

PSYCHOSOCIAL FACTORS AFFECTING ADAPTATION  
OF PATIENTS AND SPOUSES TO  
MYOCARDIAL INFARCTION

An analysis of stress accumulation,  
resources, coping strategies and adjustment

by

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A dissertation submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of  
DOCTOR OF PHILOSOPHY

in

Family and Child Development

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November, 1986

Blacksburg, Virginia

DEDICATED TO

parents who have shown me the importance  
of a family's caring and support

my sons who have survived a partially absent  
father when they would have much rather been playing ball  
And most of all to my wife

whose editing assistance has been invaluable and who  
more importantly has been so patient and understanding  
throughout this project

## ACKNOWLEDGEMENTS

First, I wish to acknowledge and express sincere appreciation to the families who took their valuable time to complete the questionnaire

I also want to express my thanks to the members of my advisory committee: Dr. Jay Mancini, Dr. Howard Protinsky, Dr. Joseph Maxwell, Dr. Linda Thompson, Dr. Dennis Hinkle, and Dr. Michael Sporakowski. Special thanks to Dr. Jay Mancini who has provided the right blend of support and challenge to make this dissertation a success.

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## CHAPTER 1

### INTRODUCTION

This chapter will begin with an introduction to the serious personal, familial and cultural effects of heart disease. The author will state the specific problem this study will address and to what purpose the results could be applied. A discussion of the significance of the study to basic science and clinical application will conclude the chapter.

#### Heart Disease as a Societal Problem

Despite recent reductions in morbidity and mortality, heart disease was listed by the American Heart Association (AHA) as the number one cause of death in the United States in 1986. The AHA estimates that more than 63 million Americans (more than one in every four) have some form of cardiovascular disease. In 1983 approximately 1.5 million people suffered myocardial infarctions (heart attacks). About one-third of these were fatal accounting for 547,000 deaths. The great majority of the remaining two-thirds will return home after a period of hospitalization (American Heart Association, 1986). There are millions of people who have been through this experience at least once and who now manage to live with this condition of chronic disease.



In addition to being a significant health problem, it is also an economic problem. In any given year, about one-third of the persons who become eligible for disability benefits qualify on the basis of cardiovascular disease.

#### Heart Disease and Myocardial Infarction

There are three general types of heart disease (Hull, 1973). Congenital heart disease, which has an onset in infancy, is typically caused by a viral infection or nutritional deficiency. However, almost 65% of cases are of unknown etiology and are believed to be genetic in origin.

The second type of heart disease is hypertension or high blood pressure. As with congenital heart abnormalities, the cause of hypertension is difficult to trace. It is suspected that endocrine deficiencies, other disease processes, genetic predisposition, and stress all play roles in the development of this disorder. Both hypertension and congenital problems are relatively easy to detect and treat with environmental manipulations and medication.

The third type of heart disease, atherosclerosis or arteriosclerosis, results from a blockage of the coronary arteries supplying blood to the heart. It can also present itself as a blockage of the major arteries which provide the blood to the coronary arteries themselves. This blockage occurs over time and is felt to result from combinations of

factors including genetic predisposition, smoking, stress, high blood pressure, diet and exercise. The presence of severe atherosclerosis is somewhat difficult to detect. A person may have pains in the chest (angina) or in other areas of the body, reflecting a problem in blood flow. A person can be given an arteriogram, a test which shows the extent of blockage using injections of dye. However, there is no more dramatic demonstration of the presence of this condition than the occurrence of a myocardial infarction: the heart attack. In this event, one of the coronary arteries has been occluded to the point of cutting off blood flow to a portion of the heart muscle, causing major tissue damage.

Occurrence of a myocardial infarction (MI) typically results in hospitalization. In some patients, the damage is too severe, and they do not recover. The majority, however, about 8 out of 10, can eventually return to their normal activities at a slower rate. It is strongly recommended, however, that they concentrate on lowering their personal risk factors, and this almost always involves changes in their lifestyle. These changes will often require others, particularly family members, to alter their roles and behavior in reaction to the conclusive evidence of chronic illness in the family.

