhypotheses which reflect five dependent variables identified in this dissertation as manifestations of role insufficiency. The dependent variables in this category were defined in Chapter Four.

Table 6-14

Significance of Repeated Measures Analysis of Variance and Covariance for Varibles Reflecting Role Insufficiency by Time, Group, and Center*

Variable	Patient (N = 46)				Spouse (N = 46)			
	Time	Group	Center	Inter-action	Time	Group	Center	Inter-action
Anxiety	NS	NS	NS	NS	NS	p=.05	NS	NS
Depression	NS	NS	NS	NS	NS	NS	NS	NS
Hostility	NS	NS	NS	NS	p=.05	NS	NS	NS
Marital Satisfaction	NS	NS	NS	NS	NS	NS	NS	NS
Self-esteem	NS	NS	p=.04	NS	NS	p=.02	NS	p=.02
Identity	NS	NS	NS	NS	NS	NS	NS	p=.03
Satisfaction	NS	NS	NS	NS	NS	NS	NS	NS
Bahavioral Self	NS	p=.02	NS	p=.04	NS	p=.03	NS	p=.05
Physical Self	NS	NS	NS	NS	NS	p=.04	NS	NS
Moral-ethical Self	NS	NS	NS	NS	NS	p=.02	NS	NS
Personal Self	NS	p=.02	NS	NS	NS	NS	NS	NS
Self as Family Member	NS	NS	NS	NS	NS	p=.01	NS	NS
Social Self	NS	NS	NS	NS	NS	NS	NS	p=.003

* p values reported based on Greenhouse-Geisser

Table 6-15

Significance of Repeated Measures Analysis of Variance and Covariance for Variables Reflecting Role Mastery in Patient Subjects (N = 46) by Time, Group, and Center

Variable	Time	Group	Center	Interaction
Cigarette Use	NS	NS	NS	NS
Systolic Blood Pressure	NS	p = .04	NS	NS
Diastolic Blood Pressure	NS	NS	NS	NS
Tricep's Skin Fold	NS	p = .004	NS	NS
Weekly Exercise	NS	NS	p = .03	NS

Subhypotheses Related to Role Insufficiency of Patient Subjects

Affective States:

1. Patients in Experimental Group 1 will report lower anxiety scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower anxiety scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality ($p=.46$, see Appendix J 1). Patients in Experimental Group 1 experienced a marked decrease in anxiety when compared to patients in the other two groups. Patients in Experimental Group 2 evidenced a decrease in anxiety immediately following the role supplementation program, but their anxiety increased slightly above the pretest level at the six month follow-up. Patients in the control group experienced an increase in anxiety at three months when compared to the baseline measurement, and this increase in anxiety was maintained at six month follow-up. Thus, the trends of the changes in anxiety supported the hypothesis.

Interestingly, the patients in the control group were significantly less anxious upon entry into the study than the patients in either of the experimental groups ($p< .05$). However, none of the mean values of the experimental groups exceeded the norm established by Zuckerman and Lubin (1965) of 6 to 8. Thus, the mean averages for the groups at all three testing times reflected relatively normal anxiety levels.

2. Patients in Experimental Group 1 will report lower depression scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower depression scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.67, see Appendix J 2). There was a marked, sustained decrease in the depression scores of patients in Experimental Group 1. Patients in Experimental Group 2 also had a decrease in depression over the six month follow up, but it was not as marked as for patients in the patient-spouse groups. Patients in the control group had a decrease in depression at three months that returned to pretest levels at six month follow-up.

3. Patients in Experimental Group 1 will report lower hostility scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower hostility scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.58, see Appendix J 3). Patients in all three groups experienced a decrease in hostility at three months, but this decrease was only sustained at six months follow-up for patients in Experimental Group 1. Interestingly, patients in the control group reported a marked increase in hostility at the last follow-up when

compared to the first testing. Again, as with anxiety and depression, the trends support the hypothesis, i.e., that patients in the patient-spouse groups experienced the least hostility on posttest when compared to patients in Experimental Group 2 and the control group.

Marital Satisfaction:

4. Patients in Experimental Group 1 will report higher marital adjustment scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher marital adjustment scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality ($p=.50$, see Appendix J 4). Patients in the patient-spouse groups reported a slight increase in marital adjustment immediately following the role supplementation program. This is in contrast to patients in the other two groups, who reported a decrease in marital adjustment at the three months follow-up. However, all three groups reported a decrease in marital adjustment at six months when compared to time of entry into the study.

Components of Self Concept:

5. Patients in Experimental Group 1 will report higher positive self esteem scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental

Group 2 will report higher positive self esteem scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.10, see Appendix J 5). Patients in Experimental Group 1 had a marked increase in feelings of self-esteem, and this increase continued at six month follow-up. In contrast, patients in the control group had a marked decrease in feelings of self-esteem that continued at six month follow-up. Patients in the patient-only groups experienced an increase in self esteem following the role supplementation program, but these positive changes were not completely sustained at six month follow-up.

6. Patients in Experimental Group 1 will report higher identity scores at post test than at pre test when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher identity scores at post-test than at pre-test when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.26, see Appendix J 6). The patients positive view of themselves increased in both experimental groups following the intervention, but this positive trend only continued for patients in Experimental Group 1. The control group experienced a small but consistent decrease in positive feelings of self over the three testing periods. Thus the change trends were in the direction predicted

by the hypothesis.

7. Patients in Experimental Group 1 will report higher self satisfaction scores at posttest than at pretest when compared to patients in experimental group 2. Furthermore, patients in Experimental Group 2 will report higher self satisfaction scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.58, see Appendix J 7). Patients in both of the experimental groups experienced an increase in self-acceptance following the intervention program, and this trend continued at six-months. Patients in the control group experienced a decrease in their satisfaction with themselves at three month follow-up, although this perception had altered in a positive direction at six months.

8. Patients in Experimental Group 1 will report higher satisfaction with their behavior scores at post test than at pre test when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher behavior scores at posttest than at pretest when compared to patients in the Control Group.

The data were found to differ significantly for the statistical null hypothesis of equality among groups (p=.02, see Appendix J 8). Now

let us consider the patterns in the data in light of subhypothesis 8.

Patients in Experimental Group 1 viewed their behavior as increasingly adequate and appropriate following the role supplementation program. Patients in Experimental Group 2 also had a positive but less marked change in their behavior scores. Patients in the control group felt no differently at three month follow-up when compared to baseline, but felt their behavior to be less adequate at the six month follow-up.

The repeated measures analysis of variance and covariance indicated the presence of an interaction effect between the groups and centers (df = 8, F = 2.29, p = .04) and, therefore, the changes are graphed for each center rather than for the pooled groups (Figure 6-1).

9. Patients in Experimental Group 1 will report higher physical self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher physical self scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.53, see Appendix J 9). Patients in Experimental Group 1 reported an increase in positive feelings about their physical condition and sexuality, which is a component of self concept, following the intervention program, and this positive change was sustained at the six month follow-up. Patients in Experimental Group 2 experienced an increase in this aspect of self-concept, but at

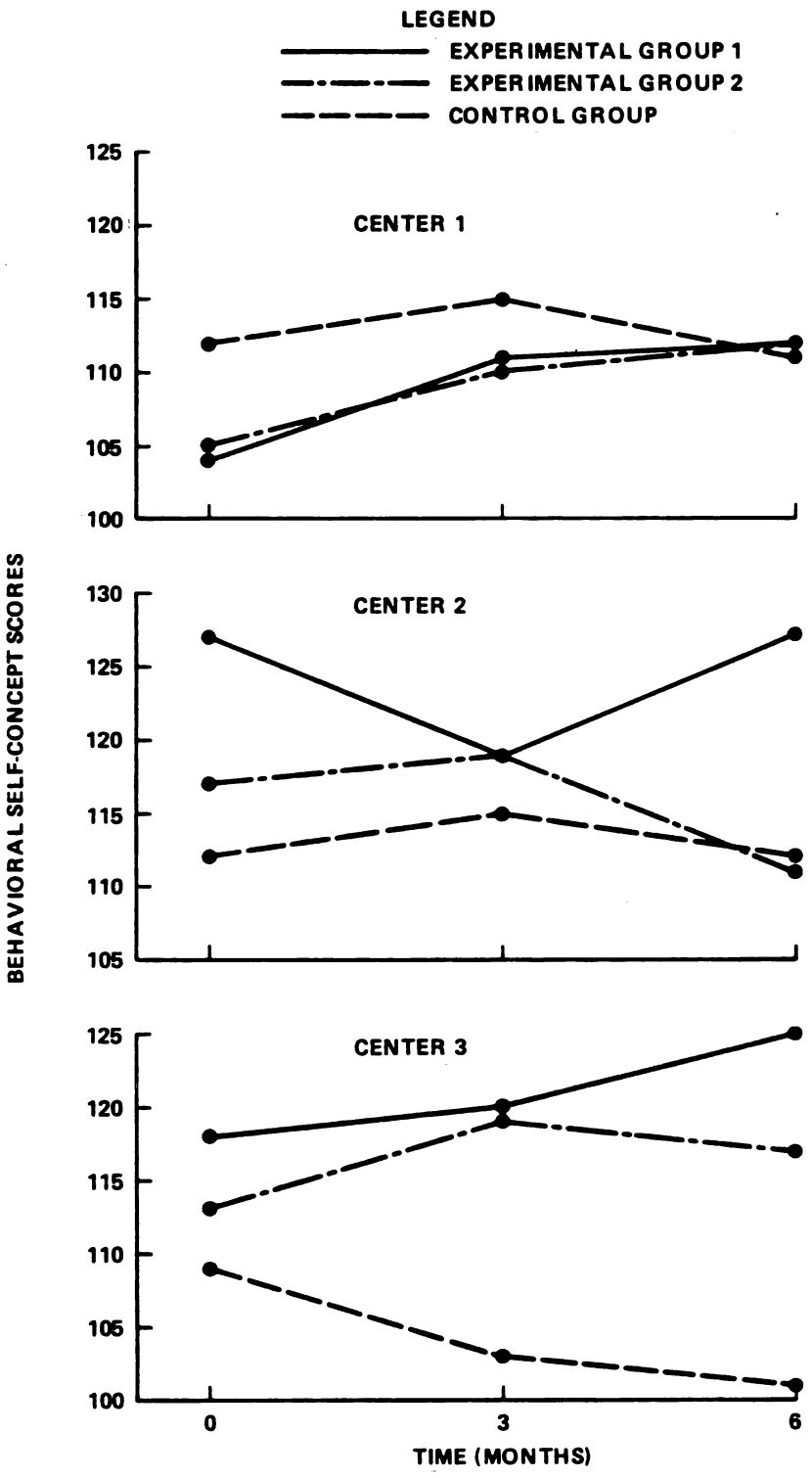


Figure 6-1. Changes in Patient Subjects' Behavioral Self Concept over Time

six months this change had returned to near baseline. Patients in the Control Group reported a decrease in positive feelings about their physical self at both three months and six months follow-up. Thus, trends of change were in the predicted direction.

10. Patients in Experimental Group 1 will report higher moral-ethical self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher moral-ethical self scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly from the statistical null hypothesis of equality among groups ($p=.61$, see Appendix J 10).

Patients in Experimental Group 1 reported increased satisfaction with their religious beliefs and feelings of moral worth at six month follow-up when compared to baseline. Patients in Experimental Group 2 reported higher moral-ethical self scores at the first posttest, but this improvement was not sustained at the second posttest. Patients in the Control group reported no significant change on this dependent variable at three and six months when compared to baseline. Thus, trends of change were in the predicted direction.

11. Patients in Experimental Group 1 will report higher personal self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2

will report higher personal self scores at posttest than at pretest when compared to patients in the Control Group.

The data were found to differ significantly from the statistical null hypothesis of equality among groups (p=.02, see Appendix J 11). The patterns in the data are seen in Figure 6-2. The patients in Experimental Group 1 reported an increase in feelings of adequacy and personal worth immediately following the role supplementation program, and these perceptions became even more positive at the six month follow-up. Patients in Experimental Group 2 reported a similar increase in feelings of personal worth following the program, and these changes were sustained at six month follow-up. The changes in this group, however, did not continue to increase following the first posttest evaluation as they did for subjects in Experimental Group 1. Patients in the Control Group reported no change in this variable at three months, but then reported a decrease at the final testing.

12. Patients in Experimental Group 1 will report higher family self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher family self scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.69, see Appendix J 12). Patients in Experimental Group 1 reported a slight decrease in their feelings of

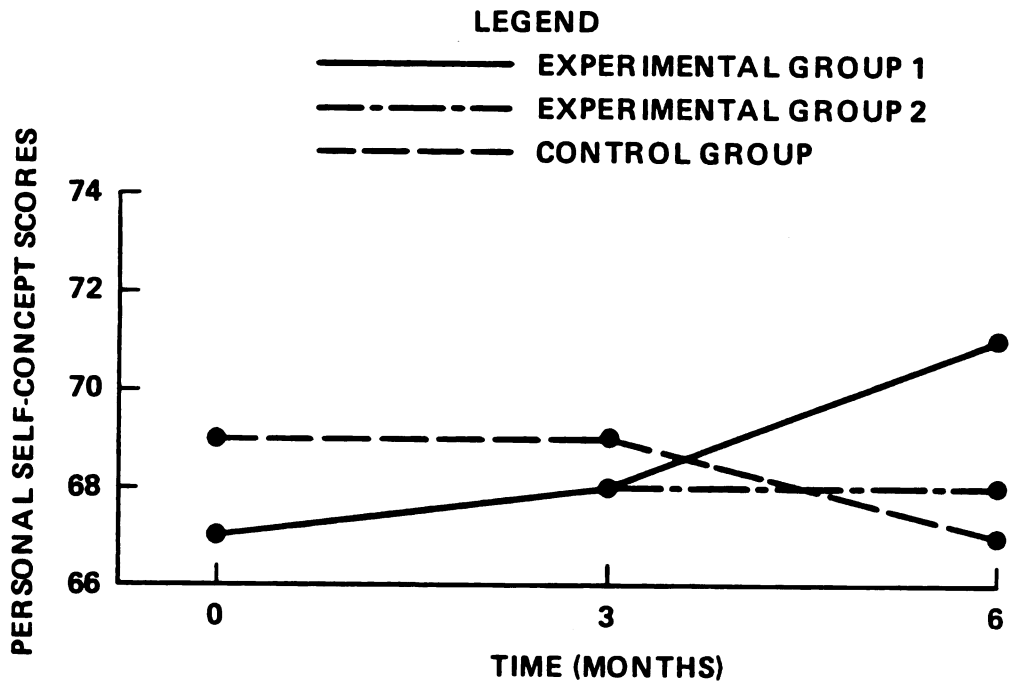


Figure 6-2. Changes in Patient Subjects' Personal Self Concept over Time

adequacy and value as family member immediately following the role supplementation program. However, these feelings become more positive when tested at the six month follow-up. Patients in Experimental Group 2 reported increasingly positive feelings of worth as a family member over the two posttest periods, while patients in the Control Group reported a dramatic increase in these feelings.

In summary, the trends of the changes were contrary to these predicted by the hypothesis, with the Control Group subjects reporting the most positive feelings on this subscale.

13. Patients in Experimental Group 1 will report higher social self scores at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher social self scores at posttest than at pretest when compared to patients in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.09, see Appendix J 13). However, the trend of the reported changes was in the direction predicted by the hypothesis.

The patients in Experimental Group 1 reported an increased sense of adequacy and worth in their social interactions with people outside their family immediately following the role supplementation program, and these feelings were even more positive at the six month follow-up. The patients in Experimental Group 2 reported an increase in these positive feelings immediately following the program, but the six month follow-up

revealed a slight decrease in these scores (although they were still above baseline). The patients in the Control Group reported a continuing decline in their sense of social worth over the two posttest periods.

Summary

The answer to the first two research questions posed, namely, "does participation in a role supplementation program decrease the role insufficiency experienced by cardiac patients?", and "does the inclusion of spouses in such a program decrease the amount of role insufficiency experienced by patients more than when patients meet alone?" is answered in the negative.

Thirteen dependent variables were identified as manifestations of role insufficiency. Although eleven of these varibles changed in the direction predicted by the major hypothesis, only two reached a level of significance in a repeated measures analysis of variance and covariance. The two variables were components of the self concept, i.e., satisfaction with one's behavior and personal self. It is noted that the trends for anxiety, depression, hostility, and eight dependent variables related to self concept changed in a positive direction for those subjects who participated in the role supplementation program. Moreover, the changes that reflected a decrease in role insufficiency were more marked for those patients whose wives or husbands participated in the experimental program than for patients whose spouses did not participate.

The Research Questions Related To Role Insufficiency of Spouses

The third research question asked in the dissertation was: does participation in a role supplementation program decrease the role insufficiency experienced by spouses of cardiac patients? As described in the previous section, role insufficiency was viewed not as a single entity but as a constellation of affective states. Thirteen dependent variables were identified as manifestations of role insufficiency, and, just as for patients in the study, 13 subhypotheses were formulated to determine the relationship of a role supplementation program for spouses to the 13 variables previously identified as manifestations of role insufficiency. Each of these subhypotheses will be discussed in order.

Subhypotheses Related to Role Insufficiency of Spouse Subjects

Affective Status:

14. Spouses in Experimental Group 1 will report lower anxiety scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups ($p=.05$, see Appendix J 14). The trends of the changes are presented in Figure 6-3.

Spouses in Experimental Group 1 had a dramatic decrease in reported anxiety levels following the role supplementation program. Their anxiety approached baseline levels at six month follow-up. Spouses in Experimental Group 2, who did not participate in a role supplementation program, reported an increase in anxiety over the two posttest periods

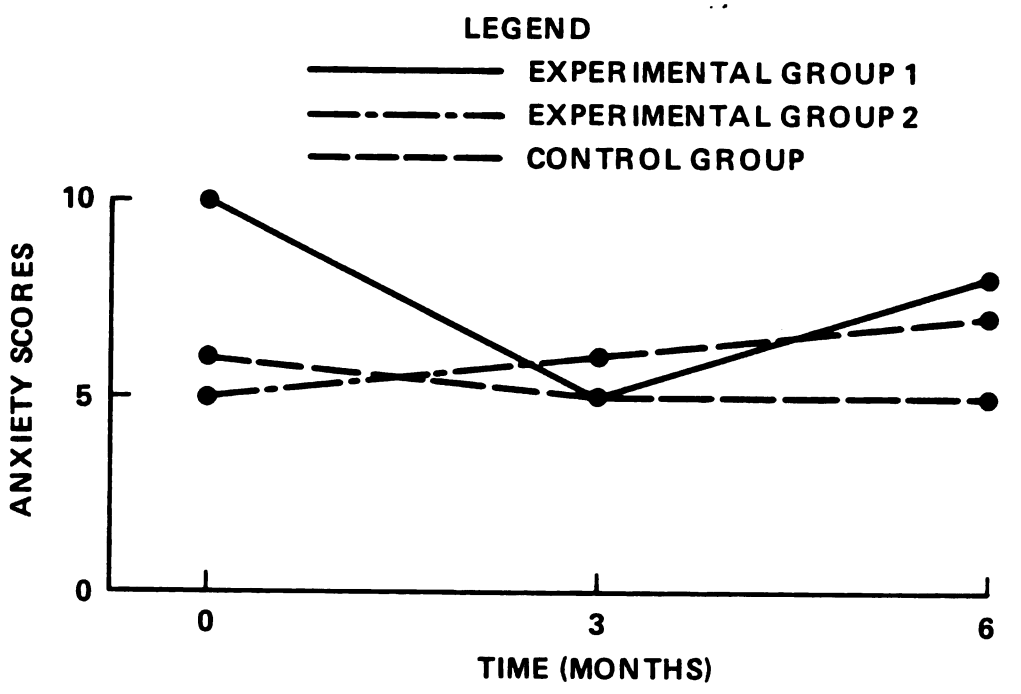


Figure 6-3. Changes in Spouse Subjects' Anxiety over Time

as compared to baseline. In contrast, spouses in the control group reported a continuing decrease in anxiety over the follow-up period, but this decrease was not as marked as the decrease noted in Experimental Group 1, even given the increase noted in the latter at six months follow-up.

15. Spouses in Experimental Group 1 will report lower depression scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.17, see Appendix J 15). There was a marked decrease in the depression scores of spouses in Experimental Group 1 at three months follow-up when compared to spouses in the other two groups, but this difference was not statistically significant. By six months, the depression score of Experimental Group 1 had almost returned to the baseline level. There was a slight increase in Experimental Group 2 spouses reported depression at three-months follow-up, but this pattern reversed in the six month follow-up. In contrast to the other two groups, there was a small but continuing decrease in depression scores of the Control Group spouses.

16. Spouses in Experimental Group 1 will report lower hostility scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.13, see Appendix J 16). Although there was a significant decrease in the hostility scores of the Experimental Group 1 spouses from baseline to three months follow-up, this decrease was not sustained at the final posttest. Spouses in Experimental Group 2 showed no difference in this dependent variable at the first posttest, but at six months a marked increase was noted. Hostility scores in the Control Group spouses remained relatively constant throughout the three testing periods.

Marital Satisfaction:

17. Spouses in Experimental Group 1 will report higher marital adjustment scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.18, see Appendix J 17). In fact, contrary to the direction predicted by the hypothesis, spouses in Experimental Group 1 reported a decrease in marital adjustment following the role supplementation program, and this decrease was even more marked at six months follow-up. A similar decrease was noted for the spouses in the other two groups at the first post-test (i.e., three months), but Experimental Group 2 reported a slight increase in martial adjustment at six months follow-up.

Components of Self Concept:

18 Spouses in Experimental Group 1 will report higher positive self esteem at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

These data were found to differ significantly for the statistical null hypothesis of equality among groups ($p = .02$, see Appendix J 18). Now let us consider the patterns in the data in light of subhypothesis 18.

In examining the average scores for all centers it is apparent that spouses in Experimental Group 1 reported no significant change in self-esteem immediately following the role supplementation program, but at six month follow-up there was a marked increase in self-esteem. A repeated measures analysis of variance established a significant difference for spouses participating in the experimental program when compared to spouses who had not participated in the intervention.

Spouses in Experimental Group 2 and the Control Groups reported a slight increase in feelings of self-esteem at three month follow-up, but this increase was lost at six month follow-up. In fact, spouses in the control group reported a marked decrease in these positive feelings at six month follow-up when compared to entry into the study.

The repeated measures analysis of variance and covariance indicated the presence of an interaction among the group, centers and time effects ($df = 4$, $F = 3.20$, $p = .02$). Therefore the changes are graphed for each center rather than for the pooled groups (Figure 6-4).

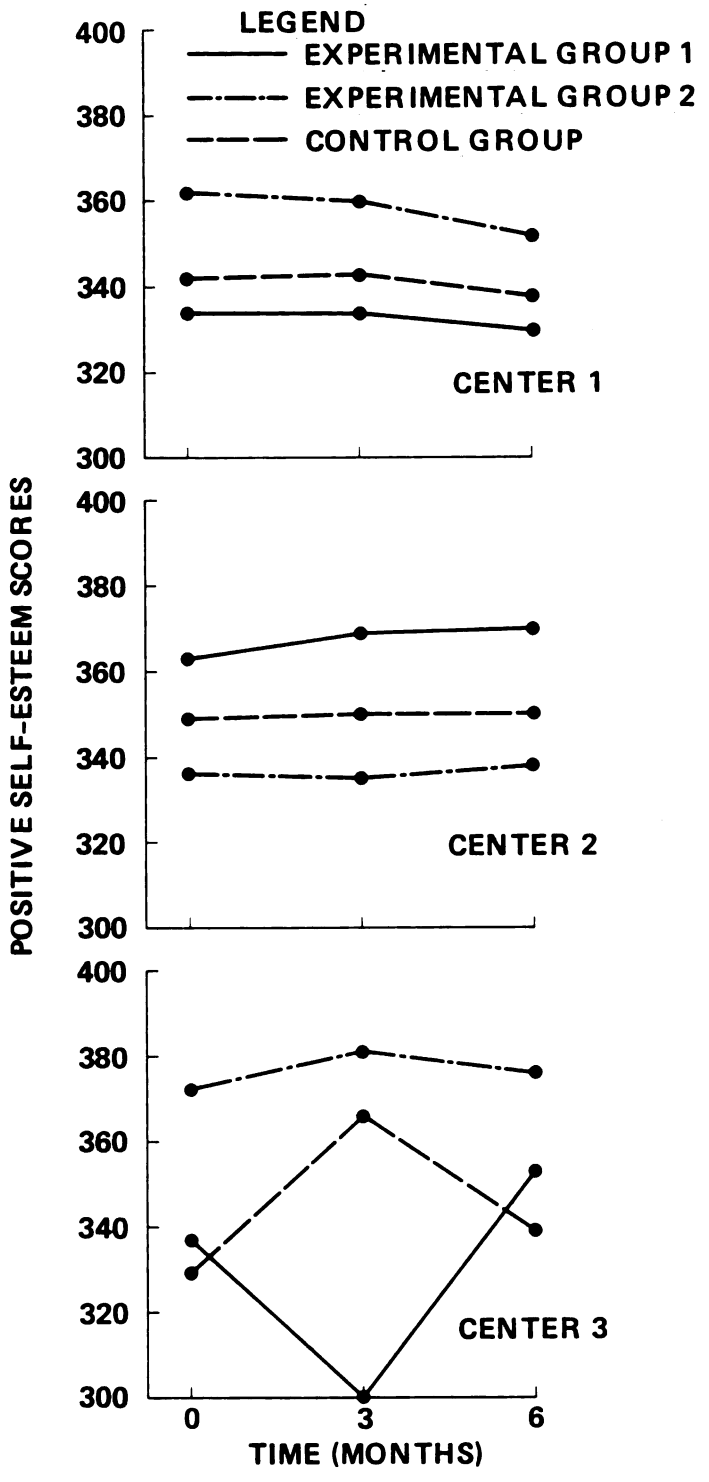


Figure 6-4. Changes in Spouse Subjects Positive Self Esteem over Time

19 Spouses in Experimental Group 1 will report higher identity scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.23, see Appendix J 19). Spouses in all three groups reported no change or a slight decrease in their positive feelings of basic identity at the three months testing period. Spouses in the role supplementation program did report an increase in their positive feelings related to identity at six months. Spouses in the other two groups reported a decrease in this variable. Thus, the trend was in the direction predicted by the hypothesis, but the changes did not reach a level of significance.

20. Spouses in Experimental Group 1 will report higher self satisfaction at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.07, see Appendix J 20). Spouses in all three groups reported a slight increase in their feelings of satisfaction with themselves at three months follow-up, with the most marked increase occuring in the control group. However, these feelings of self-acceptance decreased at six months for spouses who did not participate in the role supplementation program. In contrast, spouses in Experimental Group 1 reported an increase in self satisfaction at six

month follow-up, but the repeated measures analysis of variance documented the change at a p value of .06. Thus, the change was not considered significant, although the trend was in the direction predicted by the hypothesis.

21 Spouses in Experimental Group 1 will report higher behavioral self concept scores at post-test than at pre-test when compared to spouses in Experimental Group 2 and in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups (p.03, see Appendix J 21). The patterns of change are presented in Figure 6-5 by individual center since an interaction occurred among the three factors of group, center, and time (df = 8, F = 2.19, p = .047).

In reviewing the change trends, the results at Center 1 and 2 support the research hypothesis. Center 3 reflects surprising trends at three months, distinctly opposite to those predicted. These same trends were consistent at the third center in all the dependent variables related to self concept, but the reasons for this divergence from the predicted directions are not clear.

22 Spouses in Experimental Group 1 will report higher physical self scores at post-test than at pre-test when compared to spouses in Experimental Group 2 and in the Control Group.

The data were found to differ significantly from the statistical null hypothesis of equality among groups (p.05, see Appendix J 22). Now

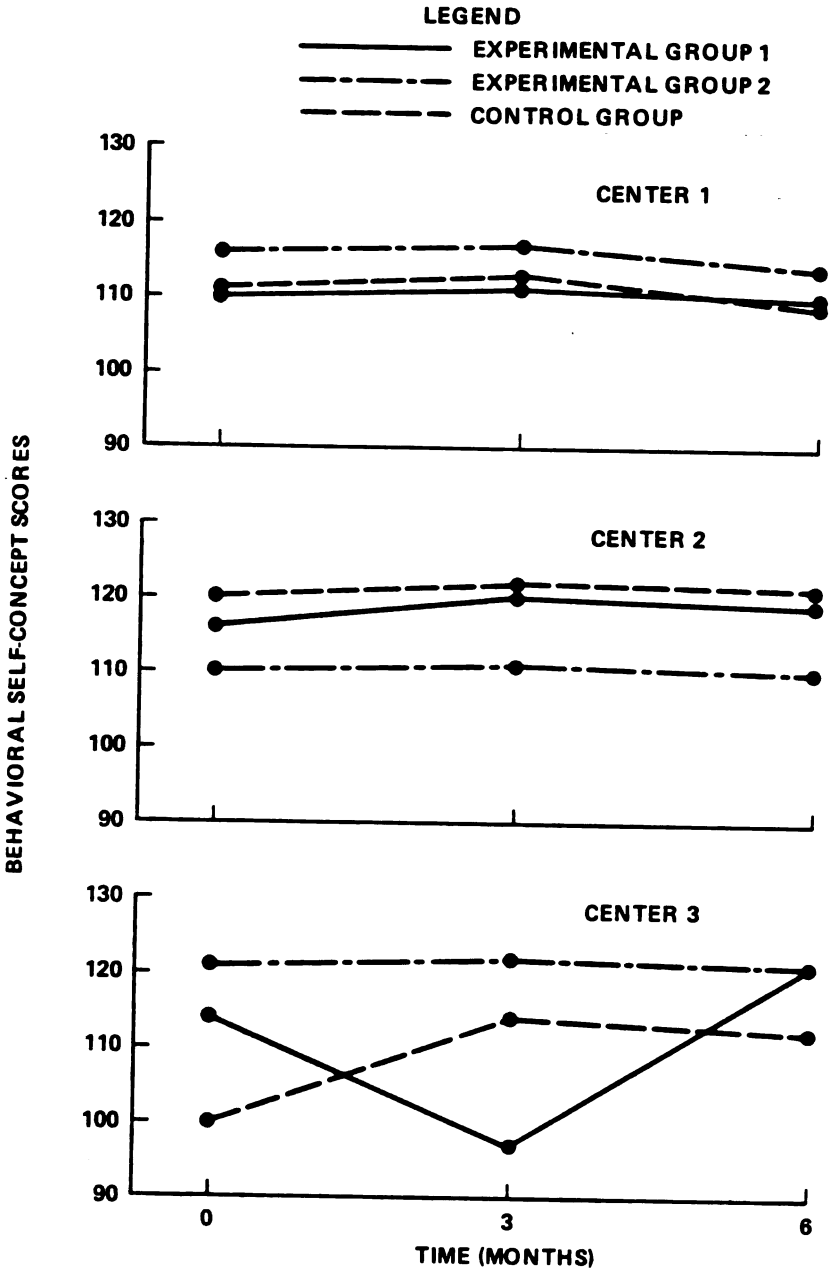


Figure 6-5. Changes in Spouse Subjects' Behavioral Self Concept over Time

let us consider the patterns in the data in light of subhypothesis 22. Spouses in the role supplementation program reported a continuing and significant increase over the six month follow-up in their positive perceptions of their state of health, physical appearance and sexuality. In contrast, spouses in the control group reported a continuing decrease in physical self scores on posttest. Spouses in Experimental Group 2 reported no change increase in this variable over the six months follow-up (Figure 6-6). The changes were therefore in the direction predicted.

23. Spouses in Experimental Group 1 will report higher moral-ethical self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups (p .02, see Appendix J 22). Now let us consider the patterns in the data in light of subhypothesis 23. Spouses in all three groups reported a slight increase at the first posttest (i.e. at three months) in their satisfaction with their moral worth and their religious belief system. However, at six month follow-up, spouses who did not participate in the role supplementation program expressed less satisfaction with themselves from a moral-ethical frame of reference than they had at entry into the study. In contrast, spouses in Experimental Group 1 expressed a continuing increase in positive feelings about themselves on a moral-ethical dimension (Figure 6-7).

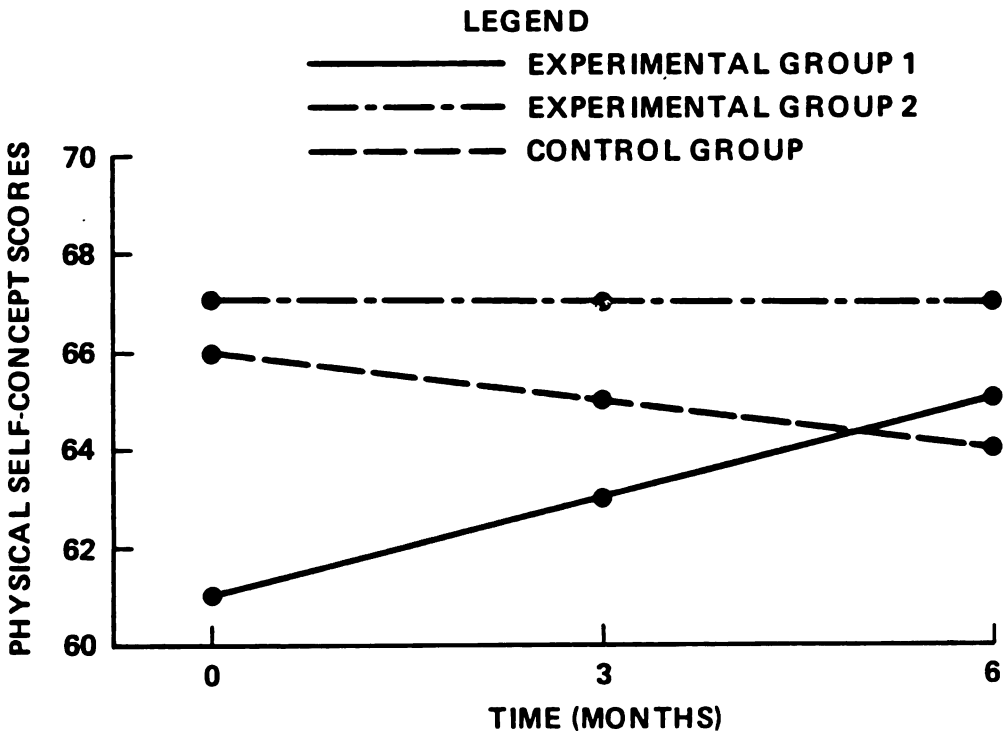


Figure 6-6. Changes in Spouse Subjects' Physical Self Concept over Time

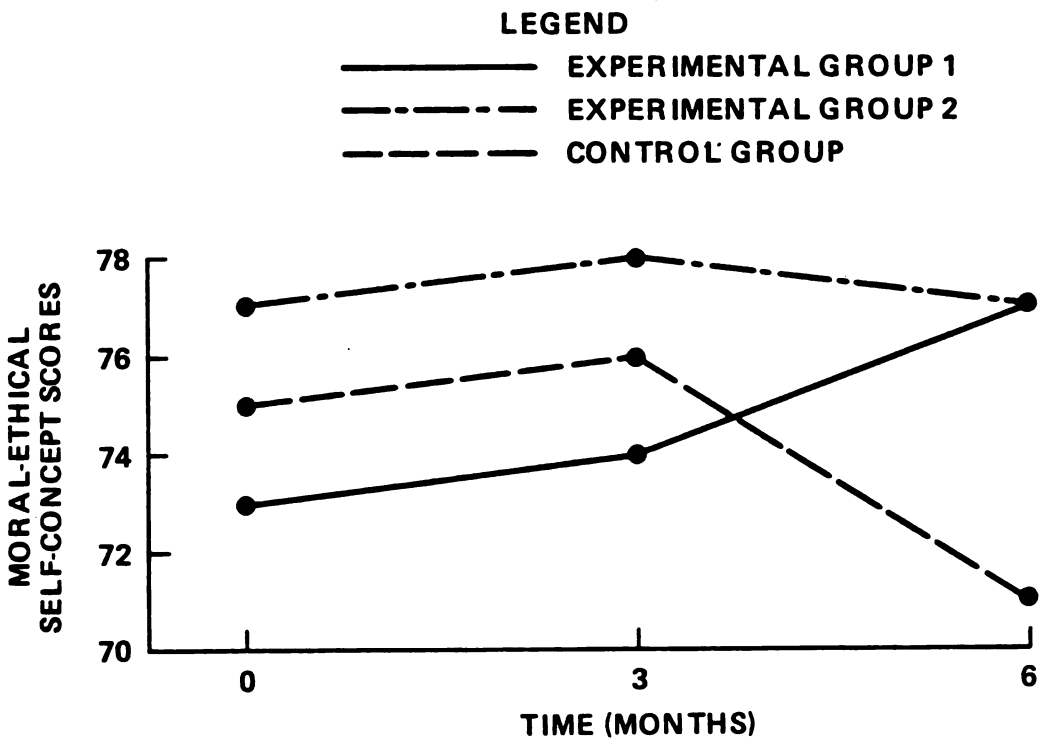


Figure 6-7. Changes in Spouse Subjects' Moral-ethical Self Concept over Time

24 Spouses in Experimental Group 1 will report higher personal self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.45, see Appendix J 24). At three months follow-up spouses in Experimental Group 2 and in the control group reported an increase in feelings of personal worth and adequacy, while spouses in Experimental Group 1 reported no change. At six months follow-up, however, spouses who participated in the experimental program reported a marked increase in feelings of personal worth when compared to spouses who did not participate. This increase was not statistically significant and the hypothesis was not supported.

25 Spouses in Experimental Group 1 will report higher family self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups (p=.01, see Appendix J 25). The patterns in the data in light of subhypothesis 25. Spouses in the supplementation program initially reported a slight decrease in their feelings of value as a family member, but at six months follow-up these feelings were more positive than at baseline. In contrast, spouses in Experimental Group 2 and the control group reported an initial increase in positive feelings of worth as a family member at three months follow-

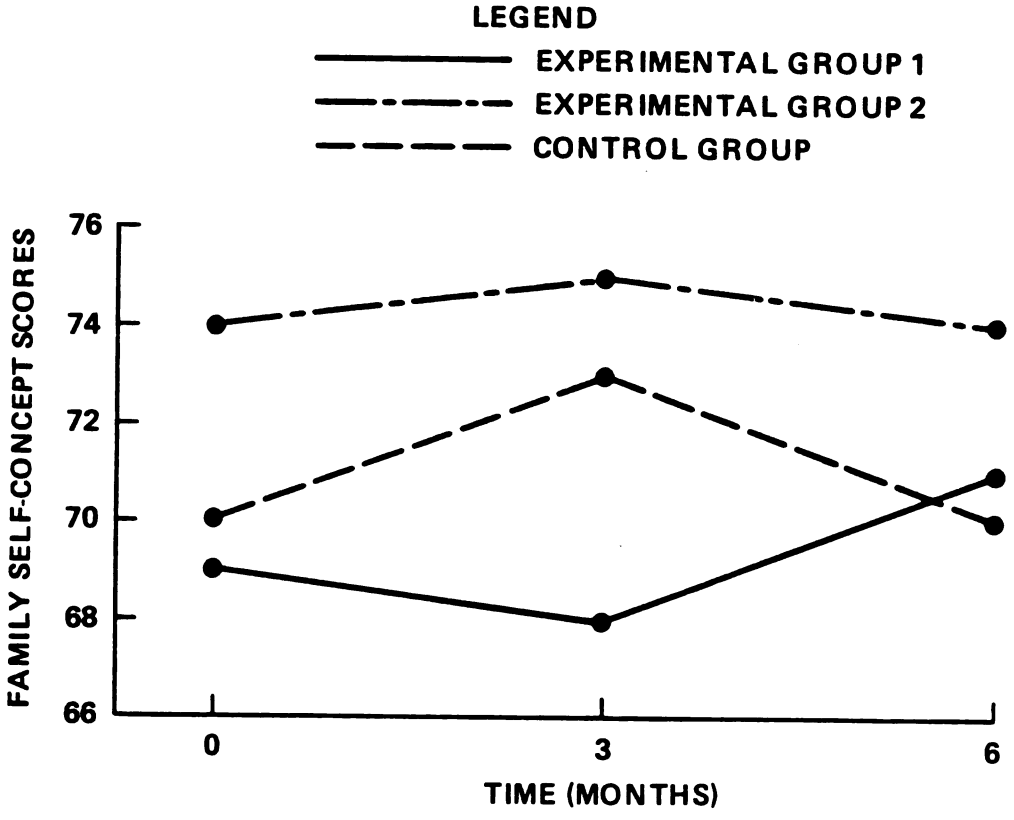


Figure 6-8. Changes in Spouse Subjects' Self Concept as Family Member over Time

up, but these scores had returned to baseline at the final posttest. Spouses who participated in the experimental program, then, evidenced a slightly positive change in this variable at final posttest.

26 Spouses in Experimental Group 1 will report higher social self scores at posttest than at pretest when compared to spouses in Experimental Group 2 and in the Control Group.

The data were not found to differ significantly for the statistical null hypothesis of equality (p=.14, see Appendix J 26). In analysing the data, no clear patterns emerge with the changes over time being quite small. Spouses in Experimental Group 1 reported a consistent decrease in their sense of adequacy and worth in social interactions over the two posttest periods. Thus, spouses in Group 1 changed in the opposite direction predicted by the hypothesis. Spouses in Experimental Group 2 reported an initial decrease in social self scores, similar to spouses in Group 1, but at the final posttest the trend reversed. Unlike the spouses in the two experimental groups, spouses in the control group reported an increase in feelings of social adequacy at the first posttest, but three months later their mean score had dropped to below the mean baseline level. In examining the mean scores at each of three centers, there was actually little change on this variable across the three posttest periods, except for the third center. In this center there were dramatic changes away from those predicted by the hypothesis at the first posttest for two of the three groups. The third setting, therefore, is responsible for the changes noted in the sum mean scores,

but it is not clear why these two groups of spouses responded differently than the other seven groups in the study.

Summary:

The answer to the third research question posed for study, namely, does participation in a role supplementation program decrease the role insufficiency experienced by spouses of cardiac patients, is answered in the affirmative. An analysis of variance showed a significant difference between groups on six of the thirteen variables measured on posttest.

Spouses who participated in the experimental program reported a significant decrease in anxiety on posttest, which was most marked at three months follow-up. Although reported depression and hostility scores were also decreased immediately following the program, the difference was not significant in the repeated measures analysis of variance and covariance.

Spouses in Experimental Group 1 also reported a significant increase in their total positive feelings of self esteem when compared to spouses who did not participate in the program. Similarily, these same spouses reported a marked increase in four of the eight sub-scales related to self esteem (as measured by the Tennessee Self Concept Scale). The four areas significantly affected were: increased satisfaction with the individual's behavior, physical appearance and state of health, moral-ethical self, and value as a family member. Three of the remaining four sub-scales relating to self concept changed in the direction predicted by the hypotheses, but these trends did not

reach significance. The three sub-scales were identity, satisfaction with self, and personal worth.

Finally, two of the dependent variables related to role insufficiency changed in a direction opposite to that predicted by the sub-hypotheses. Spouses in Experimental Group 1, like their mates, reported a decrease in marital satisfaction following participation in the role supplementation program. They also reported a decrease in their sense of adequacy in social interactions. Although these differences were not significant among groups in an analysis of variance test, the pattern is worthy of note.

It is also of great interest that the participation of patients in a role supplementation program seemed to have little or no effect on spouses when these spouses did not themselves participate in the program. Spouses in Experimental Group 2 reported similar manifestations of role insufficiency as spouses in the control group over the six month follow-up period.

Research Questions Related to Role Mastery of Patients

The fourth research question asked in the present study was: does participation in a role supplementation program increase mastery of the at risk role on the part of cardiac patients? The fifth research question was related to the fourth question: does the inclusion of spouses in a role supplementation program increase cardiac patients' mastery of the at risk role more than when patients meet alone, i.e., without spouses present.

Answers to these research questions were based on this researcher's conceptual and operational definition of mastery of the at risk role. Enactment of the role involves recognition on the part of the cardiac patient that he or she is at increased risk for a future myocardial infarction because of having documented coronary atherosclerosis. Acceptance and mastery of the at risk role demands that the patient reduce any appropriate cardiac risk factors, i.e., cigarette use, hypertension, obesity, sedentary life style, hyperlipidemia, and stress.

Five dependent variables were identified in this study as manifestations of role mastery. They were: smoking behavior, systolic blood pressure, diastolic blood pressure, body fat (measured by the triceps skin fold), and exercise level. It was postulated that a role supplementation program would result in smoking cessation, lowered systolic and diastolic blood pressures, decreased obesity, and increased physical exercise. The following five sub-hypotheses reflect the proposed relationship.

Subhypothese Related to Role Mastery of Patient Subjects:

27. Patients in Experimental Group 1 will report lower cigarette use at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report lower cigarette use at posttest than at pretest when compared to patients in the Control Group.

These data were not found to differ significantly for the statistical null hypothesis of equality (p=.58, see Appendix J 27). None of the patients in Experimental Group 1 smoked on entry into the study, and this abstinence continued throughout the follow-up period. One patient in Experimental Group 2 and one in the control group smoked at pretest, and these two subjects continued to smoke on posttest. Therefore, there was no change in this variable over the testing period for any of the three groups, since all but two of the 46 patient subjects had maximum compliance in smoking behavior throughout the study.

28 Patients in Experimental Group 1 will have a lower systolic blood pressure at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will have a lower systolic blood pressure at posttest than at pretest when compared to patients in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups (p=.04, see Appendix J 28). As

seen in Figure 6-9, patients in experimental Group 2 did indeed have a significantly lower systolic blood pressure at posttest than at pretest when compared to the control group. The blood pressure of the latter group, in fact, increased over the posttest period. Therefore, the second part of the hypothesis was accepted.

However, the decrease in systolic blood presure for the patients in Experimental Group 1 was less than that documented for Experimental Group 2 patients. The most effective intervention for this variable was the patients-only group, and therefore the first part of the hypothesis was rejected.

29. Patients in Experimental Group 1 will have a lower diastolic blood pressure at posttest than at pretest when compared to patients in Exerimental Group 2. Furthermore, patients in Experimental Group 2 will have a lower diastolic blood pressure at posttest than at pretest when compared to patients in the Control Group.

These data were not found to differ significantly for the statistical null hypothesis of equality (p=.54, See Appendix J 29). The patients in both experimental groups had a similar decrease in diastolic blood presure at three month follow-up and this trend continued for the six month follow-up of the study. Patients in Experimental Group 2 did indeed have lower diastolic pressures on posttest than the patients in the control group, but this difference was not statistically significant.

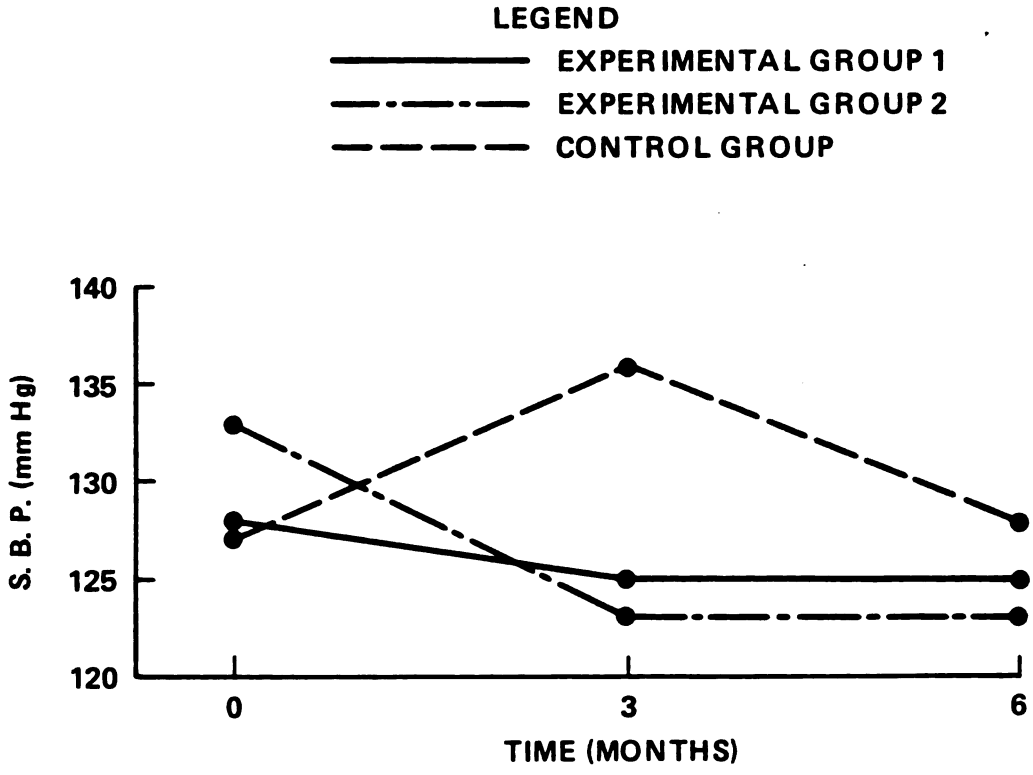


Figure 6-9. Changes in Patient Subjects' Systolic Blood Pressure (mm Hg) over Time

30 Patients in Experimental Group 1 will have lower triceps skin fold measurements at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will have lower triceps skin fold measurement at posttest than at pretest when compared to patients in the Control Group.

These data were found to differ significantly from the statistical null hypothesis of equality among groups (p=.004, see Appendix J 30). As seen in Figure 6-10, the patterns in the data supported subhypothesis. Patients in both Experimental Groups had a dramatic decrease in their tricep's skin fold measurement over the two posttest periods, but the decrease was significantly greater for patients in Experimental Group 1. Patients in the control group had a small decrease in their tricep's skin fold measurement at three months posttest, but this was followed by a sharp increase at six months.

31. Patients in Experimental Group 1 will report higher hours of exercise per week at posttest than at pretest when compared to patients in Experimental Group 2. Furthermore, patients in Experimental Group 2 will report higher hours of exercise per week at posttest than at pretest when compared to patients in the Control Group.

These data were not found to differ significantly for the statistical null hypothesis of equality (p=.31, see Appendix J 31). There was a slight increase in hours exercised per week from pretest to

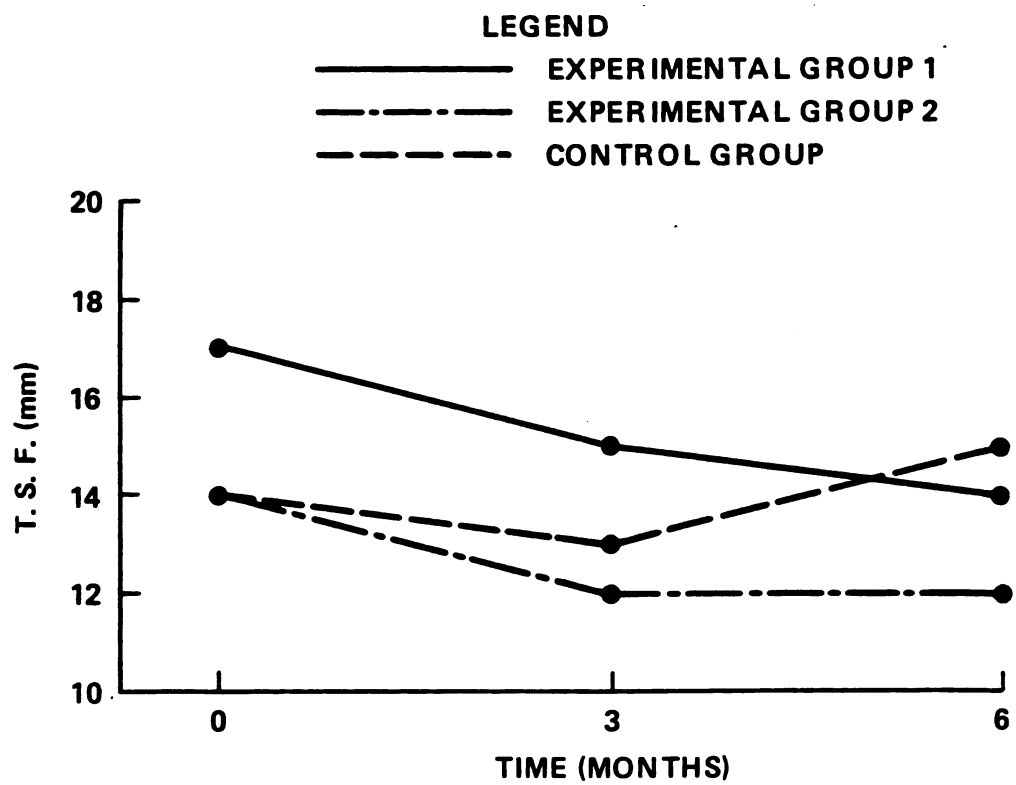


Figure 6-10. Changes in Patient Subjects' Tricep's Skin Fold Measurement (mm) over Time

first posttest (at three months) for subjects in all three groups. Patients in both Experimental Group 2 and the control group reported a decrease in exercise levels at the six month posttest, while patients in Experimental Group 1 reported a continuing increase in weekly exercise. The trend in reported exercise did support the hypothesis.