Psychological responses of individual patients to an MI can also influence their recovery and their family's adaptation. Interview judgments of distress range from 20% of patients (Hinohara, 1970) to 88% of patients (Wishnie, Hackett & Casseem, 1971), with other reports in between. Differences in depression and anxiety on the Minnesota Multiphasic Personality Inventory (MMPI) between post-MI patients and controls have frequently been reported (Mordkoff & Rand, 1968). Doeherman (1977) concludes his review of this area, saying that "studies examining psychological reactions for coronary patients in the post-hospital period provide evidence of considerable anxiety and depression, which persists months and sometimes years" (p. 206).

#### Heart Disease as a Family Problem

The study of experiencing stress as a family unit has been of particular interest since the work of Angell documented family behavior change during the Depression (1936). Theoretical development of Angell's observations by Hill (1949, 1958) led to Hill's explication of the relevant variables which interact to produce a level of family disorganization following a stressful event. Further elaboration of these variables emerged from the work of Burr (1973). However, this work focused on the family's reaction to a particular stressful event and failed to capture the

experience of a family over time. Most recently, McCubbin and Patterson (1981) have extended the Hill model to describe the family response to a stressful event as it evolves over time. In addition, McCubbin and associates have attempted to employ these elaborated models to explain and predict behavior of families who have experienced chronic disease in a child member. However, there are few reported attempts to describe family behavior changes when an adult is the chronically ill member.

The role of the family in rehabilitation has been considered an important factor. Skelton and Dominian (1973) noted that there were significant role changes with resulting life style changes for both spouses, as well as for patients. Tyzenhouse (1973) described an increase in wives' anxiety, accompanied by feelings of guilt, loss and depression. Finlayson and McEwen (1977) talked about reactive illness in wives of heart attack patients. Dhooper (1983) found that wives often had difficulties of their own from over-functioning in the care of their husbands and their families. Finally, Mayou (1984) reviewed several studies of the predictors of positive emotional and social outcomes and found that (1) married patients recover more quickly and fully after heart attacks than those living alone, (2) social

support from spouse and others is an important determinant in patients' emotional reactions and, (3) family structural variables seem important, particularly the effects of overprotectiveness by the family. Mayou concluded by saying that, although they seem important, little is known about the family process variables which encourage family adaptation to chronic coronary artery disease.

#### STATEMENT OF THE PROBLEM

Although it is generally assumed that the family is important in the recovery process, it is not clear in what ways they are helpful. Which individual belief systems, coping strategies, or interpersonal processes, such as communication or adaptability, are important to families in adjustment to a heart attack is the underlying question. If educational information is provided on specific changes in diet, exercise, and lifestyle, information is also needed on specific coping strategies and interpersonal processes which are helpful.

This study will look at the relationship between family members' perceptions about the adjustment required after the heart attack and their own levels of anxiety and depression. Specifically, patient and spouse will report on their perceptions of: (1) the demands placed on the family by the MI, as well as subsequent stressors; (2) their difficulty in

dealing with those demands; (3) their resources for dealing with the perceived stressors; and, (4) their current levels of anxiety and depression. It will be determined from among the first three of these variables, which are associated with the outcome variables of anxiety and depression and which are better predictors of these variables. Thus, the regression models for each spouse will be:

(A) Pile-up of Demands + Resources + Perceived → Depression

(Personal) Difficulty

(Family)

(B) Pile-up of Demands + Resources + Perceived → Anxiety.