Summary:

The fourth research question asked if participation in a role supplementation program increased patients' mastery of the at risk role. Patients who participated in a role supplementation program did decrease four of the five cardiac risk factors identified as manifestitations of role mastery. On posttest these patients had lower systolic and diastolic blood pressures, lower triceps skin fold measurements (indicating decreased obesity), and higher weekly exercise levels than patients in the control group. However, only the decrease in triceps skin fold measurements reached the 0.05 level of significance. There was no change in smoking behavior following the program, but it is important to note that 30 of the 31 patients who participated in the experimental program had maximum compliance on this variable upon entry into the study.

In summary, participation in a role supplementation program did increase the patient's mastery of the at risk role, but these changes were only significant for two of the five identified variables.

The fifth research question asked if participation by spouses in the role supplementation program increased patients' role mastery more than when the patients met alone. Three of the five variables

identified in this category were effected by spouse involvement. When spouses were included patients had a significant decrease in triceps' skin fold measurements as compared to patients who met alone. ($p < .01$). Patients in Experimental Group 1 also had lower diastolic blood pessures and exercised for a longer time each week at six month follow up, when compared to patients in Experimental Group 2, but these trends were not significant. Spouse involvement did not have a significant effect on the remaining two variables, i.e., systolic blood pressure and smoking behavoir.

Morbidity and Mortality

The effect of a role supplementation program on the course of the patients' cardiac disease was addressed in the last research qustion. To review, the question asked if patients who participated in a role supplementation program had a decrease in morbidity events, i.e. fewer reinfarctions and fewer hospitalizations, and a decrease in mortality at six months follow-up. Given the relatively small number of patients in each of three groups, hypotheses were not posed.

During the study's course of six months, only three patients were re-hospitalized. One patient suffered a second myocardial infarction, a second patient was hospitalized for chest pain, but a myocardial infarction was ruled out. A third patient was hospitalized for vascular complications related to his previous coronary artery bypass graft surgery. Interestingly all three patients were in the control group. None of the patients who participated in the role supplementation program were hospitalized prior to the six month follow-up.

There were no deaths among any of the subjects at six months follow-up.

In summary, the role supplementation program did appear to have a positive effect on the course of the patient's disease. This conclusion must be viewed with extreme caution, however, given the small sample size and the relatively short period of follow-up time. Long-term effects of increased role mastery on morbidity and mortality were not examined.

Section V Evaluation of Role Supplementation Program by Participants

Following the last group session of the role supplementation program subjects filled out an evaluation form (Appendix G). Each participant was asked to describe his or her feelings about the content and length of the program. A summary of these evaluations is presented for Experimental Group 1 in Table 6-16 and for Experimental Group 2 in Table 6-17.

In reviewing these data several differences between the two groups are apparent. The participants in Experimental Group 1 felt that the program was more helpful than those in Experimental Group 2. Eightytwo percent of the first group described the sessions as very helpful while only 20% of Experimental Group 2 felt this to be so. Nintythree percent of the patients-spouse group said they would attend a similar program again, while only 60% of the patient-only group agreed. Similar differences were noted in almost all eleven areas assessed.

The participants were also asked several open-ended questions. Their responses yielded qualitative data that will be analyzed at a future date.

Table 6-16

Evaluation of Patient and Spouse Participants
in Experimental Group 1

N = 28

		Very Much		Moderately		Very Little	
1.	Attendance at meeting helped	23	(82%)	4	(14%)	1	(4%)
2.	Miss meetings now program completed	20	(71%)	6	(21%)	2	(7%)
3.	Anticipated each session	24	(86%)	3	(11%)	2	(7%)
4.	Felt group sessions personal enough	28	(100%)	0	(0%)	0	(0%)
5.	Felt group willing to discuss what participant desired	23	(82%)	5	(18%)	0	(0%)
6.	Felt comfortable discussing problems in group	22	(79%)	6	(21%)	0	(0%)
7.	Enjoyed sessions	23	(82%)	5	(18%)	0	(0%)
8.	Felt series should be unchanged in length	24	(86%)	4	(14%)*	0	(0%)
9.	Would attend a similar program again	26	(93%)	2	(7%)	0	(0%)
10.	Would recommend to other coronary patients	28	(100%)	0	(0%)	0	(0%)
11.	Would like same group leaders of sessions again	27	(96%)	0	(0%)	1	(4%)

*Thought series should be longer

Table 6-17

Evaluation of Patient Participants in Experimental Group 2

N = 15

		Very Much		Moderately		Very Little	
1.	Attendance at meetings helped	3	(20%)	9	(60%)	3	(20%)
2.	Miss meetings now program completed	4	(27%)	8	(53%)	3	(20%)
3.	Anticipated each session	5	(33%)	7	(47%)	3	(20%)
4.	Felt group sessions personal enough	13	(87%)	2	(13%)*	0	(0%)
5.	Felt group willing to discuss what participant desired	10	(67%)	5	(33%)	0	(0%)
6.	Felt comfortable discussing problems in group	11	(73%)	4	(27%)	0	(0%)
7.	Enjoyed sessions	5	(33%)	8	(53%)	2	(13%)
8.	Felt Series should be unchanged in length	10	(67%)	5	(33%)**	0	(0%)
9.	Would attend a similar program again	9	(60%)	0	(0%)	6	(40%)
10.	Would recommend to other coronary patients	13	(87%)	0	(0%)	2	(13%)
11.	Would like same group leaders of sessions again.	13	(87%)	0	(0%)	2	(13%)

* Sessions not personal enough

** 2 participants wished series to be longer
3 participants wished series to be shorter

CHAPTER SEVEN

DISCUSSION

This dissertation study will be discussed in three sections: 1) the results related to the outcome variables identified for study; 2) the themes and therapeutic benefits of the role supplementation program; and 3) the differences in the two experimental groups related to spouse involvement.

The discussion of findings must take into account the work of previous investigators. Unfortunately the vast majority of this work has been based on a psychiatric medical model, a framework quite different than the one used in this dissertation. For example, the four studies performed to date to evalute the effects of a group intervention for cardiac patients used a group psychotherapy model to define the strategies employed and the outcome variables measured (Adsett & Bruhn, 1968; Ibrahim et al., 1974; Mone, 1970; Rahe et al., 1973). Nonetheless, these studies did involve the same population, namely, cardiac patients and spouses, and, in many cases, measured dependent variables identical to those measured in this dissertation study. Therefore, similarities and differences in the findings of these four studies, as well as in the body of literature reviewed in Chapter Two, will be addressed in the following discussion.

Section 1: Results Related to Outcome Variables Identified for Study

Three categories of outcome variables were measured in this dissertation study: the first category included those variables that

were identified as manifestations of role insufficiency; the second encompassed variables that reflected successful mastery of the "at risk" role; and the third reflected changes in the course of disease. Each category will be discussed in order after first reviewing the characteristics of the study sample.

Profile of Study Sample and Consideration of Group Differences

A review of the sample characteristics reveals the following profile of couples who participated in this dissertation study. The patient was a male caucasian, 58.7 years of age. He was college educated and worked as a manager or within a profession. At the time of the study he had returned to work full-time or was working a part-time schedule with plans to return to full-time employment. His female spouse was also caucasian, 56.8 years of age. She was a high school graduate and did not work outside the home. The couple had been married for 28.8 years, with this being their first marriage. They had two children who were independent and no longer lived at home. Their joint annual income was between $20,000 and $40,000. The sample was a relatively homogeneous one, reflecting upper-middle class couples in a long-term marriage.

The majority of patients had experienced a first myocardial infarction or had had coronary artery bypass graft surgery within the past six months prior to entering the study. An analysis was not performed in this dissertation study to determine differences between patients who had suffered a myocardial infarction vs. patients who had experienced revascularization surgery. However, this analysis will be

performed at a later date to determine if the two groups were comparable upon entry into the study on the dependent variables of interest and/or if there was a differential response to the experimental intervention.

The rationale for combining the two groups in this dissertation study was twofold: first, by combining medical and surgical patients a sample representative of patients enrolled in current cardiac rehabilitation programs was achieved. Given that medical and surgical patients are combined in the educational and exercise components of cardiac rehabilitation, it was anticipated that future role supplementation programs would also combine medical and surgical patients in group sessions. Second, recent investigations have established numerous similarities between these two types of cardiac patients in terms of their psychosocial response during recovery. Similar levels of anxiety, depression, low self-esteem, and marital discord have been documented during the rehabilitation period in both groups, and the percent that return to work is also identical (Gundle, Reeves, Tate, Raft, & McLaurin, 1980). Thus, although the treatment experienced by the two types of patient is somewhat different, the patients experience similar signs of role insufficiency upon entry into a cardiac rehabilitation program and face similar obstacles to successful role transition.

Despite the demographic similarity of the three treatment groups, several differences were noted in the entry levels of anxiety, depression, and hostility. Control patients were significantly less anxious than the patients in the two experimental groups ($p \leq .05$) and spouses in Experimental Group 1 were significantly more depressed ($p \leq$

.05) and hostile ($p \leq .01$) than spouses in the other two groups. A potential explanation for these differences lies in a review of the medical status of the three groups. Patients in the control group had less incidence of angina and congestive heart failure and had fewer positive exercise stress tests. Although these differences were not statistically significant, a significant difference in functional class among the groups was established, with control group patients more likely to be Class I ($p \leq .05$). The patients in the control group may well have viewed themselves as less ill and communicated this perception to their spouses. This explanation is supported by previous investigators who found a direct correlation between severity of illness, as measured by angina, history of congestive heart failure and functional class, and psychological dysfunction, paticularly anxiety and depression (Acker, 1968; Croog et al., 1968; Winefield & Martin, 1981). As previously described in Chapter Two, other investigators (Blachley and Blachley, 1968; Fisher, 1970; Garrity, 1973a, 1973b) have questioned the causal relationship of clinical severity and psychological dysfunction. They have, instead, asserted that the patient's "self-perception" of his/her health is the most significant prediction of morale and that this perception may or may not be influenced by the actual clinical severity of the illness. The data in this dissertation study, however, supports the view that clinical severity does influence the affective state of both the cardiac patient and his/her spouse.

Given the randomization of the groups in a time series, it can be asked how these differences in clinical severity and psychological

states existed among the groups. The answer may lie in a consideration of the randomization process. It is well accepted by researchers that random assignment to comparison and control groups is the optimal method of insuring that groups are comparable with respect to those variables identified as having potential effects on the cause-effect relationship tested. However, even randomization does not guarantee that comparison groups will be comparable with respect to all measured variables of interest. In this study no significant differences were noted on 8 of 9 demographic variables and on 17 of 18 dependent variables for patient subjects. No significant differences were noted in any of the 9 demographic variables and on 11 of the 13 dependent variables measured in spouse subjects. Therefore, the randomization procedure used in this dissertation study did establish relative comparability among comparison groups, and the few differences noted can be ascribed to chance. However, it is not known how these differences influenced the subjects' spouses to the experimental intervention.

Role Insufficiency of Patient Subjects

Affective States

Although there were no statistical differences among the three groups on the outcome measures of anxiety, depression, and hostility, the trends supported the general study hypothesis. At the second testing, the largest decrease in each of the three variables was reported by those patients who met with their spouses. For example, in comparing the anxiety scores at Time 1 (baseline) and Time 2 (immediately following the role supplementation program), Group 1

patients had a mean decrease of 2.2, Experimental Group 2 reported a mean decrease of 1.2, and the control group reported a mean increase of 0.2. These findings are similar to those of Meleis & Swendsen (1978).

In general, the positive psychological effects were lost at six month follow-up. These findings were similar to those of Adsett and Bruhn (1968) who found no change at six months follow-up in the anxiety and depression of cardiac patients who had met for 10 weekly group therapy sessions when compared to matched controls. These data indicate that the role supplementation program needs to continue past ten weeks, perhaps by having the groups meet on a bimonthly or monthly basis for an extended period of time. A number of studies (Hoebel, 1976; McGrath & Robinson, 1973; Stern et al., 1976; Winefield & Martin, 1981) have documented the on-going nature of the adjustment process to coronary heart disease. The process continues as the patient arrives at new "milestones," e.g., beginning to exercise, return to work, resumption of sexual activity, first out-of-state trip, etc. In this study, many of these "milestones" occured during the 10 week period of the groups, but the transitional period continues for six to 12 months following hospitalization. One of the goals of the role supplementation program was to provide the patient with strategies to deal with future role transitions, but ten weeks may not be sufficient time to stabilize the changes promoted in the program. At six months, all three groups reported an increase in anxiety and hostility; the control group also reported an increase in depression. The data, therefore, support a continuation of the intervention past the time tested in this study.

An interesting finding in this area relates to the psychological

effects of exercise alone. Three previous studies (McPherson et al., 1967; Naughton et al., 1968; Prosser et al., 1978) consistently documented a decrease in anxiety, depression, and sleep disturbances in cardiac patients following an exercise program. The data from the control group only partially substantiates these findings. Depression and hostility did decrease during the first three months of study, but increased at six months. No change in anxiety was noted. This latter finding is surprising, but may be explained by the relatively low entry levels of anxiety reported by the control group. Folkins and Amsterdam (1977) have noted that the greatest psychological benefit of exercise seems to accrue to those individuals who report high levels of anxiety. Since the control group reported low anxiety at entry into the study, the lack of change may reflect a more "psychologically fit" group, at least on this parameter.

Marital Adjustment

The only positive changes in marital adjustment were reported by Exerimental Group 1 patients immediately following the program and by Experimental Group 2 patients at six months follow-up. Neither were statistically significant. This lack of change in marital functioning was consistent with the findings of Ibrahim and colleagues (1974) but was surprising in light of the interactive framework upon which this study was based. Two explanations can be posited.

The first (and perhaps most obvious one) is that marital adjustment was inadequately measured. The instrument chosen by this investigator was the Spanier Dyadic Adjustment Scale, a relatively new tool that, as

yet, has little published data confirming its sensitivity. It was chosen over other possible instruments for two reasons. First, unlike other marital adjustment tools, it did not include items regarding sexual activity that subjects might find offensive. Based on this researcher's experience with cardiac patients in previous studies, it was feared that the majority of subjects would refuse to complete a marital adjustment questionnaire that asked sexually explicit questions and, in fact, might even withdraw from the study. Second, in a review of the seventeen most commonly used marital adjustment questionnaires, it was clear that few adequately demonstrated and reported validity and reliability, nor did they have a conceptual plan behind the scale development (Spanier, 1979). The dyadic marital adjustment scale used in this study did have excellent validity and reliability, as discussed in Chapter Five.

In completing the Spanier instrument, however, a number of subjects commented on its negative tenor and stated that it did not reflect the changes they had experienced within their marital relationships during the course of the experimental intervention. None of the four subscales (consensus, cohesion, satisfaction, and affectional expression) directly address the increased communication and role-taking process emphasized in the experimental intervention. Therefore, it is possible that positive changes occurred within the subjects' marital relationships as a result of the program, but that the instrument did not have adequate sensitivity.

The second explanation lies in the nature of the variable itself. The majority of subjects had been married in excess of 20 years. It can

be hypothesized that a ten week intevention did not have enough strength to alter the couple's perception of their marriage. This explanation is indirectly supported by the data on both the patients' and spouses' feeling of value as a family member, reflected in that sub-scale of self concept. Experimental Group 1 patients reported no change and spouses reported a slightly negative change in mean values of this sub-scale immediately following the role supplementation program. The two variables of marital satisfaction and family self concept are conceptually linked within an interactionist framework in that one's view of oneself as an important and valuable member of a family is formed by successive interaction episodes with one's spouse, children, parents, etc. As such, the quality of the interactions between a couple contributes to both their assessment of their value as family members and to their satisfaction with their marital relationship. Since neither variable was significantly altered by the conjoint role supplementation program, the data suggest that, even with an increase in communication, problem-solving skills, and role clarification, couples' views of their marital and family relationships are based on such a long interactive history that significant alteration does not occur with a ten week intervention.

The data also support findings of previous investigators that the significant marital dysfunction is experienced by the many couples following a coronary event. For example, 35 of 65 couples interviewed by Skelton and Dominian (1973) described an appreciable negative change in their marital relationships in the first three months after hospital discharge, with increased anxiety and irritability experienced by both

partners. Similar marital dysfunction was revealed in the data of the current study. It can be concluded that the severe marital strain experienced by a percentage of cardiac patients and spouses may require an intensive couples' intervention beyond the scope of a role supplementation program.

Self Concept

The data related to self concept was amazingly consistent across all eight subscales of the Tennessee Self Concept Scale. The change trends were in the direction predicted by the general study hypothesis, with Experimental Group 1 patients reporting the greatest increase in self esteem; the gains were also sustained or increased at six months follow-up. These findings corroborate the symbolic interactionist view of self conception. It is the individual's conception of what he/she is really like, based on the constellation of roles enacted, and as such is indisolubly linked to experiences in social relationships. The positive social interactions provided by the experimental reference group influenced the patients' view of themselves and of their personal worth. Statistical differences were noted among the groups for the patients' view of their behavior being appropriate and for their sense of personal worth ($p < .05$), with Experimental Group 1 patients reporting the most positive changes. Both aspects of self concept were directly addressed within the experimental protocol, so these findings yield no surprises.

Despite the fact that only two of the nine variables related to self conception were significantly different among groups, it is

important to note the patterns of change for remaining seven variables. Those patients who participated in a role supplementation program with their spouses reported increased self esteem and more positive self worth related to their identity, behavior, physical appearance, moral-ethical value system, and social relationships. They also expressed increased satisfaction with themselves and felt that their personal worth was enhanced. Moreover, these changes continued to increase at six months follow-up. Patients who met alone initially reported similar increases immediately following participation in the program, but at six months follow-up these positive feelings were lost. Patients in the Control Group reported increasingly negative feelings related to self concept over the posttest period.

The direction and consistency of these changes supports the theoretical basis of a role supplementation program. The inclusion of spouses in the experimental program was a powerful force in altering the patients' self conception in a positive manner. The evolving interactions within the patient-spouse groups apparently provided the patients with cues that led them to greater self acceptance and feelings of positive self-worth, changes that endured even after termination of the experimental program. In contrast, those patients who met alone (without spouses) experienced an initial increase in self esteem and the related self concept variables, but that these changes were reversed at six months follow-up. Again this finding supports the interactionist definition of self concept in that patients who lost their reference group at the completion of the ten week program experienced lower self esteem at six month follow-up than patients whose reference group

included spouses.

The fact that only two of the nine self concept variables had statistically significant changes among the patients in the three treatment groups is similar to the findings of other investigators (Adsett and Bruhn, 1968; Ibrahim et al., 1974; Mone, 1970). Given the consistent trends of the data, however, it might be anticipated that statistical significance would be documented in a replication of this dissertation study using larger sample sizes.

A significant limitation of this study is its relatively small sample size. Although 92 subjects participated, the study design resulted in the number of subjects in each group being less than twenty, which is the minimal number considered appropriate for inferential statistics (Kerlinger, 1973). A fourth cardiac treatment center was used; however, its series was completed in February 1982 and the data from its three groups were not presented here. Analysis of the total 124 subjects is currently in progress, but at this time it is not known how the addition of these 32 subjects will effect the results. Even with this addition, the small sample size will remain a significant limitation and will preclude generalizing the results to the larger population.

Role Insufficiency of Spouse Subjects

Affective States

The patterns of change in the three variables of anxiety, depression, and hostility were consistent, although a significant difference was only documented among the groups for anxiety ($p \leq .05$).

Immediately following the role supplementation program, the spouses who participated in the intervention reported a dramatic decrease in all three affective states, while spouses in the other two groups reported little or no change. For example, Experimental Group 1 spouses reported a mean decrease in anxiety of 5.4, while Experimental Group 2 and control group spouses reported a mean increase of .3 and .4 respectively.

As in the patient subjects, the beneficial effects of the experimental program were not sustained at six months, but these negative changes were even more dramatic in spouse subjects than in patients. A possible explanation for this difference can be found in the work of Adsett and Bruhn (1968). These investigators met with cardiac patients and spouses in separate groups. They characterized the patient group as dealing primarily with issues of self esteem, while the spouse group continually addressed issues of guilt, particularly related to the negative, aggressive feelings and behavior they had expressed in the past to their mates. Through the interactive processes of the couples group, the spouses in this dissertation study were able to clarify the inappropriateness of their guilty feelings. The effectiveness of the reference group is well documented by the data in this dissertation. However, when the reference group was lost to the spouses, the result was that anxiety, depression, and anger increased. In the interactionist framework, it can be postulated that with the reciprocal interrelationship between roles, spouses adjusted their view of their past behavior according to cues provided by other members of the couples reference group. Spouses no longer felt "responsible" for

their mates' coronary disease and for their compliance with a medical regimen. With the loss of this reference group, spouses once again received cues from their mates (or others) that they were responsible for the disease and for future outcomes and once again felt anxious, depressed, and angry.

Marital Adjustment

The lack of positive changes for experimental spouses on this variable has been discussed previously. The negative effect on marital adjustment was noted in all three groups. As noted in the discussion of the patient subjects' marital adjustment scores, the lack of change on this variable can be attributed to a lack of sensitivity of the instrument used and/or the enduring quality of marital satisfaction, i.e., a perception that remains relatively unchanged despite a 10 week intervention.

Self Concept

A surprising finding in this study was that despite the increases in anxiety, depression, and hostility reported by Experimental Group 1 spouses at six months follow-up, their self conception was markedly more positive. The mean scores for total positive self esteem increased 10.9 points from the second testing, while Experimental Group 2 spouses' scores decreased 2.7 points and control group spouses decreased 9.5 points. Thus, there was an independent relationship between affective states, marital adjustment, and self concept that was not predicted by the theoretical framework of symbolic interactionism.

Role insufficiency was defined by this investigator as an aggregate of affective states, marital strain, and various aspects of self conception. It was assumed that an intervention directed toward reducing role insufficiency would affect these components somewhat equally. Since this did not occur, the question can be raised whether or not the appropriate attributes of role insufficiency were identified? Is it possible for some symptoms to occur, i.e., anxiety, depression, anger, and not others, i.e., lowered self esteem and alterations in the self conception?

An examination of the data supports the original definition of role insufficiency. A form of criterion-related validity for the concept was established by the change score data previously reviewed for subjects who participated in the role supplementation program. However, theoretically it can be postulated that components of role insufficiency can exist concurrently at varying levels. In a period of role transition, a number of roles may be altered. For example, spouses in the role supplementation program described numerous alterations in primary and complementary roles related to their mates' cardiac illness. Some spouses assumed drastic new roles by taking jobs outside the home for the first time in their marriage and expressed pride in their accomplishments. Thus, it may be that spousal self esteem increased because of new roles successfully assumed, but that at the period of six months follow-up and some symptoms of role insufficiency remained.

Limitations Related to Measurement of Role Insufficiency

Limitations frequently cited in relation to questionnaires as a method of data collection apply to this study's measurement of role insufficiency (Nisbett & Wilson, 1977). Predictions about actual behavior cannot always be implied even though valid and reliable tools are employed. Subjects may respond with what they consider are socially desirable answers or they may not have access to the depth of their feeling states. For example, it is well documented that cardiac patients frequently use denial to defend against the anxiety they experience following a coronary event (Cassem & Hackett, 1971; Gentry, Foster, & Haney, 1972; Hackett & Cassem, 1978). Although Hackett and Cassem (1974) developed a questionnaire to measure denial, this defense mechanism is notoriously difficult to measure operationally (Scalzi & Burke, 1980). In assessing the role denial plays in an individual's psychological state, it is difficult to distinguish denial (as a defense mechanism) from inability or conscious unwillingness to discuss emotional laden issues. Inconsistencies in data linking denial to recovery outcomes have, for example, been attributed to differences in patient willingness to admit troublesome feelings in brief interviews with strangers, as opposed to in-depth interviews with trusted hospital staff (Doehrman, 1977).

Role Mastery of Patient Subjects

Patients' mastery of the at risk role was successfully achieved through the role supplementation program. Both experimental groups had decreases in their systolic and diastolic blood pressures and triceps

skin fold measurements on posttest. Both reported increasing their hours of regular weekly exercise following participation in the program. These trends were in contrast to the control group, who had negative or no changes in these risk factors. Statistical analyses revealed significant differences for Experimental Group 1 on the variable of triceps skin fold ($p < .01$) and for Experimental Group 2 on systolic blood pressure ($p < .05$). With the exception of systolic blood pressure, the change scores were greatest for patients whose spouses participated in the experimental intervension.

The findings related to role mastery were consistent with this study's theoretical framework. It was postulated that a role supplementation program would facilitate the cardiac patient's assumption of the goals, values, and behaviors of the at risk role. The data related to risk factor reduction confirms this hypothesis and were similar to the findings of Meleis and Swendsen (1978). These investigators found that a role supplementation program implemented in a prenatal sample of husbands and wives facilitated the wife's assumption of the mother role, as measured by a number of mothering behaviors and attitudes.

The findings in this dissertation study are in contrast to the two cardiac group intervention studies that measured cardiac risk factors. Adsett and Bruhn (1968) found no significant difference in patients' blood pressure or heart rate following a 10 week series of group therapy measured at six months follow-up. Ibrahim and associates (1974) found no significant changes in blood pressure, serum cholesterol, serum triglyceride, or body index scores for post-MI patients who had

participated in a year of weekly group therapy, as measured at six months follow-up. The remaining cardiac group therapy studies did not include measurement of risk factors.

This current study would have been enhanced by the addition of serum cholesterol and triglyceride measurements. The small number of risk factor variables tested were further reduced by the absence of smokers in the study sample and limit the interpretation of the spouse's role in risk factor reduction. Three of the four risk factors that were reduced decreased the most for patients whose wives/husbands participated in the group sessions. The group effect was statistically significant, however, for only one of these four, the triceps skinfold measurement. In the majority of couples, cooking was the responsibility of the spouse and, therefore, it is not surprising that weight loss was significantly altered for Experimental Group 1 patients.

The trends of the findings support the interactionist view of compliance as being dependent on the role-taking process (Dracup and Meleis, 1981). The at risk role, like all roles, is created, defined, stabililzed, and modified as an outgrowth of interaction(s) with one of more relevant others. In this study, the data supported the validity of the symbolic interactionist view that all roles are developed in pairs. By facilitating the role taking process in the patient-spouse groups, spouses developed complementary and supporting roles to the patients' at risk role. Risk factor modification behaviors increased accordingly.

This explanation for the findings related to compliance is based on the consensual frames of reference principle formulated by Turner, which

states that "individuals tend to merge into their persons those roles by which significant others identify them" (1978, p. 13). Turner (1978) further postulated that the tendency to merge a role with the person increases as the individual invests more time and effort in learning to play a role. The data suggests that those patients who spent the extra time and effort demanded by the role supplementation protocol were more likely to incorporate the goals, values, and behaviors of the at risk role. By including spouses, this increased time and effort could be anticipated to extend outside the walls of the rehabilitation program, thus, partially explaining the successful risk factor reduction of Experimental Group 1 patients.

The findings in this study are also consistent with a number of studies in the compliance literature that have documented the importance of the patient-spouse interaction as a predictor of patient adherence to a medical regimen (Haynes, 1976). In a case study approach to identifying the effect of this interaction, Hoebel (1976) interviewed nine couples in which the husband had recently suffered a myocardial infarction. Hoebel hypothesized that the wife's attempts to modify her husband's high risk behavior played a role in maintaining those behaviors. He saw the wives for individual counseling to effect a change in their problem solving behaviors related to the husbands' risk factors. The results of his study supported the importance of modifying the patient-spouse interactional system in achieving compliance. Despite the obvious limitation of sample size, Hoebel's work sheds light on the data from this dissertation. Spouses often entered the patient-spouse groups feeling inappropriately responsible for their mate's

compliance. Patients complained of feeling infantalized and were resentful of their mates' overprotectiveness. In discussing these feelings in the group sessions, the spouses' approach to supporting their mates' compliance altered, with a more realistic division of responsibility being achieved.

Morbidity and Mortality

Although this study documented the beneficial effects of a role supplementation program, it did not indicate whether such a program effects ultimate morbidity and mortality. If the true incidence of 1 year mortality for post-myocardial infarction patient is 4 - 6% (Fletcher & Cantwell, 1979), it would take 15,975 patients to have a power of 0.80 in detecting such differences at a P value less than 0.05 (one-sided). With the sample of 46 patients the findings that only patient subjects in the control group experienced reinfarction or rehospitalization must be viewed with caution. A much larger study would be required to document the effects of a role supplementation program on the course of the disease.

Summary

The data generated in this dissertation study generally supported the positive effects of a role supplementation program on the psychosocial adaptation of cardiac patients and spouses and on patient compliance to cardiac risk factor modification. Repeated measures analysis of variance and covariance tests supported a stronger program effect on role insufficiency for spouses than for patients, with

differences documented for six of the 13 dependent variables (vs. two for patients). The fact that spouses received greater benefit is not surprising in that the group sessions were the sole treatment intervention for spouses, while patients participated in the usual exercise and educational components of a cardiac rehabilitation program. A rationale for the necessity of a spouse intervention is found in the descriptive data of Mayou, and colleagues (1978), who documented significant psychological distress (anxiety, depression, irritability, and insomnia) in the spouses of post-myocardial infarction patients at two months and one year. Seventeen percent had consulted doctors for these symptoms.

The major findings of this study also supported the work of Turner (1956, 1968, 1978) and other symbolic interactionists (Blumer, 1969; Mead, 1934; Stryker, 1964), i.e., that roles are created, defined, stabilized and modified as an outgrowth of an interaction with one or more relevant others toward which they are oriented. The manner in which roles and counter-roles were developed and supported within the experimental program will be discussed in the following section. The components of the role supplementation program (described in Chapter Three) will also be addressed.

Section 2: Themes and Therapeutic Benefits of the Role Supplementation Program

Within the 10 week protocol of the role supplementation program certain themes were developed by the participants that served as therapeutic benefits during the identified role transition process.

These themes provide at least a partial answer to the question, "How does a role supplementation program help?" Although stylistic clarity demands that they be discussed singly, the discriminations are, in actuality, quite arbitrary and many occurred and functioned in an interdependent fashion.

Imparting of Information

This category encompasses the didactic instruction about the coronary atherosclerotic disease process and cardiac risk factor management given by the group leaders, as well as the advise, suggestions, or direct guidance about life problems offered either by the leaders or other participants. As in other types of groups (e.g., group psychotherapy), information transfer often functioned as the initial binding force in the groups until other therapeutic benefits became operative (Yalom, 1970). In part, however, explanation and role clarification were effective in their own right. The study data indicates that as participants clarified misconceptions and identified the behaviors appropriate to the "at risk" role (and its complementary role) anxiety decreased. The need to dispel uncertainty with factual information was exemplified in every one of the eight groups by the reoccurring theme of diet. Although this topic was not covered in any of the didactic material presented by the group leaders, questions about the importance of maintaining a low sodium, low cholesterol diet constantly were raised. This repetition undoubtedly reflected the lack of clarity on dietary restrictions provided in the media and by the patients' private physicians, and the participants frequently sought

clarification from the nurse leaders.

Direct advice from the group members also occurred in every group. Patients and/or spouses presented difficulties related to their role transitions, e.g., how to tell a son or daughter with young children that a two week visit would be too stressful for them given the recent coronary event. Responses from the group members were often in an advice giving mode, being preceded by such phrases as, "Why don't you ..." or "What worked for us was ...." The specific suggestion may or may not have been helpful, but they were interpreted as mutual caring and interest and contributed to group cohesiveness.

Instillation of Hope

The role modeling component of the experimental intervention provided the participants with a feeling of hopefulness that, in itself, was therapeutically effective. The groups invariably contained individuals who were at different points along a role mastery continuum. Participants had an opportunity to hear about problems very similar to their own and how other patients/spouses had successfully coped with them. In the fourth meeting a guest couple discussed their "passage" through the cardiac rehabilitation program and provided something of a testimonial of the positive outcomes they experienced. The effects of such role modeling processes were evidenced in new attitudes of hopefullness and conviction by the participants, results of modeling similar to those documented by other investigators (Bandura, 1971; Bandura, Ross, & Ross, 1963; Mann & Janis, 1968).

Redefinition of Wellness

As the groups progressed through the ten sessions, the patients began to redefine what it meant to be healthy. Prior to their coronary events, wellness meant the absence of disease. As they discussed their changing life styles, necessitated by the diagnosis of coronary atherosclerosis, they spoke of changing their values to incorporate the health-seeking behaviors promoted by the cardiac rehabilitation program personnel. The majority had smoked, worked long hours under stress, and led sedentary life syles. Many were over-weight. They encouraged and supported each others' changes in modifying these risk factors. Wellness was now measured by weight loss, the ability to reduce stress, and new prescriptions for exercise at higher target heart rates. For example, one subject (an engineer) brought a histogram to the last group session showing his weekly weight loss. Wellness was redefined by the majority of subjects as an absence of coronary risk factors and the ability to do regular aerobic exercise without cardiac symptoms.

In a very early treatment of role change, Mead (1934) described role transition as a process of disintegration of the old self, and a redefinition and reconstruction of a new self. The patients in this study exemplified this process as they redefined wellness. Each sought cues from significant others as to the kinds of changes to make in their attitudes and behaviors to achieve health. By integrating and stabilizing the new behaviors related to risk factor modification, they received cues from both the health professionals involved in their care and from their family members that they were achieving a "well state." Thus, the goals, values, and behaviors of the at risk role were

integrated into the patients' perceptions of themselves as healthy.

Reference Group

In the evaluation of the program, many subjects expressed the most important benefit as being the recognition that their feelings and concerns were shared by the majority of group members. The disconfirmation of their feelings of uniqueness by members of reference group was a powerful source of relief. Despite the complexity of problems each patient/couple faced in adjusting to this chronic illness, certain common denominators became clearly evident. Resentment at being stereotyped "cardiac" by family, friends, and employers was shared. Fears of sudden death, which were more common for spouses than patients, were openly discussed. Although these two themes appear paradoxical, i.e., "I am dying," they reflect one reality. The cardiac patient appears no different externally and often feels physically well, despite the occurrence of a cardiac event. He or she resents being relegated to invalid status by others, since it is a reminder of the heart damage suffered but now not felt. Despite the frequent lack of symptomatology, cardiac patients (and their spouses) are also acutely aware of their increased risk for sudden death. The first premonition of one's mortality is a painful experience, and the concern of significant others often serves as a poignant reminder for the cardiac patient.

Confusion about changes in roles within the family system were also discussed and solutions offered by other members of the group. For example, one patient described his mixed feelings when his wife came to the coronary care unit and told him that his 12 year old son had put his

wedding ring on the first night of the hospitalization and assured her that now he would take care of her. The group focused on the patient's loss of self esteem with these shifts in roles and supported the patient's need to reassert his paternal role during this transitional period. As exemplified here, patients frequently grappled with feelings of role insufficiency related to previously enacted roles.

Humor was often used by the group to defuse feelings of anguish and uncertainty. For example, one patient, who was an author by profession, admitted to the group that he hadn't been able to use the word "deadline" since his infarction. As patients and spouses perceived their similarity to others in the group, they benefited from the humor expressed by others and the accompanying catharsis. The ultimate acceptance by other members of the reference group, then, was a major force in the patients' ability to redefine wellness in an appropriate and meaningful manner.

Altruism

Altruistic acts often set healing forces in motion within a group setting (Yalom, 1970). Throughout the course of the program, subjects offered support, suggestions, reassurance, and insights to other group members. The self-absorption that had characterized much of the patient/couples' interactions since the coronary event and/or hospitalization was slowly replaced by concern for others in the group.

The increase in self esteem noted in the experimental group patient data may be directly correlated with this curative force. As the subjects began to experience their contributions to the group as

worthwhile, self esteem increased. In the patient-spouse groups many of the patients expressed surprise over the fears and concerns expressed by spouses. Spouses described their hesitation about letting their mates know these fears, feeling that it would be a "burden" to them. This same dynamic of self-imposed non-communication was described by Stern and Pascale (1979) in a descriptive study of 38 spouses of post-myocardial infarction patients. In the groups, however, the majority of patients responded to their mates' openness with support and concern, a response that was altruistic in nature and again resulted in increased self esteem.

Section 3: Differences between Experimental Groups

The following discussion is based upon the research data presented in Chapter Six and on discussions with the group leaders that took place following each group session. The group leaders also wrote process recordings for each session and content analysis will be performed on these at a later date.

As the evaluation data indicated the two experimental groups evolved a character that was quite distinct from each other.

Experimental Group 1

In the first three sessions group discussion was relatively superficial and the couples primarily looked to the group leaders for direction. A number of questions were asked of the group leaders that were informational, i.e., questions about diet, medications, and disease mortality. There was also a great deal of time spent with each member

relating their account of the coronary event and how he or she personally responded. Patients spoke of being surprised by the depression and irritability they experienced upon discharge from the hospital, while their spouses focused on their fear of death as imminent and their hesitancy to create any disruption in the home environment that might lead to cardiac symptoms. In all three patient-spouse groups, patients expressed surprise to hear that their husbands or wives had discussed the possibility of death with the physician during hospitalization and said that they never considered the possibility. The isolation experienced by the spouses was frequently commented on by both members of the couple and the group was identified as an important source of support for the spouses. The patients spoke of joining the group "for her sake" and felt that they derived adequate support during the exercise sessions from other patients and staff.

Following the fourth session, in which a couple who had graduated from the rehabilitation program presented, the increase in the identification of the other members as a significant reference group was dramatic. Couples moved from discussion of past feelings and presented their current problems and conflicts. The following incident, which occurred in a ninth session, serves to illustrate the point.

> David described an argument that he and his wife Evelyn had had the evening before about the number of lamb chops she had prepared for their supper. He didn't know why he was so upset but their argument had carried over into the next day. Evelyn was surprised at the outburst and both had retreated into hurt silence. In exploring the incident, the group uncovered that David had requested a specific number be cooked and that Evelyn had prepared more than this number. Underlying themes discussed were his fears about their decreased finances and his frustration at Evelyn's "not listening to me." Since his MI four months previous, David had quit his job as an engineer with a large aerospace firm and was now

working full-time in his wife's jewelry store. The group focused on the importance of communication during this stressful time of occupational/role changes and supported the couple's feelings of frustration and impotence as being normal. Evelyn then told David how fearful she became when he retreated into silence and both discussed the importance of identifying underlying themes in these everyday arguments.

In this incident, as well as others, the group learned how to identify the issues underlying arguments, rather than focus on the specific source of anger. Common themes underlying marital arguments were financial insecurity, feelings of powerlessness, sexual frustration, fears related to resuming former roles (and thus increasing stress), loss of self esteem, and fear of death. As these feelings were recognized and accepted by group members, problem-solving skills increased and the groups evidenced less dependence on the group leaders for direction and interpretation of common themes.

The final session in all three patient-spouse groups included one of the wives collecting names, addresses, and telephone numbers of the group members for future meetings. Two of the three groups met within the following month for supper at one of the couple's home. This activity, which was remarkably absent in Experimental Group 2, was symbolic of the couples' identification of the reference group as an important source of support for the role-taking process. Role definitions were reaffirmed and redefined within the patient-spouse groups in a manner that was not possible without the support of the reference group. Spouses frequently spoke of the freedom they felt within the group to share their frustrations and feelings with their mates - a freedom they did not feel in the home environment. Thus, the spouses in particular sought to continue the group sessions.

The nature of the patient-spouse groups was quite different than the spouse-only groups described by Adsett and Bruhn (1968). These investigators characterized the wives as being quiet, passive, and dependent on the two male therapists. Absenteeism was high (33% compared to 4% in this study). Although not directly measured, the investigators noted a "lack of cohesiveness" in their spouse-only group. They hypothesized that the spouses felt that the therapists (who were both male) were critical of their actions and feelings. In contrast, the process recordings of the group leaders in this dissertation study reflected a high degree of participation by spouses. The dramatic decrease in the spouses' anxiety, depression, and hostility at the completion of the group series reflects the positive effects of their participation.

Experimental Group 2

The three patient-only groups had several similarities that set them apart from the patient-spouse groups. First, the period of testing the competency of the group leaders extended into the middle of the series, and for one group was never resolved. In the patient-spouse groups this issue appeared to be successfully completed by the end of the second session. The fact that the patient-only group members were all male and the group leaders all female may have been responsible in some part for this difference. Adsett and Bruhn(1968) described the male participants in their sample as consistently competing with each other and with the therapists. The males in this current study may have had difficulty viewing the female group leaders as experts and needed to

compete with them for the authority role, creating an air of challenge and tension.

Second, as described by previous investigators (Adsett and Bruhn, 1968; Ibrahim et al., 1974; Mone, 1970; Rahe et al., 1973), the discussion remained superficial throughout the ten week sessions. Difficult feelings were rarely addressed and the tenor of the groups remained one of jovial support rather than introspection. Cardiac patients are, by nature, aggressive and challenging in their communication style. They are activity-oriented rather than feeling-oriented, and introspection is an unfamiliar process (Jenkins, 1971). In the patient-only groups these traits hindered effective communication and empathy among group members.

Group cohesiveness was not apparent in any of the three groups at termination and in one of the groups the more quiet members were still addressed by the wrong names (e.g., Leon instead of Leo). The group members often described themselves as not having any problems and continued to wonder why they needed to attend. This assessment is well documented in the evaluation data of the Experimental Group 2 patients.

Third, the major value of the group identified by the participants was the information presented, particularly on stress management. They responded enthusiastically to the didactic material presented and felt ill at ease in the discussion periods. The problem-solving focus of the groups was difficult to achieve because a number of patients continued to actively deny (either cognitively or affectively) their disease. In contrast, when the patients in Experimental Group 1 made similar statements, their spouses presented conflicting data that supported the

fact that patients were indeed experiencing difficulty in their emotional adaptation to the disease. More importantly, the greatest benefit identified by Experimental Group 1 subjects was the opportunity to share fears and concerns within the group.

The inclusion of spouses is an important theoretical component of a role supplementation program. The processes of role-taking and role clarification demand that those in reciprocal roles be involved in these interactional processes. Role expectations must be constantly altered and redefined, and in the absence of spouses the patients in Experimental Group 2 lacked the critical "significant other" for the interactional process. Frequent discussions about home and spouse occurred, but were centered around the issues of being controlled and closely watched. Patients expressed vague concerns about the changes in their marital relationships, but were unable to clarify or define the cues they were receiving from spouses related to their altered roles and the new at risk role.

Summary

Some of the differences between the two forms of experimental groups support the work of Turner (1978) and Turner and Shibutani (1976) in the importance of the interactive process. The inclusion of spouses altered the nature of the group process considerably, with the patient-spouse groups evidencing a cohesiveness, trust, and level of introspection that was almost entirely absent from the patient-only groups. The data from this study supports the importance of facilitating the role-taking process in both patients and spouses. As

meaningful interactions occurred and feelings and expectations were shared and understood, symptoms of psychological dysfunction decreased.

A central dynamic in the patient-spouse interaction following a coronary event is the spouse's fear that increased communication will lead to myocardial ischemia. She or he is fearful that if true feelings of fear, anger, frustration, or powerlessness are shared, the patient will respond with chest pain or, perhaps, even sudden death. thus, the patient becomes the center of the household in a conspiracy of silence. The interactions within the patient-spouse groups were important (and powerful) contradictions to this assumption and communication styles were altered accordingly.

In support of the preceding discussion, it is important to note that the three cardiac rehabilitation centers that participated in the study chose to continue the role supplementation program as a formal component of rehabilitation in a conjoint format. An example of such in provided in Appendix K.

CHAPTER EIGHT

SUMMARY AND CONSLUCION

The research presented in this dissertation evaluated the effects of a nursing intervention of role supplementation on the psychosocial adaptation of cardiac patients and their spouses. The experimental intervention was implemented within the out-patient cardiac rehabilitation programs of three cardiac treatment centers. The evaluation was carried out by means of a three-group, time series design which varied the inclusion of spouses in the following manner:

1. Experimental Group 1 consisted of cardiac patients and their spouses who met in weekly group sessions of ninety minutes for 10 weeks.
2. Experimental Group 2 consisted of cardiac patients who met without spouses in a weekly group of ninety minutes for 10 weeks.
3. The Control Group consisted of patients and their spouses who did not attend any group sessions. The patients, however, were participants in a cardiac rehabilitation program.

A review of the literature suggested that a major source of the psychosocial dysfunction reported by both cardiac patients and their spouses is a result of the role changes and alterations in self concept that attend a cardiac event. Interactionist role theory served as the theoretical basis for this study, with the rehabilitation period defined as a time of role transition for patient and spouse. To facilitate the process of role adjustment and role acquisition of couples a role supplementation program was designed that emphasized increased communication and problem-solving skills. The basis premise of the

experimental program was that the involvement of the coronary patient's spouse in the rehabilitation process is critical to the recovery of both patient and spouse.

Based on the theoretical framework, four purposes were identified and achieved in this research effort:

1) to determine if nursing interventions based on interactionist role theory could be used to decrease the psychological and social dysfunction experienced by cardiac patients and their spouses;
2) to further elucidate the manifestations of role insufficiency and role mastery in a clinical population;
3) to further define the nursing strategies used in a role supplementation program
4) to outline a role supplementation protocol that could be replicated by other investigators in future studies.

Reflecting these purposes, the major research question posed for study was the following: Does participation in conjoint group sessions based on a model of role supplementation decrease the role insufficiency experienced by both patients and spouses and increase the role mastery of patients?

The sample consisted of 46 couples in which one of the partners had documented coronary atherosclerotic heart disease and was enrolled in an out-patient cardiac rehabilitation program. Data was collected on the 92 subjects at baseline, ten weeks, and six months using six structured instruments. The data collection period extended from April, 1980 to September, 1981.

Summary of Research Findings

The major findings in this dissertation were as follows:

Role Insufficiency

The experimental program had a positive effect on those variables identified as manifestations of role insufficiency. Significant differences ($p < .05$) were noted for spouses who participated in the role supplementation program on six of thirteen dependent variables measured in this category: anxiety, self esteem, behavioral self concept (i.e., the view of one's behavior as appropriate), physical self concept, moral-ethical self concept, and family self concept. Of the remaining seven variables, five changed in a direction predicted by the study hypothesis. These were: depression, hostility, sense of identity, satisfaction with self, personal self, and social self.

The changes experienced by patients in the experimental program were less dramatic than those experienced by spouses, with only two variables reaching significance, namely, behavioral self concept and personal self concept. Of the remaining eleven variables, however, ten changed in the predicted direction. That is, patients who met with their spouses in the role supplementation program reported more positive psychosocial adaptation than patients who met alone. Patients who participated in the cardiac rehabilitation program but did not meet in the therapeutic group sessions reported, increasingly negative changes on eleven of the thirteen variables measured.

The increased psychosical adjustment reported by both patients and spouses who met in conjoint group sessions was in marked contrast to the findings of previous investigators who tested the effects of group

therapy for patients only (Ibrahim et al., 1974; Mone, 1970; Rahe et al., 1973) or for patients and spouses meeting in separate sessions (Adsett and Bruhn, 1968). Their data indicated little or no significant change on a variety of psychosocial variables for either patients or spouses, although all four sets of investigators reported that the participating subjects "felt better." Thus, the data from this study supports the importance of spouse involvement and is congruent with the tenets of interactionist role theory.

An unexpected finding was the lack of change in marital adjustment and satisfaction reported by the experimental subjects on posttest. Subjects in all three treatment groups reported a decrease in marital harmony at six month follow-up, emphasizing the continuing stress experienced in marital relationships following a coronary event.

A second finding not predicted in the theoretical framework was that the variables associated with role insufficiency did not always change in the same direction. At the six month follow-up spouses who had participated in the conjoint group meetings reported an increase in anxiety, depression, and hostility that was unaccompanied by negative alterations in self concept. This finding raises questions about the nature of role insufficiency. In this study it was defined as a constellation of signs and symptoms that alter in a relatively uniform manner during periods of role transition. It may be, however, that the signs and symptoms vary with different levels of role mastery.

Finally, a third finding was the need for the continuation of the role supplementation program in some form beyond the ten weeks tested in this study. The spouse data for anxiety, depression, and hostility

indicates that the positive changes experienced by the spouse participants immediately following the program were not completely sustained at the six-month follow-up.

Mastery of the At Risk Role

Patients who participated in the experimental program had significant differences in weight loss ($p < .01$) and systolic blood pressure ($p < .05$) when compared to those who had not. Interestingly, patients in the patient-only group manifested the greatest decrease in systolic blood pressure, but the change trends for the other variables of weight loss, diastolic blood pressure, and weekly exercise supported the value of including spouses in the role supplementation program. Smoking did not prove to be an important variable in this category, since all but two subjects had quit or never smoked prior to entering the study.

Implications and Recommendations

The results from this study support the work of previous investigators who have documented psychological and social dysfunction in the spouses of cardiac patients that is equal to, if not greater than, the dysfunction experienced by their mates (Croog and Fitzgerald, 1978; Mayou et al., 1978; Stern and Pascale, 1979; Wishnie et al., 1971). The data from this study also suggest that spouses must be involved in the rehabilitation process in a formal manner, and that effective participation is provided within the context of a role supplementation framework. These findings are an extension of the

previous work of Meleis and Swendsen (1978), who documented the positive effects of a role supplementation program within an expectant-parent population.

The design of this dissertation study addressed many of the limitations noted by precious investigators (Ibrahim, 1976; Krantz, 1980) in relation to other tests of group interventions for cardiac patients. Unlike previous studies the experimental program was derived from a theoretical basis and included a specific protocol that allows for replication by other investigators. The design, with its inclusion of comparison and control groups, allowed for certain conclusions to be made regarding the clinical utility of a role supplementation program.

Recommendations for future research include the following:

1) A time series study testing varying lengths of a role supplementation program (e.g., three months vs. six months) would be helpful in identifying the amount of time required for optimal effects.
2) Replication studies are required to evaluate the effects of the experimental nursing intervention on cardiac populations that differ from the one used in this study. Large clinical trials are also required to examine the effects of the program on ultimate morbidity-mortality.
3) Patients in this study represented a mixture of acute and chronic responses to a cardiac event. Each of the comparative groups included some patients who had suffered an acute cardiac event within the preceeding three months and some who had been diagnosed some years earlier. This current analysis did not yield information

about the differential responses of patients to a role supplementation program based on acuity. Future studies are required to determine the relationship of acuity vs. chronicity on the effectiveness of a role supplementation program.

4) The sample used in this study was representative of a sestern, middle-class culture. The role supplementation protocol tested here was based on the cultural values and norms of this population. In another culture with different role expectations (particularly related to male-female roles), a different protocol would be appropriate. The protocol also would need to be altered for differing socioeconomic classes. Replication studies in different cultures and for different socioeconomic classes are therefore needed.

5) Further documentation of the effects of the role supplementation program on the patient's mastery of the the at risk role require a larger number of outcome variables than were studied here.

6) The findings related to the role insufficiency of spouses suggest that this concept requires further clarification before it can be uniformly used as a nursing diagnosis. Specifically, its signs and symptoms and the manner and direction in which they are altered by increasing levels of role mastery need to be more clearly explicated.

7) The way in which a person's self image related to being ill, either acutely or chronically, effects his or her self conception has yet to be determined. Methodological research needs to be done to develop the instruments needed for such a study. It would also be

helpful for nursing to establish the manner in which other variables (e.g., demographic, past medical history, acuity of present illness, etc.) alter the patient's selective response to their illness.

8) The role transitions created by illness need to be studied as they relate to complementary role changes in significant others. The variables which affect a smooth role transition on the part of the patient and his or her family members require further empirical testing and factor analysis.

9) A role supplementation program is one nursing strategy directed toward decreasing an individual's role insufficiency (whether it be in the sick role a related at risk role or in other roles affected by illness). Other strategies need to be developed and empirically tested.

10) There may be certain patient populations whose personality traits hinder the role-taking process. Sarbin (1954) has noted that hypochondriasis, or a tendency toward somatization, decreases an individual's ability for role-taking. A number of independent researchers have established a high level of hypochondriasis in patients with coronary disease (Jenkins, 1971). The correlation between hypochondriasis and low role-taking ability in patients with cardiovascular disease has yet to be establilshed, and documentation of such a relationship would be of assistance in modifying the role supplementation program tested in this dissertation.

In summary, the results of this study have served as an impetus for future research on the role-taking process. Understanding the role

transitions that occur within the context of a cardiac rehabilitation program is a complex task which necessiates more systematic study. The need continues to clarify further the concepts within the symbolic interactionist framework, particularly as they relate to health-illness transitions.