(Personal) Difficulty

(Family)

#### SIGNIFICANCE OF THE STUDY

##### Family Stress

The study will provide an opportunity to test selected variables proposed by family stress theorists. In previous work, most often a childhood illness has been the focus of attention. Patterson (1985) looked at critical factors affecting family compliance with home treatment for children with cystic fibrosis. Hymovich & Baker (1985) looked at the coping strategies used by parents of children with cystic fibrosis. Hauser & Johnston (1985) studied the contribution

of family environment factors to management of acutely ill adolescents. The clinical work described by Minuchin, Rosman, & Baker (1978) is focused on the adaptation of families to the childhood and adolescent illnesses of diabetes, asthma, and anorexia nervosa. In a recent special edition of Family Relations (January, 1984), which focused on families with handicapped members, only 2 of 21 articles addressed families with chronic illness in an adult member. The remainder were child focused. In summary, although there is an abundance of literature which focuses on family adaptation to childhood illness, very few studies look at the factors affecting this process when an adult is the patient.

#### Rehabilitative Medicine

Heart disease ranks first as the major chronic illness in the United States, and atherosclerosis is the major manifestation of heart disease. Even though researchers in heart disease and rehabilitation have suggested that interactional variables are important to consider, both in etiology and in adaptation (Croog & Levine, 1977), no empirical studies have attempted to isolate the specific family variables which are important.

The purposes of basic science are furthered by this study's effort to describe the most effective beliefs and behaviors which patient and spouse employ during the

post-hospitalization recovery period in maintaining their own mental health. Results of this study will be used in clarification of the specific aspects of the family stress model which are important in heart disease. These can then be further refined and replicated in this or similar chronic illness populations.

The significance to preventive family treatment and family therapy is achieved through the study's aims to further describe the family unit as it responds to stress. In addition, many families enter a crisis period with little or no experience in how to deal with each other through the crisis. If the ability to express themselves, to maintain a positive perception of the patients' abilities, and to be flexible with changing rules are important to overall mental health, it is expected they will also be a major factor in physical recovery. Through a better understanding of the coping strategies and interactional processes which aid the family in adaptation, we may more successfully identify the times and manner in which family intervention within and/or in addition to a structured rehabilitation program would be helpful.



## CHAPTER 2

### REVIEW OF THE LITERATURE

The second chapter begins with a discussion of the primary theoretical model upon which this study is based, that is, family stress theory. A review of related research is organized to follow the major factors of the model. These factors are also the variables of primary interest in this study. A review of relevant studies of patient and family response to heart disease will be presented. The chapter concludes with study hypotheses.

#### The ABCX Model

Family stress theory has been selected as the organizing framework for this study. Hill (1949, 1958) originally proposed, in equation form, a framework for understanding how a family adapts to a stressor. The equation was  $A + B + C = X$ , where A = any stressful event, B = the family's crisis meeting resources, C = the family's definition of the demands of the event, and X = the family crisis.

Factor A, the crisis precipitating event or stressor, was a "situation for which the family has had little preparation" (Hill, 1958) and must be viewed as problematic. Such events vary considerably from family to family based on the individual family response to the event.

Factor B, the family's crisis meeting resources, was

largely underdeveloped by Hill. He stated that these resources lie primarily within the family. Burr (1973) attempted to elaborate on this dimension by suggesting a number of variables which may influence family adjustment. He conceptualized adjustment as family vulnerability to stress and family regenerative power. Examples of variables he felt influenced these were the amount of personal influence held by the family or its members, the amount of reorganization required (adaptability) and the amount of communication (expressiveness) between family members.

The C factor was the definition the family made of the event. Apart from the objective cultural definition of the seriousness of the event, this was the family's subjective definition of the stressor and its hardships. A family's outlook could vary from seeing life changes as challenges, to interpreting a stressor as uncontrollable and likely to lead to severe family disruption.

The X factor, or level of reorganization, was the dependent variable of the original Hill equation. A lack of clarity associated with the concept is evident by the various labels that have been used for the factor: type of adjustment (Cavan & Ranck, 1938); level of adjustment (Hill, 1949); recovery from crisis (Dyer, 1963); and level of reorganization

(Hill & Hansen, 1962). Burr has described the X factor as a continuous variable representing the amount of disorganization or disruptiveness experienced by a family following a stressful event.

In their review article of research in the 1970's, McCubbin, Joy, Cauble, Comeau, Patterson & Needle (1980) noted that, since Hill's original explication of the ABCX model, the major variables have remained unchanged, and most articles on stress and the family use it as a frame of references. Theoretical efforts have thus focused on clarifying or expanding the basic concepts (Hansen & Johnson, 1979; McCubbin & Patterson, 1982). The criticism has been made that the original A factor did not take into account other major events happening before and after the "crisis event" (Walker, 1985). The resources factor (B) has been often criticized for its lack of clarity and specificity. Hill did not elaborate in this area but suggested that resources are anything that helps a family cope with a stressful event. He did not attempt to distinguish between personal, family and community resources. Finally, the C factor has been criticized for the difficulty in arriving at a "family perception" of the stressfulness of an event. Walker (1985) suggested that it is the individual perceptions which are most important and that it is impossible to arrive at "family perceptions."

### The Double ABCX Model

McCubbin & Patterson (1982) have provided one of the more interesting expansions of the ABCX model, the Double ABCX model, which was a more developed version of Hill's original effort. It answered one of the frequent criticisms, that Hill's model did not include other stresses occurring during the adaptation period. The Double ABCX model added post-crisis variables in an effort to describe (a) the additional life stressors and strains which shape the course of family adaptation (pile-up), as well as (b) the personal, intrafamilial, and community resources critical to families in effective adaptation. McCubbin (1979) included coping behaviors as a resource which individual members develop to actively struggle with stressful situations.

The expanded model for this study follows this Double ABCX framework and is outlined in Figure 1. A description of each variable and existing research follows.

#### Pile Up- The aA Factor

The aA factor in the Double ABCX model refers to the pile-up of stressors which occur in the aftermath of a major stressor such as death, diagnosis of chronic illness or natural disaster. These pile-up stressors include the major event and its hardships, normal transitions of individual



members and the family system, prior strains, consequences of the family efforts to cope and intrafamily and social ambiguity. The demands placed on a family by a major stressful event are seen as exacerbated by an increase in the demands placed on it during the adaptation process.

#### Resources - The bB Factor

The bB factor describes resources available to the family and its members. They include personal resources, such as cognitive ability, educational attainment, physical health, and the subjective perception of physical health. Garrity (1974) has noted the particular strength of this last personal resource in coping with heart disease. Personal resources also include use of a variety of coping strategies in dealing with the demands of the particular event, as well as the pile-up of events. These coping strategies include efforts to maintain family integration, to utilize and enlarge social support networks, and to understand more about the particular crisis.

A second level of the resource factor is the family system. This level includes intrafamilial factors, which allow a family to remain intact and well functioning, while at the same time adapting to stressful events. Socioeconomic status, as reflected in income level, educational level, or

occupational prestige, is one type of usually pre-existing resource. A second type includes process variables within a family which allow it to adapt to stressors. Two process variables, proposed by Koch (1985) as particularly important in a family's adaptation to a medical stressor, were flexibility and expressiveness.

### Personal Resources

#### Perception of Patient Health and Capability

Garrity (1973) described a study of white males who had experienced their first heart attacks and survived at least 6 months after hospital discharge. His hypothesis was that patients' activity level would be the most significant predictor of morale. He measured a number of variables to determine which best predicted morale in the patient. In addition to activity level, he looked at employment, participation in social events, health perception, severity of heart attack, age, and socioeconomic status. He found, contrary to expectation, that activity did not predict to morale; however, health perception was a strong predictor. As has been consistently the case in other studies, severity of the attack was not a strong predictor.

In another analysis of these data, Garrity (1973) focused on vocational adjustment. He found that, of 12 explanatory variables in medical and socio-psychological areas, only

perceived health status at the 6 month follow up correlated significantly with return to work. The better the patient perceives his health to be, the more likely he is to be working after discharge. Socioeconomic status, family's overconcern and pre-attack work status showed modest correlations; however, patient health perception was the most significant predictor of the dependent variable.