One of the goals of nursing interventions in cardiac rehabilitation will always be to provide emotional support to cardiac patients and their family members in a manner that fosters successful mastery of their roles. This study served to facilitate a growing awareness of the factors involved in providing psychological and social support to patients and families during the cardiac rehabilitation process.

APPENDICES

APPENDIX A PROTOCOL OF EXPERIMENTAL INTERVENTION

A-1 Protocol of Role Supplementation Program

A-2 Teaching Material for Session 5: Stress Management I

A-3 Teaching Material for Session 3: Problem Solving I

APPENDIX A-1

PROTOCOL OF ROLE SUPPLEMENTATION PROGRAM

Session 1: Clarifying Roles

Content

-Introduction of group facilitators and participants
-Discussion of program purpose and "ground rules" (e.g., confidentiality, attendance, etc.)
-Review of ten session content
-Review of coronary risk factors
-Identification of changes in roles and relationships by participants since coronary event
-Identification of commonalities and differences in problems resulting from coronary event

Audiovisual

-Written schedule of ten sessions

Discussion Questions

-What changes have occured with the assumption of the "at risk" role?
-How have these changes affected your feelings about yourself?
-How do your partners feel about these changes?
-What do you see as your major problems at this point?
-How do you view the group helping with these?

Session 2: Overcoming Fear

Content

-Discussion of common emotional response to coronary heart disease (i.e., anxiety, depression, anger, etc.)
-Identification of major sources of anxiety for both patient and spouse
-Discussion regarding gaining control over one's life
-Identification of ways to set new goals

Audiovisual

-16 mm. film, "Pack Your Own Chute" (Ramic Productions)

Discussion Questions

-What don't you like about having coronary heart disease?
-How have you felt since discharge from the hospital?
-What do you do when you start to feel anxious?
-What changes would you like to make in your lives?

Session 3: Problem Solving I

Content

-Review of the five step problem solving process
-Identification of the importance of taking time to gather data, generate alternative solutions, and examine different points of view before making decisions
-Application of process to example situations (role rehearsal)
-Homework assignment: Couple to apply problem-solving process to a mutual problem experienced during the week

Audiovisual

-Written summary of Problem Solving Process

Discussion Questions

-What problems have arisen since your coronary event?
-How can we use this process to solve one of them?
-When do you feel most frustrated? Can you identify a problem in these situations?
-What problems can you anticipate because of the new "at risk role?
-Do we always need to be perfect?
-What problems arise from this need?

Section 4: Problem Solving II

Content

-Introduction of couple who has successfully completed cardiac rehabilitation program
-Discussion of ways in which this couple dealt with role transition
-Discussion of strategies to increase communication within family

Audiovisual

None

Discussion Questions

-What kinds of problems described by the couple are similar to those of the group?
-What strategies seemed to work for them?
-What problems do husbands and wives of cardiac patients face that the patient doesn't share?
-What problems do patients have that the spouse doesn't share?

Session 5: Stress Management 1

Content

-Review of physiological changes during stress
-Presentation of Benson's relaxation response
-Homework assignment: Couple to practice relaxation response twice daily during week

Audiovisual

-Film-audiocassette "Stress and the Relaxation Response (Trainex Corporation)
-Stress dots
-Written summary of relaxation response

Discussion Questions

-How can you know when you feel stressed?
-What's the difference between distress and eustress?
-What is the physiological response to stress?
-How do you feel after the relaxation response exercise?
-How can you incorporate this exercise into your day, e.g. times, place, etc.?

Session 6: Stress Management II

Content

-Review of participants' experience with relaxation response
-Identification of sources of stress for each couple
-Review of other alternatives to stress management
    1)exercise
    2)Transcendental meditation
    3)yoga
    4)effective communication
    5)assertive techniques

Audiovisual

- None

Discussion Questions

- What were your experiences with relaxation response during the week?
- What stressors did you identify during the past week?
- What other strategies have you used to decrease stress?
- Do you feel stressed when you want to say "no" to a request?
- What strategies can you use in this situation?

Session 7: Relationships with Family

Content

- Identify of role changes in family relationships since cardiac event
- Identification of problems in maintaining "at risk" role
- Facilitation of communication between spouses

Audiovisual

- None

Discussion Questions

- What has been the family's reaction to the patient's illness?
- How has it affected their lives?
- Do you (patient) expect anything different from your family because of your cardiac status?
  Do you (spouse) expect anything different from your husband/wife because of his/her cardiac status?
- How have your roles changed within the family?
- Do you (spouse) feel responsible for your partners?
- Do you ever feel resentment about the changes in the family since the caridac event?
- Where do you both get your support?

Session 8: Communication through Sex

Content

- Review of information about resuming sexual activity following a cardiac event
- Identification of common sexual problems post coronary
- Identifiction of common fears and misconceptions

Audiovisual

16 mm. movie, "Sex and the Heart Patient" (Synthesis Communication, Inc., for Burroughs Wellcome Co.)

Discussion Questions

- What fears have you had about resuming sexual activity?
- Did you receive any information to help you?
- What questions or concerns do you have now?

Session 9: Dealing with the "At Risk" Role

Content

- Review of behavior changes on part of patient & spouse related to the "at risk" role
- Identification of changes in attitudes and relationships related to role transitions
- Open agenda to allow participants to discuss issues and feelings related to role transition

Audiovisual

- None

Discussion Questions

- What changes have occurred in your relationship since you began the cardiac rehabilitation program?
- What risk factors are most difficult to alter?
- Do you have any concerns or fears related to your coronary heart disease?

Session 10: What Now?

Content

- Review of material presented in group sessions
- Identification of participants' feelings and perceptions about group process
- Open agenda to deal with termination issues

Audiovisual

- None

Discussion Questions

- Have the groups been helpful? How?
- What changes have occurred within your family since you began the group sessions?
- What are your plans for the future?

APPENDIX A-2

Session 5: Stress Management I

THE RELAXATION RESPONSE

1. 15-20 minutes per session
2. Twice a day
3. Anytime except 2 hours after eating
4. Quiet spot
5. Get in a comfortable sitting position.
6. Close your eyes.
7. Concentrate on relaxing your body starting with your feet and moving upwards.
8. Breathe through your nose
9. Say a word or phrase, such as "one", to yourself each time you exhale.
10. Have a clock nearby
11. When finished, open your eyes and get up slowly.
12. ONWARD ! ! ! !

RELAXATION

What is relaxation?

Everyone experiences tension. Most people would agree that tension causes discomfort. Our muscles become tight and our body stiff. We may develop a headache and shortness of breath.

Relaxation is the opposite of tension. It is feeling relief of bodily tension. During relaxation our muscles become loose and we feel rested. We can prevent and disolve headaches and shortness of breath through relaxation.

Why teach relaxation?

Sometine we get so used to feeling tense we forget how to relax. By participating in relaxation exercises we can focus on loosening our muscles and feeling more comfortable.

The objectives of relaxation are to:

1. Decrease body tension.
2. Decrease muscle tightness, body stiffness, and discomfort.
3. Slow down breathing.
4. Practice and use abdominal breathing.
5. Increase activity level through improved breathing patterns.

When to practice relaxation?

Practice relaxation whenever you feel tense, when breathing become difficult, when you have a headache, when you are tired but can not fall asleep, or when you have pain.

Where to practice relaxation?

Choose an environment that is comfortable for <u>you</u>. The following may assist in your relaxation.

- a warm tub bath prior to exercises or you may wish to relax in the tub for a short while
- a warm drink such as a cup of mint tea
- a semi-dark room
- soft music

- try not to eat a large meal at least 1-2 hours prior to relaxation
- wear comfortable clothing such as a loose fitting robe or pajamas
- remove glasses or contact lenses
- a room free of distractions, far away from the phone, doorbell, or other loud noises
- use a firm mattress for support

How to begin relaxation?

I. The first step is to find a comfortable position for relaxation. Although relaxation can be done in a sitting position and you may favor an easy chair or recliner it is preferred that you try the following position for relaxation. The position described below allows your neck and shoulder muscles to relax by providing support. It also bends your knees and tilts your pelvis, thus straightening your back to relieve back and leg strain.

1. Place a small pillow under your head. Pull the two lower corners forward onto your shoulders. Shoulders should rest flat on the bed.

2. Arms should be rested on the bed at your side. Position so each elbow is about 6 inches away from the side of your body. Do not keep them straight.

3. Avoid folding your hands or touching your hands with your legs. Keep wrists and hands supported on the bed.

4. Place a small pillow under your knees. Your knees will be slightly bent and your back flat on the bed.

5. Gradually close your eyes.

If you do pefer a sitting position, try a half lying position. You may find breathing easier since there is less pressure on the back and abdominal pressure is reduced.

Make sure your arms are supported and that your feet are supported by a footrest. A pillow is placed under your head for support.

II. The second step is to practice diaphragmatic breathing. You must concentrate on making each breach slow and deep.

- Breathe diaphragmatically
- Pursed lip breathing should accompany the diaphragmatic breathing
- As you begin to relax listen and concentrate on your breathing
- As you exhale try to push out your bodily tensions

III. Concentration and Motivation make up the third step in working towards relaxation: You must want to relax -- relaxation can not be forced. You must also remember that this is exercise and it involves both physical and mental energy. Often the rewards are not seen immediately so you must have patience and persistence to work at relaxing. You must be ready to give yourself some time away from all other tasks and problems to concentrate on relaxation.

IV. The fourth step involves learning to feel and sense the difference between relaxation and tension through tightening and relaxing various body parts.

Your therapist will guide you during this exercise. Starting with your right arm you will tense your muscles, hold and let go, while breathing diaphragmatically. You will continue by tensing/relaxing your left arm, right leg, left leg, trunk, neck, and finally your facial muscles.

V. Finally, relaxation requires both mental and physical repetition. You will have to review the above exercises while concentrating on feeling relaxed. You must think back to each arm, each leg, your back, abdomen, neck, and face muscles. Are they holding or moving? Do you feel tense or relaxed.

When to practice relaxation?

As you begin relaxation it is probably best to establish a routine time in your daily schedule to practice. Individuals differ but 2 sessions a day, 20 - 30 minutes each session are usually more effective than one session a day for 1 hour. Through observation of your pogress you and your therapist will decide which schedule is best for you.

And as you become more familiar with these techniques you will learn to incorporate relaxation into your daily activities. During work you may need to stop and relax for 5 minutes due to shortness of breath before resuming activity. Continuous practice will allow you to do this.

Remember, it takes patience and daily practice to achieve successful results.

Additional suggestions:

1. Learn to slow down -- don't do everything in a hurry. Conserve energy by performing tasks at a steady pace rather than rushing to get the job done.

2. What you don't finish today will be waiating for you tomorrow. Don't run yourself ragged by trying to do everything today. If you can't complete all your tasks just do what you can and finish them tomorrow. Don't be a worn out perfectionist.

3. Plan your time reasonably. Don't try to accomplish too many tasks in too short a time. Be flexible -- things come up that we don't always plan for.

4. Allow time for recreation and hobbies. We can't work 24 hours a day. Everyone needs time to themselves, time to visit with friends, and time to engage in enjoyable activities. Don't cheat yourself -- make time for recreation and have a more well rounded life.

5. Don't worry about situations you have no control over. If a problem arises and you have no control over the situation -- rationalize. Accept the situation for what it is and make the best of it. Worrying never solves anything.

rm/80

STRESS DOTS

Stress dots are micro-encapsulated cholesteric liquid crystals which are worn on the hand, in between the thumb and the forefinger, in the hollow, fleshy area. Their purpose is to measure stress through temperature variance, by changing colors. Higher temperatures in fingers and toes indicate a lower stress level. The stress indicator levels are:

Amber.....89.6°F

Yellow.....90.6°F

Green.....91.6°F

Turquoise.....92.6°F

Blue.....93.6°F

Violet.....94.6°F

Your stress dot is black before it touches your skin. When placed on the skin, it will change color in accordance with the temperature of the hand. If it doesn't change from black, this indicates the temperature in your hand is lower than 89.6°F. The theory behind the dots is this: When a person is tense, muscles tighten, thus restricting blood flow by placing pressure on blood vessels and arteries. When this happens, the heart has a harder time pumping blood to the hands and feet. This is where the expression "cold feet" comes from. When stress exists, the body temperature drops, indicating a color change in the dots.

The dots can be taken off, carefully, and replaced after washing hands. They will stay accurate as long as they are securely in contact with the skin.

APPENDIX A-3

EFFECTIVE PROBLEM SOLVING

Prerequisites

1. Don't rush. Take your time.
2. Understand the difference between fact and opinion.
3. Realize that there is more than one way to view any problem.
4. Follow the 5 step problem solving method below.

Step

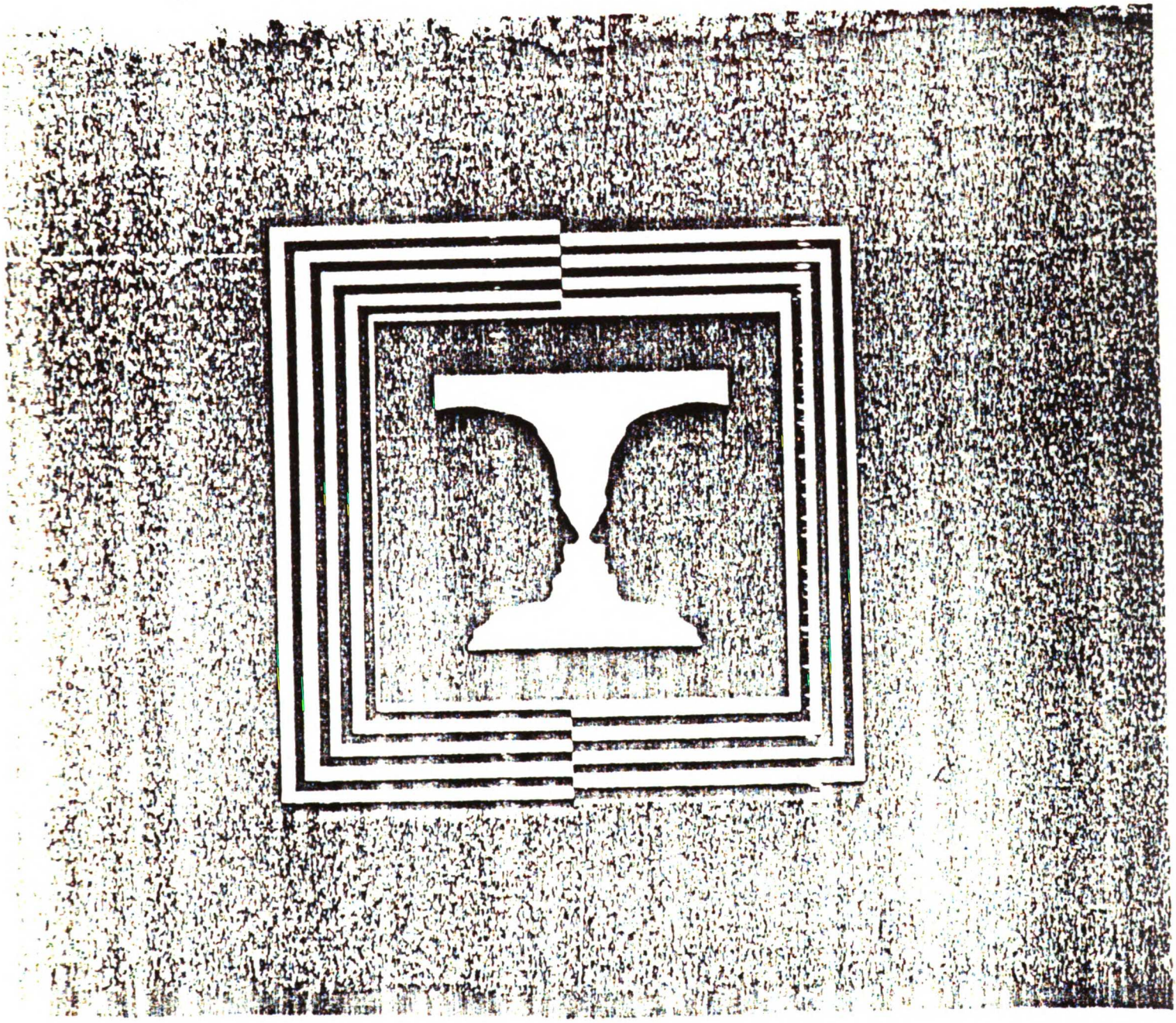
1. What is the problem? Describe it as best you can.
2. List all the possible solutions to the problem.
3. Discuss the pros and cons of each solution.
4. What is the best solution?
5. Step by step, describe carrying out the solution.

You have been waiting in line at the bank for 20 minutes. It's Friday. It's been a long week and you and your wife are expecting 10 dinner guests in one hour. You need to mail you request for an income tax extension and the post office closes in 15 minutes.

This man approaches:

> If I don't cash my check now, I'll miss my plane. I came earlier and the line was just as long. Could I please move in front of you!

Card 12 GF of the Thematic Apperception Test.



APPENDIX B EXAMPLE OF SUBJECT RECRUITMENT LETTER

SANTA MONICA HOSPITAL MEDICAL CENTER

HAVE WE GOT A PROGRAM FOR YOU!

If you are married or living with a partner your participation is eagerly sought.

The Santa Monica Hospital Medical Center Cardiac Treatment Center will be offering a 10 week workshop covering such topics as Problem Solving, Stress Management, Relations with Family and Friends, and Sexual Activity.

These workshops are being offered as part of a research study.

Data will be collected to help other cardiac rehabilitation programs decide whether patient groups or patient-spouse groups are important for a total recovery from a heart attack, surgery or over coming symptoms related to heart disease.

If you are interested in participating please fill in the following application.

Please call me as I am interested in participating in the Patient-Spouse Research Study.

Name_____Telephone No._____

Partner's Name_____

Please return to Marilyn Staley R.N. CCRN at Santa Monica Hospital Medical Center Cardiac Treatment Center by Friday September 26, 1980.

APPENDIX C RESEARCH STUDY CONSENT FORMS

C-1 Experimental Group 1 - Patient

C-2 Experimental Group 1 - Spouse

C-3 Experimental Group 2 - Patient

C-4 Experimental Group 2 - Spouse

C-5 Control Group - Patient

C-6 Control Group - Spouse

Group 1 - Patient

4/14/80

University of California, San Francisco

Consent to Act as a Research Subject

Evaluating the Use of Therapeutic Group Sessions in a Cardiac Rehabilitation Program

Kathleen Dracup, R.N., M.N., a doctoral student in the UCSF School of Nursing, is planning a study to evaluate the effect and usefulness of therapeutic groups in a cardiovascular rehabilitation program. Weekly group sessions are a part of some cardiac rehabilitation programs, but as yet the usefulness of such groups has not been tested. I have been asked to participate in this study because I have coronary artery disease and am enrolled in a cardiovascular rehabilitation program.

If I agree, I will meet in weekly group sessions with my husband/wife, other participants in the cardiac rehabilitation program and their spouses, and two clinical nurse specialists who are members of the rehabilitation team. These meetings will last 90 minutes each week and there will be ten sessions in all. The purpose of the group is to provide psychological support to the participants by setting aside a time when patients and spouses in the program can meet together to express their feelings and concerns relating to coronary disease and the rehabilitation program. I will be interviewed by Kathleen Dracup prior to the first group session, then at 3-month and 6-month intervals. I will be asked to fill out some written questionnaires following my interviews with Ms. Dracup which will take approximately 45 minutes to complete.

The study may involve the following risks and/or discomforts:

(a) possible fatigue from filling out the questionnaires,
(b) possible feelings of anxiety during the group sessions.

The possible benefits of the study are:

(a) increased understanding by health professionals of the usefulness of therapeutic groups in a cardiac rehabilitation program,
(b) increased understanding by health professionals of the needs of spouses of patients with heart disease,
(c) possible support for my feelings and concerns relating to my cardiac disease,
(d) possible increased knowledge on my part about heart disease and the risk factors which contribute to it.

The study has been explained to me. Also Kathleen Dracup will answer any questions I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this consent form, as well as a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. I also have the right to refuse to participate in the research study but still be in the therapeutic group if I so wish. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's signature_____

Date_____

Witness_____

APPENDIX C-2

Group 1 - Spouse

4/14/80

University of California, San Francisco

Consent to Act as Research Subject

Evaluating the Use of Therapeutic Group Sessions in a Cardiac Rehabilitation Program

Kathleen Dracup, R.N., M.N., a doctoral student in the UCSF School of Nursing, is planning a study to evaluate the effect and usefulness of therapeutic groups in a cardiovascular rehabilitation program. Weekly group sessions are a part of some cardiac rehabilitation programs, but as yet the usefulness of such groups has not been tested. I have been asked to participate because my husband/wife has coronary artery disease and is enrolled in a cardiovascular rehabilitation program.

If I agree, I will meet in weekly group sessions with my husband/wife, other participants in the cardiac rehabilitation program and their spouses, and two clinical nurse specialists who are members of the rehabilitation team. These meetings will last 90 minutes each week and there will be 10 sessions in all. The purpose of the group is to provide psychological support to the participants by providing a time when patients in the program can meet together with their spouses to express their feelings and concerns relating to coronary disease and the rehabilitation program. I will be interviewed by Kathleen Dracup, R.N., M.N., just before the first group session, then a 3-month and 6-month intervals. I will also be asked to fill out some written questionnaires at these times which will take approximately 45 minutes to complete.

The study may involve the following risks and/or discomforts:

(a) possible fatigue from filling out the questionnaires,
(b) possible feelings of anxiety during the group sessions.

The possible benefits of the study are:

(a) increased understanding by health professionals of the usefulness of therapeutic groups in a cardiac rehabilitation program,
(b) increased understanding by health professionals of the needs of spouses of patients with heart disease,
(c) possible support for my feelings and concerns relating to my husband/wife having cardiac disease,
(d) possible increased knowledge on my part about heart disease and the risk factors which contribute to it.

Appendix C-2

The study has been explained to me. Also Kathleen Dracup will answer any questions I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this form, as well as a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. I also have the right to refuse to participate in the research study but still be in the therapeutic group, if I so wish. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's signature_____

Date_____

Witness_____

APPENDIX C-3

Group 2 - Patient

4/14/80

University of California, San Francisco

Consent to Act as a Research Subject

Evaluating the Use of Therapeutic Group Sessions in a Cardiac Rehabilitation Program

Kathleen Dracup, R.N., M.N., a doctoral student in the UCSF School of Nursing, is planning a study to evalute the effect and usefulness of therapeutic groups in a cardiovascular rehabilitation program. Weekly group sessions are a part of some cardiac rehabilitation programs, but as yet the usefulness of such groups remains untested. I have been asked to participate in this study because I have coronary artery disease and am enrolled in a cardiovascular rehabilitation program.

If I agree, I will meet in weekly group sessions with other participants enrolled in the cardiac rehabilitation program and with two clinical nurse specialists who are members of the rehabilitation team. These meetings will last 90 minutes each week and there will be ten sessions in all. The purpose of the group is to provide psychological support to the participants by setting aside a time when patients in the program can meet together to express their feelings and concerns relating to coronary disease and the rehabilitation program. I will be interviewed by Kathleen Dracup, R.N., M.N., prior to the first group session, then at 3-month and 6-month intervals. I will be asked to fill out some written questionnaires following my interviews with Ms. Dracup. I understand that these questionnaires will take approximately 45 minutes to complete.

The study may involve the following risks and/or discomforts:

(a) possible fatigue from filling out the questionnaire,
(b) possible feelings of anxiety during the group sessions.

The possible benefits of the study are:

(a) increased understanding by health professionals of the usefulness of therapeutic groups in a cardiac rehabilitation progra,
(b) increased understanding by health professionals of the needs of spouses of patients with heart disease,
(c) possible support for my feelings and concerns relating to my cardiac disease,
(d) possible increased knowledge on my part about heart disease and the risk factors which contribute to it.

The study has been explained to me. Also Kathleen Dracup will answer any questions I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this consent form, and a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. I also have the right to refuse to participate in the research study but still be in the therapeutic group, if I so wish. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's signature_____

Date_____

Witness_____

APPENDIX C-4

Group 2 - Spouse

4/14/80

University of California, San Francisco

Consent to Act as a Research Subject

Evaluating the Use of Therapeutic Group Sessions in a Cardiac Rehabilitation Program

Kathleen Dracup, R.N., M.N., a doctoral student in the UCSF School of Nursing, is planning a study to evaluate the effect and usefulness of therapeutic groups in a cardiovascular rehabilitation program. Weekly group sessions are a part of some cardiac rehabilitation programs, but as yet the usefulness of such groups has not been tested. I have been asked to participate because my husband/wife has coronary artery disease and is enrolled in a cardiovascular rehabilitation program.

If I agree, I will be asked by Kathleen Dracup to fill out three questionnaires before my husband/wife attends the first group session, again three months later, and finally six months after the first group session. I understand that these questionnaires will take approximately 45 minutes to complete.

The study may involve the following risk and/or discomfort:

(a) possible fatigue from filling out the questionnaire.

The possible benefits of the study are:

(a) increased understanding by health professionals of the usefulness of therapeutic groups in a cardiac rehabilitation program,

(b) increased understanding by health professionals of the needs of spouses of patients with heart disease.

The study has been explained to me. Also Kathleen Dracup will answer any questions I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this consent form, as well as a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. I also have the right to refuse to participate in the research study, if I so wish, but my spouse can still be in the therapeutic group. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's signature_____

Date_____

Witness_____

University of California, San Francisco

Consent to Act as Research Subject

Evaluating the Use of Therapeutic Group Sessions in a Cardiac Rehabilitation Program

Kathleen Dracup, R.N., M.N., a doctoral student in the UCSF School of Nursing, is planning a study to evaluate the effect and usefulness of therapeutic groups in a cardiovascular rehabilitation program. Weekly group sessions are a part of some cardiac rehabilitation programs, but the usefulness of such groups has not yet been tested. I have been asked to participate in this study because I have coronary artery disease and am enrolled in a cardiovascular rehabilitation program.

If I agree, I will be interviewed by Kathleen Dracup at the beginning of the rehabilitation program, then at 3-month and 6-month intervals. I will be asked to fill out three questionnaires at these times which will take approximately 45 minutes to complete.

The study may involve the following risks and/or discomforts:

(a) possible fatigue from filling out the questionnaires.

The possible benefits of the study are:

(a) increased understanding by health professionals of the usefulness of therapeutic groups in a cardiac rehabilitation program,
(b) increased understanding by health professionals of the needs of spouses of patients with heart disease.

The study has been explained to me. Also Kathleen Dracup will answer any question I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this consent form, as well as a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's Signature _____

Date _____

Witness _____

University of California, San Francisco

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(b) increased understanding by health professionals of the needs of spouses of patients with heart disease.

The study has been explained to me. Also Kathleen Dracup will answer any question I may have at any time concerning details of the procedures performed as part of this study. She can be reached at 825-5486.

I have been offered a copy of this consent form, as well as a copy of the Subject's Bill of Rights.

I have the right to refuse to participate or to withdraw from this research at any time without prejudice. Because of the scientific nature of the study, the investigator may stop it at any time.

Subject's signature_____

Date_____

Witness_____

APPENDIX D

D-1 Letter to Subjects' Private Physician Regarding Participation

D-2 Summary of Research Study for Private Physician

APPENDIX D-1

Dear Doctor,

We recently spoke about the possibility of your patient, _____, participating in a research study during his/her enrollment in our cardiac rehabilitation program. I appreciate your cooperation in this research effort, and am sending you a summary of the research project for your future reference.

The research study is being conducted by Kathleen Dracup, R.N., M.N., a doctoral candidate in the School of Nursing at the University of California, San Francisco. Four centers, including ours, are involved in this research effort, with two nurses from each center acting as group leaders for the experimental groups.

If you have any questions about this project, please feel free to call me or Kathleen Dracup (825-5486) at any time. We would by happy to answer any questions you may have regarding this matter. Thank you.

Sincerely,

APPENDIX D-2

SUMMARY

Research Project:

The Use of Therapeutic Patient-Spouse Groups in Cardiac Rehabilitation

The purpose of this multi-center clinical trial is to evaluate the use of therapeutic patient-spouse groups as a component of a formal cardiac rehabilitation program. Two experimental groups and a control group will be evaluated in each center: Experimental Group I will consist of cardiac patients only.

Experimental Group II will consist of cardiac patients and their spouses.

A control group consisting of patients enrolled in the formal cardiac rehabilitation program will also be evaluated. Both Experimental Groups I and II will meet for ten weekly 90-minute sessions. The control groups will attend the rehabilitation programs, but will not meet as a group in weekly sessions.

It is hypothesized that the patients and spouses who attend weekly therapeutic group sessions will demonstrate a higher compliance to the cardiac medical regimen and less difficulty in the areas of psychosocial adjustment than those patients and spouses in Experimental Group I (i.e., the patient-only group sessions) or those in the control group.

An evaluation using four paper and pencil questionnaires

will be performed prior to the initiation of the groups, at three months following the first session, and again at six months following the first sessions. In all three groups, both patient and spouse will be asked to respond to the questionnaires, whether or not they participated in a series of group meetings. In this manner it is hoped that the usefulness of patient-spouse groups in cardiac rehabilitation settings can be evaluated.

APPENDIX E RESEARCH INSTRUMENT USED FOR DATA COLLECTION

Appendix E-1 Demographic Data Questionnaire

Appendix E-2 Medical Data Summary Form

Appendix E-3 Multiple Affect Adjective Check List

Appendix E-4 Dyadic Adjustment Scale

Appendix E-5 Tennessee Self Concept Scale

Appendix E-6 Risk Factor Index

APPENDIX E-1

_____ 1-3 I.D. Number __ __ __

_____ 4 1. Participant 2. Spouse

_____ 5 1. Male 2. Female

_____ 6-7 Age _____

_____ 8 Cardiac Rehabilitation Program you or spouse currently attending:

_____

_____ 9 Group number: 1 2 3

_____ 10 Time of test 1 2 3

_____ 11-12 Years married _____

_____ 13 Number of previous marriages _____

_____ 14 Number of children

_____ 15 Number of children living at home _____

_____ 16 Religion:

1. Catholic
2. Protestant
3. Jewish
4. None

_____ 17 Education:

1. Grammar School
2. High School
3. College degree
4. Graduate degree

_____ 18 Average joint yearly income:

1. Less than $5,000
2. $5,000-$9,999
3. $10,000-$19,999
4. $20,000-$39,999
5. $40,000-$59,999
6. Greater than $60,000

_____ 19 Current employment status:

1. Working full-time
2. Working part-time
3. Unemployed
4. Retired
5. On sick leave
6. Leave of absence for reason other than health
7. Other _____

_____ 20 Occupation (be as specific as possible):

_____

_____ 21-22 Hours per week currently working _____

APPENDIX E-2 MEDICAL DATA

_____ 1-3 Code Number

History

_____ 4 Angina
1 yes 2 no 3 not documented

_____ 5-6 Number of years

_____ 7 Number of previous M.I.'s

_____ 8 Number of previous C.A.B.G.'s

_____ 9 Number of vessels grafted last surgery
1 one vessel - left main
2 one vessel - other than left main
3 two vessels
4 three vessels
5 not documented

_____ 10 Number of grafts done last surgery

_____ 11 Prior C.H.F.
1 yes 2 no 3 not documented

_____ 12 History of hypertension
1 yes 2 no 3 not documented

_____ 13 History of Diabetes
1 yes 2 no 3 not documented

_____ 14 Family history of C.A.D.
1 yes 2 no 3 not known 4 not documented

_____ 15-17 Pack years smoked

_____ 18 Stressful life style
1 yes 2 no 3 not documented

_____ 19 History of obesity
1 yes 2 no 3 not documented

_____ 20 History of Lipid abnormality
1 hypercholesterolemia
2 hypertriglyceridemia
3 unspecified
4 not documented
5 within normal limits
6 both 1 and 2

_____ 21 History of sedentary life style
1 yes 2 no 3 not documented

Diagnostic Tests Prior to Rehabilitation Program

_____ 22 Angiogram
1 positive
2 negative
3 not documented in chart
4 not done

_____ 23 ECG
1 normal 2 ischemic changes 3 old M.I.
4 non-specific ST changes 5 other

_____ 24 Exercise test
1 normal
2 significant ischemic changes
3 test discontinued for subjective symptoms before ischemic changes seen
4 results not documented

_____25-26 Met level achieved on Treadmill

_____ 27 Perfusion defect documented in exercise test
1 yes
2 no
3 test not performed
4 not documented

Course during Rehabilitation

_____ 28 Functional Class on entry

_____ 29 Arrhythmias during exercise
1 atrial fibrillation / atril flutter
2 junctional prematures
3 supraventricular tachycardia, site undetermined
4 frequent unifocal PBC's
5 frequent multifocal PVC's
6 ventricular tachycardia
7 rare PVC's
8 none experienced
9 no documentation in chart

_____ 30 Arrhythmias at rest
1 atrial fibrillation/atrial flutter
2 junctional prematures
3 supraventricular tachycardia, site undetermined
4 frequent unifocal PVC's
5 frequent multifocal PVC's
6 ventricular tachycardia
7 rare PVC's
8 none experienced
9 no documentation in chart

_____ 31 Conduction defects
1 First degree A.V. block
2 Second degree A.V. block
3 Third degree A.V. block
4 none
5 no documentation in chart
6 LASH
7 sick sinus syndrome

Medications:

_____ 32 Digitalis
1 yes 2 no 3 not known

_____ 33 Inderol
1 yes 2 no 3 not known

_____ 34 Nitro paste/Isordil
1 yes 2 no 3 not known

_____ 35 Diuretic
1 yes 2 no 3 not known

_____ 36 Antiarrhythmic
1 yes 2 no 3 not known

_____ 37 Reserpine
1 yes 2 no 3 not known

_____ 38 Apresoline
1 yes 2 no 3 not known

_____ 39 Lo-pressor/Mini-press
1 yea 2 no 3 not known

_____ 40 Other anti-hypertensive
1 yes 2 no 3 not known

_____ 41 Functional Class on discharge from rehabiliation program

_____42 Time in program prior to starting groups
1 less than 2 weeks
2 2-3 weeks
3 4-5 weeks
4 6-7 weeks
5 8-9 weeks
6 10-11 weeks
7 12-16 weeks
8 17-24 weeks
9 greater than 24 weeks

_____ 43 Time in program for YMCA patients
0 not in program
1 6-12 months

43 cont.

2 1-2 years
3 2-3 years
4 3-4 years
5 4-5 years
6 5-6 years
7 5-6 years
8 7-8 years

_____ 44-46 Percent sessions attended two weeks prior to group starting

_____ 47-49 Percent sessions attended two weeks following last group session

_____ 50-52 Average systolic pressure prior to group sessions

_____ 53-55 Average diastolic pressure prior to group sessions

_____ 56-58 Average systolic pressure post group sessions

_____ 59-61 Average diastolic pressure psot group sessions

APPENDIX E-3

MULTIPLE AFFECT ADJECTIVE CHECK LIST

IN GENERAL FORM

By Marvin Zuckerman
and
Bernard Lubin

Name..... Age..... Sex.....

Date..... Highest grade completed in school.....

DIRECTIONS: On this sheet you will find words which describe different kinds of moods and feelings. Mark an ☒ in the boxes beside the words which describe how you generally feel. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

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MAA 002

A D H

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ gay
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98. ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understanding
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☐ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

APPENDIX E-4

Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list.

	Always Agree	Almost Always Agree	Occa-sionally Disagree	Fre-quently Disagree	Almost Always Disagree	Always Disagree
___25. Handling family finances						
___26. Matters of recreation						
___27. Religious matters						
___28. Demonstrations of affection						
___29. Friends						
___30. Sex relations						
___31. Conventionality (correct or proper behavior)						
___32. Philosophy of life						
___33. Ways of dealing with parents or in-laws						
___34. Aims, goals, and things believed important						
___35. Amount of time spent together						
___36. Making major decisions						
___37. Household tasks						
___38. Leisure time interests and activities						
___39. Career Decisions						

	All the time	Most of the time	often than not	Occa. sionally	Rarely	Never
___40. How often do you discuss or have you considered divorce, separation, or terminating your relationship?						
___41. How often do you or your mate leave the house after a fight?						
___42. In general, how often do you think that things between you and your partner are going well?						
___43. Do you confide in your mate?						
___44. Do you ever regret that you married? (or lived together?)						
___45. How often do you and your partner quarrel?						
___46. How often do you and your mate "get on each other's nerves?"						

	Every Day	Almost Every Day	Occa-sionally	Rarely	Never
___47. Do you kiss your mate?					
	All of them	**Most of them**	**Some of them**	**Very few of them**	**None of them**
___48. Do you and your mate engage in outside interests together?					

How often would you say that the following events occur between you and your mate?

	Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More Often
___49. Have a stimulating exchange of ideas						
___50. Laugh together						
___51. Calmy discuss something						
___52. Work together on a project						

These are some things about which couples sometimes agree and sometime disagree. Indicate if either item below caused differences of opinion or were problems in your relationship during the past few weeks. (Check yes or no)

	Yes	No	
___53.			Being too tired for sex
___54.			Not showing love.

The dots on the following line represent different degrees of happiness in your relationship. The middle point, "happy," represents the degree of happiness of most relationships. Please circle the dot which best describes the degree of happiness, all things considered, of your relationship

___55.

0	1	2	3	4	5	6
Extremely Unhappy	Fairly Unhappy	A little Unhappy	Happy	Very Happy	Extremely Happy	Perfect

Which of the following statements best describes how you feel about the future of your relationship?

56._____ I want desperately for my relationship to succeed and would go to almost any length to see that it does.
_____ I want very much for my relationship to succeed and will do all I can to see that it does.
_____ I want very much for my relationship to succeed and will do my fair share to see that it does.
_____ It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.
_____ It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.
_____ My relationship can never succeed, and there is no more that I can do to keep the relationship going.

How often would you say the following behaviors occurred during the past week?

		Every Day	Almost Every day	Occa-sionally	Rarely	Never
57.____	I encouraged my spouse when he or she did something that was good for his or her health.	_____	_____	_____	_____	_____
58.____	My spouse encouraged me when I did something that was good for my health.	_____	_____	_____	_____	_____
59.____	I expressed my affection for my spouse in some way such as kissing or telling of my warm feelings.	_____	_____	_____	_____	_____
60____	My spouse expressed affection for me in some way such as kissing or telling about his or her warm feelings.	_____	_____	_____	_____	_____
61____	My spouse and I had a personal discussion in which we confided in each other or discussed personal matters.	_____	_____	_____	_____	_____
62____	My spouse and I engaged in sexual intercourse.	_____	_____	_____	_____	_____
63____	I asked my spouse to do something for me.	_____	_____	_____	_____	_____
64____	My spouse asked me to do something for him or her.	_____	_____	_____	_____	_____

APPENDIX E-5

TENNESSEE SELF CONCEPT SCALE

COMPUTER SCORED EDITION

by

William H. Fitts, PhD

Published by

Counselor Recordings and Tests

Box 6184 - Acklen Station Nashville, Tennessee 37212

WRITE YOUR NAME, LAST NAME FIRST, IN THE BOXES BELOW AND THEN MARK OUT THE CORRESPONDING LETTERS.

INK CANNOT BE SCORED
USE PENCIL ONLY
COMPLETELY FILL IN THE AREA BETWEEN THE LINES
THOROUGHLY ERASE ANY ANSWER YOU WISH TO CHANGE

ID NUMBER

INDICATE YOUR SEX HERE: MALE FEMALE

NAME _____ (last name first please) DATE _____

STUDENT NUMBER _____

	C F	M F	P	M T	C T
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5
5	1	2	3	4	5
6	1	2	3	4	5
7	1	2	3	4	5
8	1	2	3	4	5
9	1	2	3	4	5
10	1	2	3	4	5
11	1	2	3	4	5
12	1	2	3	4	5
13	1	2	3	4	5
14	1	2	3	4	5
15	1	2	3	4	5
16	1	2	3	4	5
17	1	2	3	4	5
18	1	2	3	4	5
19	1	2	3	4	5
20	1	2	3	4	5
21	1	2	3	4	5
22	1	2	3	4	5
23	1	2	3	4	5
24	1	2	3	4	5
25	1	2	3	4	5
26	1	2	3	4	5
27	1	2	3	4	5
28	1	2	3	4	5
29	1	2	3	4	5
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31	1	2	3	4	5
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42	1	2	3	4	5
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46	1	2	3	4	5
47	1	2	3	4	5
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49	1	2	3	4	5
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51	1	2	3	4	5
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79	1	2	3	4	5
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81	1	2	3	4	5
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91	1	2	3	4	5
92	1	2	3	4	5
93	1	2	3	4	5
94	1	2	3	4	5
95	1	2	3	4	5
96	1	2	3	4	5
97	1	2	3	4	5
98	1	2	3	4	5
99	1	2	3	4	5
100	1	2	3	4	5

THE TENNESSEE SELF CONCEPT SCALE

DIRECTIONS: Fill in your name and other information on the separate answer sheet.

The statements in this inventory are to help you describe yourself as you see yourself. Please answer them as if you were describing yourself to yourself. Read each item carefully; then select one of the five responses below and fill in the answer space on the separate answer sheet.

Don't skip any items. Answer each one. Use a soft lead pencil. Pens won't work. If you change an answer, you must erase the old answer completely and enter the new one.

RESPONSES	Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
	C	M		M	C
	F	F	PF - PT	T	T
	1	2	3	4	5

TENNESSEE SELF CONCEPT SCALE

1. I have a healthy body 1
2. I am an attractive person 2
3. I consider myself a sloppy person 3
4. I am a decent sort of person 4
5. I am an honest person 5
6. I am a bad person 6
7. I am a cheerful person 7
8. I am a calm and easy going person 8
9. I am a nobody 9
10. I have a family that would always help me in any kind of trouble 10
11. I am a member of a happy family 11
12. My friends have no confidence in me 12
13. I am a friendly person 13
14. I am popular with men 14
15. I am not interested in what other people do 15
16. I do not always tell the truth 16
17. I get angry sometimes 17
18. I like to look nice and neat all the time 18
19. I am full of aches and pains 19
20. I am a sick person 20
21. I am a religious person 21
22. I am a moral failure 22
23. I am a morally weak person 23
24. I have a lot of self-control 24
25. I am a hateful person 25
26. I am losing my mind 26
27. I am an important person to my friends and family 27
28. I am not loved by my family 28
29. I feel that my family doesn't trust me 29
30. I am popular with women 30
31. I am mad at the whole world 31
32. I am hard to be friendly with 32
33. Once in a while I think of things too bad to talk about 33
34. Sometimes when I am not feeling well, I am cross 34
35. I am neither too fat nor too thin 35
36. I like my looks just the way they are 36
37. I would like to change some parts of my body 37
38. I am satisfied with my moral behavior 38
39. I am satisfied with my relationship to God 39
40. I ought to go to church more 40

NCS Data-Reflex E 491 5432

41. I am satisfied to be just what I am 41
42. I am just as nice as I should be 42
43. I despise myself 43
44. I am satisfied with my family relationships 44
45. I understand my family as well as I should 45
46. I should trust my family more 46
47. I am as sociable as I want to be 47
48. I try to please others, but I don't overdo it 48
49. I am no good at all from a social standpoint 49
50. I do not like everyone I know 50
51. Once in a while, I laugh at a dirty joke 51
52. I am neither too tall nor too short 52
53. I don't feel as well as I should 53
54. I should have more sex appeal 54
55. I am as religious as I want to be 55
56. I wish I could be more trustworthy 56
57. I shouldn't tell so many lies 57
58. I am as smart as I want to be 58
59. I am not the person I would like to be 59
60. I wish I didn't give up as easily as I do 60
61. I treat my parents as well as I should (Use past tense if parents are not living) 61
62. I am too sensitive to things my family say 62
63. I should love my family more 63
64. I am satisfied with the way I treat other people 64
65. I should be more polite to others 65
66. I ought to get along better with other people 66
67. I gossip a little at times 67
68. At times I feel like swearing 68
69. I take good care of myself physically 69
70. I try to be careful about my appearance 70
71. I often act like I am "all thumbs" 71
72. I am true to my religion in my everyday life 72
73. I try to change when I know I'm doing things that are wrong 73
74. I sometimes do very bad things 74
75. I can always take care of myself in any situation 75
76. I take the blame for things without getting mad 76
77. I do things without thinking about them first 77
78. I try to play fair with my friends and family 78
79. I take a real interest in my family 79
80. I give in to my parents.(Use past tense if parents are not living) 80
81. I try to understand the other fellow's point of view 81
82. I get along well with other people 82
83. I do not forgive others easily 83
84. I would rather win than lose in a game 84
85. I feel good most of the time 85
86. I do poorly in sports and games 86
87. I am a poor sleeper 87
88. I do what is right most of the time 88
89. I sometimes use unfair means to get ahead 89
90. I have trouble doing the things that are right 90
91. I solve my problems quite easily 91
92. I change my mind a lot 92
93. I try to run away from my problems 93
94. I do my share of work at home 94
95. I quarrel with my family 95
96. I do not act like my family thinks I should 96
97. I see good points in all the people I meet 97
98. I do not feel at ease with other people 98
99. I find it hard to talk with strangers 99
100. Once in a while I put off until tomorrow what I ought to do today 100

APPENDIX E-6

Risk Factor Index

	Score	1	2	3	4	5
___65.	Inhalation of tobacco	None in 1 year	10/day	20/day	30/day	>40/day
	Blood Pressure					
___66.	Systolic	<110	111-129	130-149	150-169	>170
___67.	Diastolic	<70	71-76	77-90	91-100	>100
	Weight % of Fat					
___68.	Men	8-11	12-15	16-20	21-24	>24
	Women	10-13	14-17	18-22	23-27	>27
___69.	Exercise ≥ 7 Mets (Hours/Week)	4 hours	3 hours	2 hours	1 hour	30 minutes

Appendix F: Illustration of Harpenden Skin Calipers.

APPENDIX G PROGRAM EVALUATION QUESTIONNAIRE

APPENDIX G

DATE_____

POST SESSION

ALL ANSWERS WILL BE ANONYMOUS. PLEASE DO NOT WRITE YOUR NAME OR I.D. NUMBER ON THIS FORM.

1. Do you feel that attending the group meetings helped you:

( ) Very much
( ) Moderately
( ) Very little
( ) Not at all

2. Now that the group meetings have ended, do you miss these meetings:

( ) Very much
( ) Moderately
( ) Very little
( ) Not at all

3. Did you look forward to attending the group meetings:

( ) Very much
( ) Moderately
( ) Very little
( ) Not at all

4. Now that the group meetings have ended, have you kept in contact with any of the other members of your group:

( ) No

( ) Yes How many of the group members have you kept in contact with:_____

How many times have you been in contact with the other group members since the sessions have ended:_____

5. Do you feel that the group sessions were:

( ) Too personal
( ) Personal enough
( ) Not personal enough

6. Was the group willing to discuss what you wanted at the sessions:

( ) Very often
( ) Occasionally
( ) Very seldom
( ) Never

7. Did you feel comfortable in discussing your problems with the group:

( ) Very comfortable
( ) Comfortable
( ) A little uncomfortable
( ) Very uncomfortable

8. Did you enjoy attending the group meetings:

( ) Very much
( ) Moderately
( ) Very little
( ) Not at all

9. Do you feel that the group program should have been:

( ) Shorter
( ) Longer
( ) No change

10. Do you feel that the sessions should have been held:

( ) More frequently (more than once per week)
( ) Less frequently (less than once per week)
( ) No change (once per week was good)

11. If a similar program were started for coronary patients, would you like to participate again:

( ) Yes
( ) No
( ) Don't know

12. Would you recommend a program similar to the one you participated in to other coronary patients:

( ) Yes
( ) No Why not:_____

_____

_____

13. How do you feel about your group leaders? Do you think the group leaders were: (Answer Each One Below)

a.	Hostile?	( )	Yes	( )	No
b.	Friendly?	( )	Yes	( )	No
c.	Active?	( )	Yes	( )	No
d.	Informative?	( )	Yes	( )	No
e.	Serious?	( )	Yes	( )	No
f.	Understanding?	( )	Yes	( )	No

14. If your group meetings were just starting, would you like to have the same group leaders:

( ) Yes
( ) No Why not:_____

_____

15. Would you like to make any additional comments about your group leader (use space below):

_____

_____

_____

_____

_____

16. In your own words, what did you get out of attending the group meetings (use space below):

_____

_____

_____

_____

_____

_____

17. Looking back over your experience with the group program, are there any changes or suggestions you would like to make that might improve the program (use space below):

_____

_____

_____

_____

_____

_____

_____

_____

_____

7/13/71

APPENDIX H MANUAL FOR CODING OCCUPATIONS AND INDUSTRIES OF 1970-BASIS DUNCAN SOCIOECONOMIC SCORES

Appendix H January 1976 **

Duncan SEI Scores for 1970 Bureau of Census Alphabetical Index of Industries and Occupations*

1970 Code	Duncan SEI	1970 Code	Duncan SEI
Professional, Technical and Kindred Workers		Professional, Technical and Kindred Workers	
001	77	044	80
002	85	045	79
003	65	051	80
004	65	052	80
005	65	053	80
006	87	054	77
010	90	055	66
011	84	056	84
012	84	061	75
013	86	062	96
014	80	063	79
015	83	064	81
020	85	065	92
021	81	071	58
022	87	072	78
023	87	073	58
024	83	074	39
025	48	075	44
026	83	076	60
030	93	080	48
031	92	081	48
032	60	082	60
033	75	083	48
034	81	084	48
035	80	085	52
036	81	086	52
042	80	090	57
043	62	091	74

*SEI Scores are rounded off from decimal scores listed in a private paper by David L. Featherman, Department of Rural Sociology, University of Wisconsin, compiled in November 1973, entitled "Metrics of Occupational Status Reconciled to the 1970 Bureau of Census Classification of Detailed Occupational Titles (Based on Census Technical Paper No. 26, "1970 Occupation and Industry Classification Systems in Terms of Their 1960 Occupational and Industry Elements")."

**"Manual for Coding Occupations & Industries into Detailed 1970 Categories & a Listing of 1970-Basis Duncan Socioeconomic & NORC Prestige Scores", Featherman, Sobel & Dickens, a corrected version of Appendix B.

1970 Code	Duncan SEI
092	81
093	81
094	81
095	65
096	81
100	64
101	67
102	84
103	84
104	84
105	84
110	84
111	84
112	84
113	84
114	84
115	84
116	84
120	84
121	84
122	84
123	53
124	64
125	84
126	84
130	84
131	72
132	84
133	84
134	84
135	84
140	84
141	61
142	71
143	72
144	70
145	62
150	62
151	62
152	67
153	62
154	64
155	62
156	53
161	48
162	62
163	79
164	69
165	61
170	48
171	69
172	62
173	62
174	65
175	60
180	59
181	76
182	45
183	71
184	82
185	52
190	67
191	50
192	82
193	65
194	40
195	65
Managers and Administrators, except Farm	
201	61
202	80
203	51
205	72
210	74
211	59
212	74
213	58
215	67
216	32
220	75
221	50
222	67
223	60
224	61
225	75
226	58
230	38
231	71
233	75

1970 Code	Duncan SEI
235	78
240	72
245	62
Sales Workers	
200	66
261	40
262	35
264	09
265	66
266	27
270	62
271	72
281	65
282	61
283	39
284	39
285	53
Clerical and Kindred Workers	
301	52
303	44
305	51
310	44
311	44
312	44
313	43
314	44
315	40
320	44
321	59
323	44
325	44
326	62
330	44
331	53
332	43
333	28
334	44
341	45
342	45
343	45
344	45
345	45
350	45
355	45
360	44
361	45
362	44
363	68
364	44
370	61
371	61
372	62
374	24
375	44
376	61
381	44
382	63
383	22
384	47
385	45
390	60
391	61
392	42
394	44
395	44
Craftsmen and Kindred Workers	
401	22
402	22
403	16
404	33
405	39
410	27
411	32
412	20
413	22
415	19
416	31
420	12
421	19
422	52
423	40
424	21
425	40
426	48
430	44
431	37
433	49
434	55
435	47
436	23
440	17
441	50

1970 Code	Duncan SEI
442	23
443	18
444	40
445	25
446	22
450	22
452	41
453	36
454	34
455	58
456	45
461	33
462	41
470	27
471	48
472	19
473	19
474	25
475	27
480	27
481	27
482	27
483	10
484	36
485	36
486	21
491	34
492	27
495	27
501	19
502	31
503	12
504	33
505	43
506	39
510	16
511	29
512	14
514	43
515	63
516	38
520	25
521	29
522	34
523	33
525	50
530	46
531	40
533	22
534	15
535	33
536	33
540	34
542	12
543	17
545	45
546	24
550	34
551	22
552	49
554	49
560	28
561	49
562	41
563	21
571	35
572	39
575	26
580	99
Operatives, except Transport	
601	32
602	17
603	11
604	18
605	25
610	19
611	18
612	19
613	23
614	22
615	25
620	12
621	19
622	18
623	18
624	17
625	12
626	29
630	15
631	29
633	16
634	18
635	20

1970 Code	Duncan SEI
636	46
640	17
641	18
642	15
643	18
644	18
645	42
650	22
651	22
652	22
653	21
656	19
660	20
661	16
662	05
663	18
664	09
665	24
666	17
670	03
671	21
672	04
673	06
674	06
680	24
681	20
690	19
692	19
694	19
695	19
Transport Equipment Operatives	
701	24
703	24
704	33
705	31
706	17
710	03
711	19
712	42
713	44
714	10
715	15
Laborers, except Farm	
740	17
750	07
751	07
752	11
753	09
754	06
755	11
760	11
761	04
762	17
763	08
764	09
770	08
780	08
785	08
Farmers and Farm Managers	
801	14
802	36
Farm Laborers and Farm Foremen	
821	20
822	06
823	17
824	22
Service Workers except Private Household	
901	13
902	08
903	13
910	19
911	11
912	15
913	11
914	17
915	16
916	11
921	38
922	25
923	51
924	37
925	14

1970 Code	Duncan SEI
926	22
931	31
932	19
933	26
934	08
935	17
940	30
941	08
942	28
943	10
944	17
945	31
950	31
952	26
953	25
954	11
960	18
961	37
962	18
963	21
964	40
965	34
Private Household Workers	
980	07
981	07
982	11
983	12
984	07

	Occ Code	SEI
	990, 996	97
Military	581	54
	582	41
	583	41
missing data	Ref 997, D.K 998, N.A 999	99

March 26, 1976

From: Don Treiman

Re: Assigning Duncan scores to military occupations.

Since we have no Duncan scores for the four military occupations routinely coded by ISSR (the Census category for former armed forces personnel and the three military categories used by ISSR but not the Census) we need to assign scores to these categories. I propose that we take advantage of the fact that my international occupational prestige scale (Treiman, 1975) contains scores for military occupations and the fact that the Duncan index was originally designed to estimate the prestige of occupations, by converting my scores to the Duncan metric. We can do this by means of the equation $\hat{D} = 20.3 + .529(S)$ where D is the Duncan score and S is my Standard Scale score; the correlation between the two sets of scores is .86. (This equation is based on the 296 categories of the U.S. Census 1960 occupational classification, but it is highly unlikely that an equation based on the 1970 classification would be much different.)

The matching and conversion is as follows:

Standard scale title	Census code and title	Estimated Duncan score
Armed forces officer	581 Presently officers in Armed Forces	54
Soldier	580 Former members of the Armed Forces	41
	582 Presently enlisted man in Armed Forces	41
	583 Presently in Armed Forces--unspecified rank	41

Treiman, Donald J., 1975 "Problems of concept and measurement in the comparative study of occupational mobility," Social Science Research 4 (September):183-230.

DUNCAN SCORE	OCCUPATION
96	Dentists
93	Judges
92	Lawyers, Physicians, Medical and Osteopathic
90	Chemical Engineers
87	Aeronautical and Astronautical Engineers, Sales Engineers, Engineers, N.E.C.
86	Industrial Engineers
85	Architects, Mining Engineers
84	Civil Engineers, Electrical and Electronic Engineers, Personnel and Labor Relations Workers, College and University Teachers except Art, Drama, Music, Physical Education and Home Economics Teachers
83	Metallurgical and Materials Engineers, Farm and Home Management Advisors
82	Editors and Reporters, Public Relations Men and Publicity Writers
81	Petroleum Engineers, Actuaries, Statisticians, Pharmacists, Political Scientists, Psychologists, Sociologists, Social Scientists, N.E.C.
80	Mechanical Engineers, Mathematicians, Agricultural Scientists, Biological Scientists, Geologists, Marine Scientists, Physicists and Astronomers, Bank Officers and Financial Managers
79	Optometrists, Airplane Pilots, Chemists
78	Veterinarians, College Administrators
77	Accountants, Life and Physical Scientists, N.E.C.
76	Authors
75	Archivists and Curators, Chiropractors, Purchasing Agents and Buyers, N.E.C., Office Managers, N.E.C., Sales Managers, except Retail Trade
74	Economists, Credit Men, Health Administrators

DUNCAN SCORE	OCCUPATION
72	College and University Home Economics Teachers, Prekindergarten and Kindergarten teachers, Buyers, Wholesale and Retail Trade, Elementary and Secondary School Administrators, Stock and Bond Salesmen
71	Elementary School Teachers, Sales Managers and Department Heads, Retail Trade, Designers
70	Secondary School Teachers
69	Air Traffic Controllers, Radio Operators
68	Real Estate Appraisers
67	Recreation Workers, Draftsmen, Painters and Sculptors, Inspectors, except Construction, Public Administration, Officials and Administrators; Public Administration, N.E.C.
66	Operations and Systems Researchers and Analysts, Advertising Agents and Salesmen, Insurance Agents, Brokers, and Underwriters
65	Computer Specialists, Urban and Regional Planners, Vocational and Educational Counselors, Radio and Television Announcers, Research Workers, not specified, Sales Representatives, Manufacturing Industries
64	Social Workers, College and University Coaches and Physical Education Teachers, Industrial Engineering Technicians
63	Teacher Aides, except School Monitors, Photoengravers and Lithographers
62	Atmospheric and Space Scientists, Teachers, except College and University, N.E.C., Agriculture and Biological Technicians, except Health, Chemical Technicians, Electrical and Electronic Engineering Technicians, Mechanical Engineering Technicians, Engineering and Science Technicians, N.E.C., Tool Programmers, Numerical Control, Technicians, N.E.C., Managers and Administrators, N.E.C., Real Estate Agents and Brokers, Insurance Adjustors, Examiners, and Investigators, Secretaries, N.E.C.
61	Adult Educational Teachers, Embalmers, Assessors, Controllers, and Treasurers; Local Public Administration, Postmasters and Mail Superintendents, Sales Representatives, Wholesale Trade, Legal and Medical Secretaries, Stenographers, Typists

DUNCAN SCORE	OCCUPATION
60	Librarians, Therapists, Health Record Technolcgists and Technicians, Actors, Officials of Lodges, Societies, and Unions, Ticket, Station, and Express Agents
59	Funeral Directors, Estimators and Investigators, N.E.C., Athletes and Kindred Workers
58	Podiatrists, Construction Inspectors, Public Administration, Railroad Conductors, Locomotive Engineers, Health Practitioners, N.E.C.
57	Religious Workers, N.E.C.
55	Electrotypers and Stereotypers
54	Armed Forces Officers
53	College and University Art, Drama, and Music Teachers, Mathematical Technicians, Salesmen of Services and Construction, Mail Carriers, Post Office
52	Health Technologists and Technicians, N.E.C., Clergymen, Musicians and Composers, Bank Tellers, Compositors and Typesetters
51	Bookkeepers, Health Trainees, Buyers and Shippers, Farm products
50	Photographers, Officers, Pilots, and Pursers; Ship, Power Station Operators, Foreman, N.E.C.
49	Electric Power Linemen and Cablemen, Telephone Installers and Repairmen, Telephone Linemen and Splicers, Tool and Die Makers
48	Foresters and Conservationists, Clinical Laboratory Technologists and Technicians, Dental Hygienists, Radiologic Technologists and Technicians, Therapy Assistants, Surveyors, Flight Engineers, Dental Laboratory Technicians, Aircraft Mechanics and Repairmen
47	Telegraph Operators, Engravers, except Photoengravers
46	Pressmen and Plate Printers, Printing, Milliners
45	Dancers, Office Machine Operators, Postal Clerks, Telephone Operators, Locomotive Firemen, Stationary Engineers

DUNCAN SCORE	OCCUPATION
44	Registered Nurses, Billing Clerks, Cashiers, Clerical Assistants, Social Welfare, Clerical Supervisors, N.E.C., Counter Clerks, except Food, Enumerators and Interviewers, Expediters and Production Controllers, File Clerks, Library Attendants and Assistants, Meter Readers, Utilities, Payroll and Timekeeping Clerks, Proofreaders, Receptionists, Statistical Clerks, Miscellaneous and not specified clerical workers, Electricians, Railroad Switchmen, Stock Clerks and Storekeepers
43	Collectors, Bill and Account, Mail Handlers, except Post Office, Motion Picture Projectionists, Pattern and Model Makers, except Paper
42	Weighers, Photographic Process Workers, Railroad Brakemen
41	Inspectors, N.E.C., Machinist Apprentices, Tool and Die Apprentices, Enlisted Men and unspecified members of the Armed Forces
40	Writers, Artists, and Entertainers, N.E.C., Auctioneers, Vehicle Dispatchers and Starters, Printing Trades Apprentices, Pressman Apprentices, Decorators and Window Dressers, Furriers, Policemen and Detectives
39	Dietitians, Salesmen and Sales Clerks, Retail Trade, Bookbinders, Opticians, and Lens Grinders and Polishers, not specified apprentices
38	Restaurant, Cafeteria, and Bar Managers, Piano and Organ Tuners and Repairmen, Dental Assistants
37	Electrician Apprenticies, Lay Midwives, Firemen, Fire Protection
36	Jewelers and Watchmakers, Office Machine, Radio, and Television Mechanics and Repairmen, Farm Managers
35	Demonstrators, Specified Craft Apprentices, N.E.C.
34	Metal Job and Die Setters, Mechanic, except Auto, Apprentices, Plumbers and Pipe Fitters, Shipfitters, Structural Metal Craftsmen, Sheriffs and Bailiffs
33	Boilermakers, Machinists, Molder Apprentices, Plumber and Pipe Fitter Apprentices, Sheetmetal Workers, Tinsmiths, and Apprentices, Urban Rail Transit Conductors and Motormen

DUNCAN SCORE	OCCUPATION
32	Building Managers and Superintendents, Apprentice Brickmasons and Stonemasons, Asbestos and Insulation Workers
31	Carpenter Apprentices, Millwrights, Deliverymen and Routemen, Airline Stewardesses, Personal Service Apprentices, Housekeepers, except private household
30	Boarding and Lodging House Keepers
29	Painter and Plasterer Apprentices, Metal Heaters, Meat Cutters and Butchers, except Manufacturing
28	Messengers and Office Boys, Tile Setters, Child Care Workers, except private household
27	Newsboys, Brickmasons and Stonemasons, Air Conditioning, Heating, and Refrigeration Mechanics and Repairmen, Data Processing Machine Repairmen, Farm Implement Mechanics and Repairmen, Heavy Equipment Mechanics, including Diesel, Household Appliance and Accessory Installers and Mechanics, Miscellaneous and not specified mechanics and repairmen
26	Craftsmen and Kindred Workers, N.E.C., Attendants, Personal Service, N.E.C., School Monitors
25	Glaziers, Automobile Mechanic Apprentices, Plasterers, Dry Wall Installers and Lathers, Surveying Chainmen, Rodmen, and Axmen, Health Aides, except Nursing, Recreation and Amusement Ushers
24	Shipping and Receiving Clerks, Stone Cutters and Stone Carvers, Welders and Flame Cutters, Solderers, Boatmen and Canalmen, Bus Drivers
23	Excavating, Grading, and Road Machine Operators; except Bulldozer, Forgemen and Hammermen, Dressmakers and Seamstresses, except Factory
22	Telegraph Messengers, Automobile Accessories Installers, Bakers, Cabinetmakers, Heat Treaters, Annealers, and Temperers, Log and Lubmer Inspectors, Scalers, and Graders, Metal Rollers and Finishers, Tailors, Grinding, Lathe and Milling Machine Operatives, Self Employed Farm Service Laborers, Practical Nurses, Earth Drillers, Drill Press Operatives

DUNCAN SCORE	OCCUPATION
21	Cranemen, Derrickmen, and Hoistmen, Upholsterers, Precision Machine Operatives, N.E.C., Textile Knitters, Loopers and Toppers, Marshals and Constables, Railroad and Car Shop Mechanics and Repairmen
20	Bulldozer Operators, Metal Platers, Riveters and Fasteners, Winding Operatives, N.E.C., Farm Foremen
19	Carpenters, Cement and Concrete Finishers, Automobile Body Repairmen, Automobile Mechanics, Grain, Flour, and Feed Millers, Manufacturing Checkers, Examiners, and Inspectors, Cutting Operatives, N.E.C., Punch and Stamping Press Operatives, Miscellaneous specified and not specified Machine Operatives, Parking Attendants, Bartenders, Recreation and Amusement Attendants, Filers, Polishers, Sanders and Buffers
18	Bottling and Canning Operatives, Clothing Ironers and Pressers, Furnacemen, Smeltermen, and Pourers, Garage Workers and Gas Station Attendants, Meat Wrappers, Retail Trade, Mixing Operatives, Packers and Wrappers, Painters, Manufactured Articles, Sewers and Stitchers, Crossing Guards and Bridge Tenders, Guards and Watchmen, Furniture and Wood Finishers
17	Floor Layers, except Tile Setters, Sign Painters and Letterers, Assemblers, Manufacturing Graders and Sorters, Stationary Firemen, Animal Caretakers, except Farm, Stock Handlers, Farm Laborers, Unpaid Family Workers, Food Counter and Fountain Workers, Barbers, Hairdressers and Cosmetologists, Mine Operatives, N.E.C., Fork Lift and Tow Motor Operatives
16	Blacksmiths, Construction and Maintenance Painters, Manufacturing Meat Cutters and Butchers, Sailors and Deckhands, Waiters
15	Roofers and Slaters, Laundry and Dry Cleaning Operatives, N.E.C., Oilers and Greasers, except Auto, Truck Drivers, Cooks, except private household
14	Paperhangers, Farmers (owners and tenants), Nursing Aides, Orderlies, and Attendants
13	Chambermaids and Maids, except private households, Janitors and Sextons

DUNCAN SCORE	OCCUPATION
12	Carpet Installers, Metal Molders, Shoe Repairmen, Dyers, Produce Graders and Packers, except Factory and Farm, Laundresses, private household
11	Blasters and Powdermen, Fishermen and Oystermen, Gardeners and Groundskeepers, except Farm, Longshoremen and Stevedores, Busboys, Dishwashers, Food Service Workers, N.E.C., except private household, Welfare Service Aides, Housekeepers, private household
10	Loom Fixers, Taxicab Drivers and Chauffeurs, Elevator Operators
09	Hucksters and Peddlers, Freight and Material Handlers, Vehicle Washers and Equipment Cleaners, Shoemaking Machine Operatives
08	Bootblacks, Teamsters, Warehousemen, N.E.C., Miscellaneous and not specified laborers, Cleaners and Charwomen, Baggage Porters and Bellhops
07	Carpenters' Helpers, Construction Laborers, Private Household Child Care Workers, Cooks, Maids and Servants
06	Textile Weavers and Operatives, N.E.C., Garbage Collectors, Farm Laborers, Wage Workers
05	Sawyers
04	Textile Spinners, Twisters, and Winders, Lumbermen, Raftsmen, and Woodchoppers
03	Textile Carding, Lapping, and Combing Operatives, Motormen; Mine, Factory, Logging Camp, etc.

APPENDIX I SUMMARY OF REPEATED MEASURES ANALYSIS OF VARIANCE AND COVARIANCE FOR DEPENDENT VARIABLES

Appendix I-1 Variables Reflecting Role Insufficiency of Patient Subjects

Appendix I-2 Variables Reflecting Role Insufficiency of Spouse Subjects

Appendix I-3 Variables Reflecting Role Mastery of Patient Subjects

APPENDIX I-1

Results of Repeated Measures Analysis of Variance and Covariance for Variables Reflecting Role Insufficiency in Patient Subjects by Group

Variable	df	Mean Ssquare	F	p	Greenhouse-Geisser
Anxiety	4	7.57	.90	.47	.47
Depression	4	10.67	.55	.70	.68
Hostility	4	7.15	.65	.63	.59
Marital	4	11.21	.88	.48	.47
Satisfaction	4	42.37	.80	.53	.51
Self Esteem	4	327.74	2.12	.09	.10
Identity	4	43.62	1.37	.26	.26
Satisfaction	4	26.12	.69	.60	.58
Behavioral Self	4	77.18	3.29	.02	.02
Physical Self	4	12.96	.79	.53	.53
Moral-Ethical Self	4	11.61	.66	.62	.61
Personal Self	4	28.51	3.48	.01	.02
Self as Family Member	4	8.37	.53	.71	.69
Social Self	4	25.63	2.17	.08	.10

APPENDIX I-2

Results of Repeated Measures Analysis of Variance and Covariance for Variables Reflecting Role Insufficiency in Spouse Subjects (N = 46) by Group

Variable	df	Mean Square	F	p	Greenhouse-Geisser
Anxiety	4	27.82	2.41	.05	.05
Depression	4	40.70	1.66	.17	.17
Hostility	4	22.23	1.87	.13	.13
Marital Satisfaction	4	130.32	1.74	.15	.18
Self Esteem	4	759.47	3.20	.02	.02
Identity	4	54.88	1.43	.23	.23
Satiafaction	4	96.91	2.34	.06	.07
Bahavioral Self	4	124.41	3.03	.02	.02
Physical Self	4	30.92	2.61	.04	.05
Moral-Ethical Self	4	60.11	3.06	.02	.02
Personal Self	4	19.28	.94	.45	.45
Self as Family Member	4	81.79	3.44	.01	.01
Social Self	4	29.67	1.87	.13	.14

APPENDIX I-3

Results of Repeated Measures Analysis of Variance and Covariance for Variables Reflecting Role Mastery in Patient Subjects (N = 46) by Group

Variable	df	Mean Square	F	p	Greenhouse-Geisser
Cigarette Use	4	.05	.56	.69	.58
Systolic Blood Pressure	4	271.85	2.64	.04	.04
Diastolic Blood Pressure	4	41.22	.77	.55	.54
Tricep's Skin Fold	4	16.43	4.60	.002	.004
Weekly Exercise	4	.81	1.23	.31	.31

APPENDIX J MEANS AND STANDARD DEVIATIONS OF DEPENDENT VARIABLE SCORES FOR EXPERIMENTAL TREATMENT GROUPS BY TIME

Appendix J-1 Means and Standard Deviations for Patients' Anxiety Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	8.2	2.9	8.0	23	5.0	2.0
Time 2	9.0	5.2	7.3	3.6	4.0	2.5
Time 3	7.8	4.0	8.1	4.2	3.7	2.7
Center 2						
Time 1	6.0	2.9	6.3	2.1	5.4	3.1
Time 2	2.3	2.2	4.3	4.6	7.6	6.7
Time 3	2.3	3.8	7.3	6.8	7.8	5.9
Center 3						
Time 1	7.3	2.1	5.0	4.3	3.3	3.2
Time 2	3.0	1.7	3.4	2.6	2.7	0.6
Time 3	6.0	6.6	4.4	3.5	3.7	3.2
All Centers						
Time 1	7.0	2.8	6.5	3.1	4.5	2.8
Time 2	4.8	4.8	5.2	3.8	4.7	4.5
Time 3	5.4	4.8	6.7	4.8	5.1	4.4

Appendix J-2 Means and Standard Deviations for Patient's Depression Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	16.0	4.7	14.0	5.9	11.8	2.4
Time 2	14.2	5.1	12.0	7.2	9.3	2.3
Time 3	12.3	9.8	12.7	5.3	10.0	1.7
Center 2						
Time 1	8.5	5.9	11.5	7.1	14.0	4.7
Time 2	5.0	4.5	11.3	5.9	12.8	8.3
Time 3	5.3	9.2	11.8	8.3	15.6	10.4
Center 3						
Time 1	11.3	2.9	9.8	6.0	13.3	4.0
Time 2	7.7	4.2	8.8	6.7	10.0	2.0
Time 3	6.3	7.6	7.8	5.6	10.3	4.7
All Centers						
Time 1	12.9	5.6	11.9	6.1	12.4	4.0
Time 2	8.6	6.4	10.7	6.4	10.0	5.7
Time 3	8.0	9.1	9.6	6.2	12.1	6.7

Appendix J-3 Means and Standard Deviations for Patients' Hostility Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 3		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	8.7	3.6	9.5	5.2	6.2	4.2
Time 2	8.7	4.3	6.7	3.3	3.3	2.2
Time 3	6.7	3.6	8.7	4.1	4.2	2.0
Center 2						
Time 1	6.5	1.7	6.3	3.3	6.2	3.0
Time 2	3.5	0.6	6.0	4.6	7.0	3.9
Time 3	3.0	2.2	8.3	4.9	10.8	8.9
Center 3						
Time 1	5.7	2.9	6.0	3.2	6.0	3.0
Time 2	2.3	0.6	3.8	3.6	4.3	1.5
Time 3	6.0	5.6	5.0	3.7	7.0	5.3
All Centers						
Time 1	7.3	3.1	7.5	4.2	5.9	3.3
Time 2	5.0	4.2	5.5	3.7	4.5	3.2
Time 3	5.4	3.8	7.3	4.3	7.1	6.3

Appendix J-4 Means and Standard Deviations for Patients' Total Marital Adjustment Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	114.3	27.3	105.3	9.8	123.8	11.3
Time 2	116.8	27.3	102.5	14.5	121.0	8.1
Time 3	113.7	29.2	105.7	11.2	122.0	7.8
Center 2						
Time 1	114.3	15.5	118.0	20.8	110.2	6.5
Time 2	117.5	21.1	111.0	16.6	108.8	11.6
Time 3	110.0	34.6	112.5	25.7	110.0	9.2
Center 3						
Time 1	101.0	16.5	119.2	11.2	105.0	5.0
Time 2	96.3	23.2	114.2	10.4	102.3	3.2
Time 3	96.7	27.7	119.0	9.8	97.3	4.7
All Centers						
Time 1	111.0	20.4	113.3	14.4	115.1	11.2
Time 2	111.4	23.7	108.7	13.9	112.6	11.4
Time 3	108.5	28.8	111.9	15.7	112.4	12.2

Appendix J-5 Means and Standard Deviations for Patients' Total Positive Self-Esteem for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	331.3	24.9	324.2	21.5	346.3	12.7
Time 2	344.7	23.0	331.3	19.5	350.0	19.7
Time 3	348.7	18.5	340.7	26.0	342.0	13.4
Center 2						
Time 1	384.3	19.9	355.0	33.2	346.6	22.7
Time 2	375.8	29.9	361.3	29.6	350.0	22.6
Time 3	382.0	49.2	337.8	48.9	342.4	31.4
Center 3						
Time 1	352.7	25.5	348.4	29.3	339.0	33.4
Time 2	352.3	16.0	363.8	31.6	322.7	8.0
Time 3	364.3	22.5	361.8	32.1	319.0	13.1
All Centers						
Time 1	349.2	30.7	340.5	29.0	348.6	24.2
Time 2	353.3	27.1	350.1	29.4	345.5	21.7
Time 3	362.5	32.5	346.9	34.2	340.7	23.5

Appendix J-6 Means and Standard Deviations for Patients' Sense of Identity Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	122.5	10.4	119.3	5.5	121.8	4.9
Time 2	125.0	12.0	119.3	6.6	125.0	7.7
Time 3	125.0	6.8	122.5	7.0	124.0	4.9
Center 2						
Time 1	133.3	3.4	128.5	12.4	125.4	7.2
Time 2	135.5	6.5	129.5	4.2	126.2	8.0
Time 3	134.0	13.5	117.5	20.6	120.8	9.9
Center 3						
Time 1	126.3	10.4	126.2	8.7	126.0	8.7
Time 2	126.7	7.8	132.4	11.8	122.0	8.2
Time 3	132.3	3.2	130.2	7.5	118.0	12.5
All Centers						
Time 1	125.4	9.4	124.1	9.1	125.1	7.4
Time 2	127.7	10.3	126.4	9.8	124.8	7.4
Time 3	129.5	9.2	123.7	12.3	121.6	8.3

Appendix J-7 Means and Standard Deviations for Patients' Satisfaction with Self for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	104.5	12.9	100.0	10.1	113.0	4.9
Time 2	109.0	8.9	102.7	8.1	113.0	7.6
Time 3	112.2	9.8	106.2	10.1	115.3	6.1
Center 2						
Time 1	124.0	13.7	109.8	15.8	108.8	9.1
Time 2	121.5	18.1	113.3	13.9	109.0	3.14
Time 3	121.0	25.9	109.3	16.9	109.2	12.4
Center 3						
Time 1	108.3	13.7	109.6	15.0	104.3	14.0
Time 2	105.7	6.0	112.6	14.9	97.7	4.2
Time 3	107.3	12.5	114.2	16.4	100.0	4.6
All Centers						
Time 1	110.4	14.0	105.8	13.4	111.1	10.1
Time 2	111.4	12.6	108.8	12.5	108.3	8.1
Time 3	113.8	16.2	109.7	13.7	109.9	10.0

Appendix J-8 Means and Standard Deviations for Patients' Behavioral Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	104.3	9.6	104.8	8.4	111.5	7.4
Time 2	110.7	10.3	109.3	8.2	115.2	5.5
Time 3	111.5	7.1	112.0	10.4	110.8	7.6
Center 2						
Time 1	127.0	4.7	116.8	7.9	112.4	7.5
Time 2	118.8	8.1	118.5	12.8	114.8	12.5
Time 3	127.0	12.0	111.0	15.1	112.4	11.1
Center 3						
Time 1	118.0	4.0	112.6	9.1	108.7	11.4
Time 2	120.0	3.6	118.8	7.4	103.0	4.4
Time 3	124.7	7.8	117.4	11.7	101.0	1.0
All Centers						
Time 1	113.4	11.8	110.6	9.4	112.5	8.9
Time 2	114.1	9.9	114.9	9.9	112.4	9.4
Time 3	119.3	11.2	113.5	11.6	109.3	9.0

Appendix J-9 Means and Standard Deviations for Patients' Physical Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	55.0	8.5	60.8	4.3	65.0	4.2
Time 2	59.0	11.9	62.5	2.9	65.0	5.4
Time 3	59.8	8.6	62.2	3.6	65.3	5.9
Center 2						
Time 1	73.3	8.6	67.8	9.3	62.6	6.1
Time 2	72.0	10.2	67.3	9.0	61.2	7.2
Time 3	73.3	13.3	63.0	10.1	61.2	9.9
Center 3						
Time 1	70.7	4.0	68.8	7.8	65.3	8.1
Time 2	71.0	1.0	71.8	10.1	63.7	4.2
Time 3	70.3	1.5	71.8	7.0	60.0	3.5
All Centers						
Time 1	64.0	10.3	65.3	7.5	64.9	5.8
Time 2	66.0	10.9	66.9	8.2	63.4	5.7
Time 3	66.4	10.8	65.6	7.8	62.7	7.1

Tappendix J-10 Means and Standard Deviations for Patients' Moral-Ethical Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	74.5	10.3	70.5	6.6	71.0	2.6
Time 2	77.3	6.8	70.2	8.0	73.3	6.7
Time 3	77.0	4.6	73.0	9.5	73.3	4.0
Center 2						
Time 1	82.3	1.3	75.3	8.7	70.6	5.4
Time 2	80.5	7.9	80.0	7.3	72.4	3.4
Time 3	81.3	7.5	70.3	11.5	71.6	5.7
Center 3						
Time 1	76.0	9.2	74.8	2.5	75.0	9.8
Time 2	73.0	7.9	76.8	2.3	70.7	3.1
Time 3	76.7	4.2	78.0	4.4	70.0	3.6
All Centers						
Time 1	76.3	8.2	73.2	6.3	72.7	6.4
Time 2	76.4	7.9	75.0	7.4	72.4	4.8
Time 3	78.2	5.0	73.9	8.7	72.0	4.5

Appendix J-11 Means and Standard Deviations for Patients' Personal Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	62.2	6.9	63.7	6.0	68.0	2.8
Time 2	63.3	6.4	65.0	5.1	71.5	2.8
Time 3	67.0	7.3	68.5	7.5	69.2	3.7
Center 2						
Time 1	75.0	8.0	69.5	6.4	69.8	5.1
Time 2	74.3	11.4	69.5	5.5	69.8	3.9
Time 3	77.8	10.6	66.8	9.8	67.4	4.2
Center 3						
Time 1	65.3	2.1	67.4	8.7	64.7	5.5
Time 2	71.0	2.7	70.4	29.0	62.0	2.7
Time 3	71.3	7.1	68.4	5.2	62.0	4.0
All Centers						
Time 1	66.8	8.0	66.5	7.0	68.7	5.3
Time 2	68.3	8.5	68.0	6.7	68.9	4.8
Time 3	71.3	9.0	68.0	7.0	67.0	4.6

Appendix J-12 Means and Standard Deviations for Patients' Social Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mea	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	68.5	7.1	64.3	7.6	71.2	2.8
Time 2	73.3	5.9	68.7	7.8	71.0	6.0
Time 3	72.5	5.0	68.8	9.8	1.0	6.7
Center 2						
Time 1	77.8	1.2	72.3	9.0	71.6	6.1
Time 2	74.3	3.3	74.0	10.9	73.4	8.3
Time 3	74.5	10.3	68.3	11.9	70.8	7.3
Center 3						
Time 1	70.0	5.3	66.0	6.5	69.3	10.7
Time 2	70.0	7.0	71.2	9 8	62.7	8.3
Time 3	74.7	4.7	71.0	13.5	63.34	9.3
All Centers						
Time 1	70.9	6.6	67.0	7.8	70.7	5.9
Time 2	71.8	6.5	70.9	8.9	70.1	8.0
Time 3	73.6	6.5	69.4	10.9	69.3	7.6

Appendix J-13 Means and Standard Deviations for Patients' Family Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	71.2	6.4	64.8	4.3	71.2	5.7
Time 2	71.7	6.0	65.0	3.6	72.3	7.0
Time 3	72.3	8.2	68.2	4.4	71.3	2.0
Center 2						
Time 1	76.0	8.8	70.3	6.6	72.0	4.3
Time 2	74.8	6.5	70.5	6.8	73.2	5.6
Time 3	75.3	13.6	69.5	9.8	71.4	7.4
Center 3						
Time 1	70.7	12.1	71.4	7.1	64.7	7.2
Time 2	70.9	6.4	69.3	6.0	70.7	6.9
Time 3	73.0	10.1	70.0	6.9	69.7	5.9
All Centers						
Time 1	71.3	8.1	68.5	6.3	70.9	6.5
Time 2	70.9	6.4	69.3	6.0	70.7	6.9
Time 3	73.0	10.1	70.0	6.9	69.7	5.9

Appendix J-14 Means and Standard Deviations for Spouses' Anxiety Scores for Treatment Groups by Time

Treatment Center	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	10.3	3.6	5.2	2.8	5.2	4.4
Time 2	6.8	3.4	5.5	4.3	5.7	4.5
Time 3	8.8	5.4	6.2	4.4	4.8	2.6
Center 2						
Time 1	9.8	2.6	6.3	6.0	6.0	5.6
Time 2	2.8	3.0	7.3	5.3	6.4	7.3
Time 3	6.5	4.1	9.5	5.2	6.0	5.3
Center 3						
Time 1	4.3	4.0	5.0	6.8	7.3	6.7
Time 2	4.0	2.6	4.6	6.5	3.0	1.7
Time 3	7.0	6.0	6.2	8.4	1.3	1.2
All Center						
Time 1	9.8	4.6	5.4	4.9	5.9	4.8
Time 2	4.6	3.7	5.7	5.1	5.0	5.2
Time 3	7.7	4.9	7.4	5.9	4.5	3.9

Appendix J-15 Means and Standard Deviations for Spouses' Depression Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	15.3	4.2	8.3	4.0	9.5	4.7
Time 2	10.2	7.0	8.5	6.7	12.2	5.9
Time 3	14.0	8.9	9.3	4.8	10.7	6.0
Center 2						
Time 1	13.3	5.9	11.5	6.4	11.4	9.5
Time 2	9.0	8.3	12.5	6.4	11.4	9.0
Time 3	17.3	7.1	17.8	5.1	10.0	7.0
Center 3						
Time 1	11.3	8.1	8.0	6.6	9.3	4.5
Time 2	11.0	10.6	7.8	7.3	3.3	2.1
Time 3	15.0	13.8	11.0	9.7	4.7	1.5
All Centers						
Time 1	15.6	7.8	9.1	5.4	9.9	6.2
Time 2	8.3	7.6	9.3	6.6	9.3	7.4
Time 3	15.2	12.1	7.3	1.9	9.1	5.9

Appendix J-16 Means and Standard Deviations for Spouses' Hostility Scores for Treatment Groups by Time

Treatment Center	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	9.2	3.1	5.5	5.0	3.8	1.5
Time 2	6.8	4.0	4.3	3.0	5.0	2.1
Time 3	11.0	6.9	5.3	3.6	4.2	1.5
Center 2						
Time 1	7.0	2.5	5.3	3.7	6.8	4.0
Time 2	3.8	2.8	6.0	5.3	6.0	4.3
Time 3	5.3	3.2	9.8	5.9	6.2	4.1
Center 3						
Time 1	7.3	4.6	3.2	2.2	4.0	1.7
Time 2	6.0	3.6	4.0	2.0	3.0	1.0
Time 3	8.7	9.0	9.6	9.2	3.0	0.0
All Center						
Time 1	8.7	4.2	4.7	3.8	4.8	2.8
Time 2	5.1	3.8	4.7	3.4	4.6	3.1
Time 3	8.7	6.5	7.9	6.4	4.6	2.8

Appendix J-17 Means and Standard Deviations for Spouses' Marital Adjustment Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	114.0	17.8	111.4	14.8	123.8	7.6
Time 2	110.0	18.7	113.6	18.6	123.0	6.6
Time 3	107.8	23.0	111.8	20.4	119.8	5.7
Center 2						
Time 1	107.5	23.4	114.8	14.6	113.8	6.7
Time 2	112.0	26.5	109.3	22.4	112.2	5.0
Time 3	94.3	52.5	118.8	12.5	113.2	7.1
Center 3						
Time 1	110.7	17.0	120.8	9.7	116.0	14.7
Time 2	106.3	8.6	119.2	8.3	118.3	15.4
Time 3	102.3	12.4	120.6	10.1	116.0	15.1
All Centers						
Time 1	110.0	17.9	115.2	12.4	119.7	10.1
Time 2	109.9	17.7	114.4	16.1	118.1	9.2
Time 3	102.4	32.8	116.	14.3	116.6	8.5

Appendix J-18 Means and Standard Deviations for Spouses' Total Positive Self Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	333.7	29.1	362.4	15.1	342.0	31.7
Time 2	334.3	30.0	359.8	10.5	343.0	23.4
Time 3	330.2	23.8	351.6	24.2	338.0	15.5
Center 2						
Time 1	363.0	31.1	336.8	26.8	349.4	28.7
Time 2	369.3	28.7	335.0	21.1	349.8	31.5
Time 3	370.3	35.4	337.5	22.6	349.8	22.2
Center 3						
Time 1	337.0	8.5	372.4	18.1	329.3	29.0
Time 2	300.0	46.9	381.2	19.9	365.6	5.0
Time 3	353.0	12.2	376.0	23.5	339.3	12.2
All Centers						
Time 1	337.5	30.3	357.0	23.7	346.4	32.7
Time 2	336.9	38.9	360.4	25.0	350.6	24.3
Time 3	347.8	30.1	357.7	26.7	341.1	16.7

Appendix J-19 Means and Standard Deviations for Spouses' Sense of Identity Scores for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	117.8	11.7	130.8	3.0	123.7	6.8
Time 2	118.0	14.9	129.8	4.1	122.8	8.7
Time 3	116.8	9.8	126.0	8.8	122.8	8.3
Center 2						
Time 1	130.8	3.7	125.0	9.0	129.0	9.5
Time 2	131.8	7.9	123.0	5.9	123.8	10.3
Time 3	129.5	12.3	124.0	7.6	125.2	8.6
Center 3						
Time 1	127.7	3.1	134.0	5.0	127.0	16.5
Time 2	112.3	18.6	136.2	6.3	134.7	6.7
Time 3	128.7	5.9	134.8	6.9	122.3	4.7
All Centers						
Time 1	121.4	11.1	130.0	6.8	127.3	10.1
Time 2	120.9	14.5	130.1	7.5	125.7	9.6
Time 3	123.5	11.1	129.0	8.5	123.6	7.4

Appendix J-20 Means and Standard Deviations for Spouses' Satisfaction with Self for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	105.8	8.4	115.4	7.3	107.3	15.1
Time 2	105.0	9.1	112.8	9.7	108.2	9.5
Time 3	103.2	9.7	111.2	10.5	106.7	5.2
Center 2						
Time 1	116.0	16.1	102.3	8.8	107.4	11.4
Time 2	118.0	11.1	101.0	10.1	110.2	14.7
Time 3	122.3	13.3	103.5	7.9	108.0	6.3
Center 3						
Time 1	95.7	14.0	117.2	12.0	102.0	4.6
Time 2	90.3	13.6	122.6	9.2	116.7	5.5
Time 3	103.7	4.2	119.6	12.4	105.0	6.6
All Centers						
Time 1	105.0	13.7	111.7	10.9	107.6	12.5
Time 2	105.5	13.8	112.9	12.6	110.7	10.8
Time 3	109.2	13.0	112.3	11.5	106.8	5.5

AppendixJ-21 Means and Standard Deviations for Spouses' Behavioral Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	110.0	12.4	116.2	7.5	11.0	14.1
Time 2	11.3	10.5	117.2	4.0	112.8	10.6
Time 3	110.2	11.5	114.4	7.2	108.5	6.5
Center 2						
Time 1	116.3	11.8	109.5	9.1	113.0	10.3
Time 2	119.5	11.5	111.0	5.7	115.8	8.2
Time 3	118.5	10.0	110.0	8.1	112.6	8.9
Center 3						
Time 1	113.7	7.2	121.2	7.8	100.3	10.3
Time 2	97.3	24.0	122.4	9.1	114.3	1.5
Time 3	120.7	9.7	121.6	10.2	112.0	6.2
All Centers						
Time 1	111.0	11.0	115.7	8.7	111.5	14.4
Time 2	110.6	15.1	117.3	7.8	114.2	8.1
Time 3	115.2	11.0	116.3	9.3	110.7	7.1

Appendix J-22 Means and Standard Deviations for Spouses' Physical Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	62.5	9.8	70.2	6.7	64.7	5.1
Time 2	61.7	9.2	69.4	3.6	62.8	5.9
Time 3	60.3	9.9	65.8	5.3	63.3	4.0
Center 2						
Time 1	65.5	7.9	60.3	7.0	67.2	5.9
Time 2	68.5	7.1	59.5	6.9	68.0	8.3
Time 3	70.0	11.2	61.0	5.4	66.4	6.2
Center 3						
Time 1	57.7	8.4	69.6	8.0	63.0	5.2
Time 2	56.0	9.9	71.8	8.1	65.0	1.0
Time 3	65.3	5.0	70.6	9.6	60.0	1.0
All Centers						
Time 1	60.5	8.8	66.5	8.2	65.8	5.5
Time 2	62.5	9.0	67.4	8.0	65.1	6.3
Time 3	64.5	9.8	66.5	7.6	63.7	4.9

Appendix J-23 Means and Standard Deviations for Spouses' Moral-Ethical Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	70.8	5.3	75.8	9.6	72.2	8.2
Time 2	74.3	9.2	77.8	4.8	72.8	7.0
Time 3	74.5	7.6	74.8	8.4	69.0	5.1
Center 2						
Time 1	78.8	9.3	74.5	7.0	76.8	6.1
Time 2	77.5	7.2	73.8	3.8	78.0	6.1
Time 3	80.0	4.1	72.2	4.1	75.0	7.3
Center 3						
Time 1	76.0	1.7	79.8	4.8	73.3	9.1
Time 2	69.0	11.5	80.6	3.1	79.0	3.0
Time 3	77.0	4.6	79.8	5.3	70.0	7.8
All Centers						
Time 1	73.2	8.7	76.7	7.0	75.1	8.2
Time 2	73.9	8.7	77.6	4.6	76.0	6.3
Time 3	76.7	6.1	76.1	6.5	71.4	6.6

Appendix J-24 Means and Standard Deviations for Spouses' Personal Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	66.3	10.2	67.6	7.5	67.0	5.8
Time 2	65.3	5.6	67.2	7.9	68.0	5.9
Time 3	64.7	9.1	67.0	7.6	65.5	4.1
Center 2						
Time 1	65.0	8.2	63.0	6.8	67.6	6.5
Time 2	70.8	4.9	64.0	7.8	66.8	7.9
Time 3	71.0	10.0	66.3	7.6	69.0	5.0
Center 3						
Time 1	66.3	6.0	69.8	6.8	61.7	6.0
Time 2	56.7	12.8	72.6	5.3	68.3	3.2
Time 3	68.7	4.5	71.8	5.8	67.3	2.9
All Centers						
Time 1	64.7	8.0	66.7	6.9	66.7	6.4
Time 2	64.6	8.5	68.2	7.4	67.6	5.9
Time 3	67.5	8.4	68.5	6.7	67.1	4.3

Appendix J-25 Means and Standard Deviations for Spouses Family Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	68.7	5.9	75.4	4.2	69.5	8.9
Time 2	66.1	5.0	74.6	6.1	71.5	6.3
Time 3	67.2	3.4	74.6	4.0	70.0	6.6
Center 2						
Time 1	79.0	3.4	69.5	4.8	71.0	7.5
Time 2	77.8	5.4	68.3	3.1	72.0	7.8
Time 3	76.5	3.9	68.3	4.0	70.4	5.8
Center 3						
Time 1	66.0	6.2	76.6	5.1	65.7	6.0
Time 2	57.3	5.7	80.0	4.4	76.7	3.8
Time 3	71.3	8.6	77.2	4.4	67.0	8.2
All Centers						
Time 1	69.4	8.3	73.7	5.4	70.3	8.4
Time 2	67.6	8.9	74.7	6.6	72.8	6.4
Time 3	71.0	6.2	73.6	5.2	69.5	6.3

Appendix J-26 Means and Standard Deviations for Spouses' Social Self-Concept for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	65.3	7.6	73.4	1.1	68.7	8.6
Time 2	66.8	8.5	70.8	1.6	68.7	5.6
Time 3	63.5	9.1	69.4	6.1	70.1	3.5
Center 2						
Time 1	74.8	5.0	69.5	3.1	66.8	8.0
Time 2	74.8	6.9	69.5	3.7	65.0	5.7
Time 3	73.0	8.5	69.8	6.7	65.0	4.7
Center 3						
Time 1	71.0	7.0	76.6	5.5	65.7	9.7
Time 2	61.0	13.0	76.2	5.1	76.7	3.5
Time 3	70.7	2.5	76.6		68.3	3.8
All Centers						
Time 1	69.7	7.0	73.3	4.4	68.5	8.9
Time 2	68.4	9.7	72.4	4.6	69.1	6.6
Time 3	68.1	8.6	72.9	7.0	67.9	4.4

Appendix J-27 Means and Standard Deviations for Patients' Cigarette Use for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	1.0	0.0	1.3	0.8	1.2	0.4
Time 2	1.0	0.0	1.2	0.4	1.2	0.4
Time 3	1.0	0.0	1.2	0.4	1.2	0.4
Center 2						
Time 1	1.0	0.0	1.0	0.0	1.0	0.0
Time 2	1.0	0.0	1.0	0.0	1.0	0.0
Time 3	1.0	0.0	1.0	0.0	1.0	0.0
Center 3						
Time 1	1.0	0.0	1.0	0.0	1.0	0.0
Time 2	1.0	0.0	1.0	0.0	1.0	0.0
Time 3	1.0	0.0	1.0	0.0	1.0	0.0
All Centers						
Time 1	1.0	0.0	1.1	0.6	1.1	0.3
Time 2	1.0	0.0	1.1	0.3	1.1	0.3
Time 3	1.0	0.0	1.1	0.3	1.1	0.3

Key:
1 = No cigarrette use
2 = 10 cigarettes smoked/day
3 = 20 cigarettes smoked/day
4 = 30 cigarettes smoked/day
5 = 40 cigarettes smoked/day

Appendix J-28 Means and Standard Deviations for Patients' Systolic Blood Pressure (mm. Hg.) for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	119.7	20.7	129.3	13.3	131.0	31.6
Time 2	117.7	15.1	123.3	15.7	134.3	42.7
Time 3	121.7	17.2	115.8	16.3	130.7	33.4
Center 2						
Time 1	136.3	23.8	134.0	17.7	125.2	18.3
Time 2	142.0	27.4	122.5	4.4	146.0	23.1
Time 3	134.0	15.1	123.5	11.1	128.4	22.4
Center 3						
Time 1	122.7	11.6	136.0	20.7	125.3	14.7
Time 2	120.7	18.1	123.0	14.0	122.0	10.4
Time 3	120.7	10.1	131.0	33.8	122.3	10.8
All Centers						
Time 1	127.5	18.6	132.8	16.2	126.5	22.6
Time 2	124.7	21.2	123.0	12.2	135.9	31.1
Time 3	125.2	15.3	122.9	22.2	128.1	24.7

Appendix J-29 Means and Standard Deviations for Patients' Diastolic Blood Pressure for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	76.0	9.1	73.0	10.0	73.3	14.2
Time 2	76.4	5.8	69.3	6.5	71.3	6.7
Time 3	72.0	5.3 72.5	9.3	77.7	11.9	
Center 2						
Time 1	85.5	20.0	83.5	7.0	72.0	13.0
Time 2	78.0	15.8	77.5	5.0	81.2	8.7
Time 3	78.0	12.1	71.0	2.0	74.4	5.0
Center 3						
Time 1	73.3	8.3	77.6	7.9	76.3	7.1
Time 2	72.7	4.6	77.0	6.3	72.0	5.3
Time 3	66.0	5.3	74.8	15.9	70.0	8.7
All Centers						
Time 1	78.9	13.3	77.3	9.1	73.3	11.4
Time 2	74.7	9.6	74.1	6.9	75.0	8.2
Time 3	72.5	8.8	72.9	10.3	74.9	9.1

Appendix J-30 Means and Standard Deviations for Patients' Triceps' Skin-Fold Measurements for Treatment Groups by Time

Treatment Centers	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	16.8	4.6	13.8	4.1	14.7	6.3
Time 2	15.0	5.2	12.8	3.8	13.7	6.0
Time 3	14.2	5.9	12.8	4.3	16.7	6.7
Center 2						
Time 1	13.5	5.5	12.8	3.3	13.6	2.7
Time 2	13.5	2.4	11.0	4.1	14.0	1.9
Time 3	12.0	1.4	11.5	2.9	16.4	3.7
Center 3						
Time 1	21.0	14.0	14.0	1.2	11.0	1.0
Time 2	17.7	14.2	11.8	1.6	11.0	1.0
Time 3	17.7	12.5	10.2	1.6	11.0	1.0
All Centers						
Time 1	17.1	6.9	13.6	3.0	13.5	4.3
Time 2	15.0	6.7	12.0	3.2	13.2	4.1
Time 3	14.3	6.8	11.6	3.2	15.4	5.2

Appendix J-31 Means and Standard Deviations for Patients' Exercise Level for Treatment Groups by Time

Treatment Center	Experimental Group 1		Experimental Group 2		Control Group	
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev
Center 1						
Time 1	2.0	1.6	1.2	0.4	2.5	1.1
Time 2	1.3	0.5	1.0	0.0	2.3	1.0
Time 3	1.7	1.2	1.3	0.8	2.2	1.0
Center 2						
Time 1	1.0	0.0	1.5	1.0	1.2	0.5
Time 2	1.3	0.5	1.0	0.0	1.8	1.8
Time 3	1.0	0.0	2.0	0.8	3.4	1.7
Center 3						
Time 1	1.3	0.6	1.8	0.4	2.7	0.6
Time 2	2.3	1.5	1.6	0.9	1.7	0.6
Time 3	1.0	0.0	1.6	0.6	1.7	0.6
All Centers						
Time 1	1.6	1.1	1.5	0.6	2.1	1.0
Time 2	1.5	0.9	1.2	0.6	2.0	1.2
Time 3	1.3	0.9	1.6	0.7	2.5	1.3

Key:
1 = 4 hours/week
2 = 3 hours/week
3 = 2 hours/week
4 = 1 hour/week
5 = > 30 minutes/week

APPENDIX K EXAMPLE OF CONTINUATION OF ROLE SUPPLEMENTATION PROGRAM AT SETTING 2

Your group leaders will be:

_____

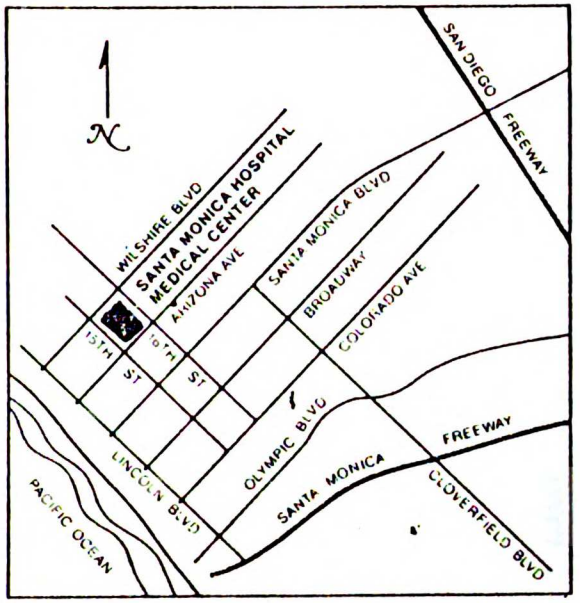
_____

Dates: _____

Time: _____

Place: _____

SANTA MONICA HOSPITAL MEDICAL CENTER
1225 Fifteenth Street, Santa Monica, California 90404



Cardiac Treatment Center, ext. 2098

THE SANTA MONICA HEART CENTER

a division of
SANTA MONICA HOSPITAL MEDICAL CENTER

PRESENTS

HEART TO HEART

A STRESS MANAGEMENT GROUP

332 FOR CARDIAC REHABILITATION PATIENTS
AND THEIR SPOUSES

ABOUT OUR STRESS MANAGEMENT PROGRAM . . .

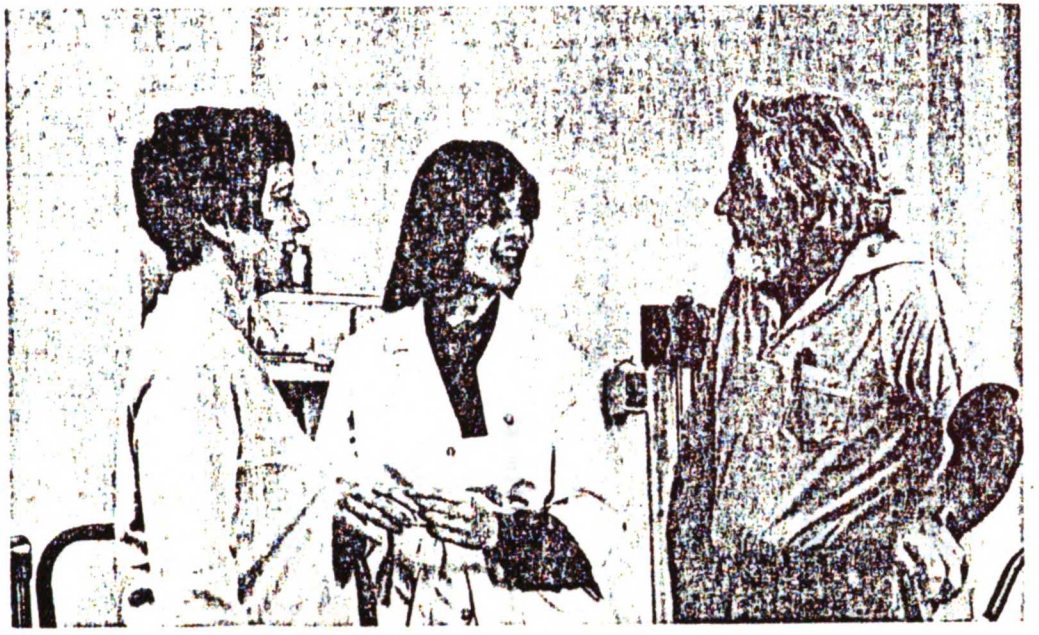
Personality, behavior patterns and individual methods of handling stress are risk factors associated with cardiovascular disease. In fact, just dealing with life's many changes can cause a stress response which has been linked to the onset of illness.

Learning to live with a chronic illness often means learning to live with change. Old patterns need to be broken and new patterns created. This can be a stressful time. Our group will deal with issues surrounding these changes and with alternatives to managing stress.

Topics of discussion will include problem solving, communication techniques, resumption of sexual activity and the relaxation response.

It is the opportunity to talk about fears and about attitudes that allow people to make a decision to change habits that are not conducive to health. It is in this supportive environment that information regarding other ways of dealing with life stresses will be presented.

Learning to live with a chronic illness often means learning to live with change.



Group interaction and individual counseling are used to teach the techniques of stress management, a vital part

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