In a related study, Garrity (1971) found that post-attack physical status correlated strongly with health perception both pre- and post-attack. The causal direction of these relationships is unclear, but this variable does appear to be consistent with physical recovery.

Brown and Rawlinson (1976) analyzed data from 150 patients who had had open heart surgery 1 or more years previously. The purpose of their study was to look at medical, demographic, personality, and social factors to determine relative predictability of morale for the patients. Their conclusions were that the most significant predictors of morale were marital status, current health perception, and coping style.

Palmore and Luikart (1972) describe a study of over 500 men and women, ages 46-71. They were randomly selected to represent the population in an urban North Carolina community.



The purpose of the study was to correlate life satisfaction with a number of predictor variables. Included were level of activity, both in work and leisure settings, marital status and satisfaction measures, self-rated health and socioeconomic variables such as income and education. Self-rated health was by far the strongest variable related to life satisfaction and alone accounted for two-thirds of the explained variance.

Hiatt, Peglar & Borgen (1984) looked more closely at the perception of health variable. They divided 62 patients into four groups based on their pattern of perception of health over 1 year. They found that perception of health did not differ significantly on cardiac diagnosis or severity of disease. They found the group with consistently high perceptions of health had the best employment record both before and after hospitalization. These findings were described as supporting the importance of perception of health as significantly associated with recovery.

The association of health perception to morale is also clear in the gerontological literature. Larsen (1978), in a review of gerontological studies in the past 30 years, reported that health perception relates more consistently to morale than any other variable that has been considered. Mancini and Quinn (1981) found, in a comparison of various dimensions of health, individuals who see their health as

better now than before and as generally good have higher morale than those who have a more negative view of their health status.

In summary, patients' perception of their current and future health is seen as an important resource in adapting to a change in physical health. This change can be a normal one associated with the aging process or a crisis such as a heart attack.

### Coping Strategies

McCubbin (1979) reviewed selective coping data in the context of family stress theory and concluded that there was sufficient evidence for including coping behavior as a resource within the Double ABCX model. He described four plausible hypotheses. Coping behaviors could decrease the presence of vulnerability factors such as emotional instability of a member. Second, they could strengthen interpersonal resources such as cohesion and adaptability. Third, they could reduce or eliminate stressor events and the related hardships. Finally, coping behaviors could aid by influencing the person to do something actively to change his or her circumstances.

The conceptual definition of coping strategies to be used in this study is one offered by Lazarus (1978), namely,

"efforts, both action oriented and intrapsychic, to manage (i.e., master, tolerate, reduce, minimize) environmental and internal demands which tax or exceed a person's resource [p. 311]." As stated in this definition, there are two primary dimensions to coping behaviors (Lazarus, 1984). The first involves cognitive appraisal. This includes those thought processes which tend to allow an individual to gain some mastery, control and predictability over a situation. The second involves direct action, when the person behaves in a way that is designed to alter or master the environment. This could be through learning more about a particular stressor; gaining more social support from extra-familial sources, working to maintain family integration, or becoming more self-reliant through work or leisure activities.

The cognitive appraisal part of this model has particular applicability to recovery from a MI. Occurrence of an acute MI constitutes a potentially uncontrollable event of major proportions for most cardiac patients and their families (Krantz & Schultz, 1980). Developing or using beliefs that things will work out, that the family member is getting the best medical care possible, and that the patient will improve may be helpful.

There are three areas of behaviors in which a patient or spouse could engage to help in feeling some control and

predictability. One is learning as much as possible about coronary artery disease, in general, and their case, in particular. Information can provide a sense of mastery. A second area of behaviors is in developing new or existing leisure activities, becoming involved in more social activities and, in general, doing those things that make the person feel more self-assured and psychologically stable. A third area involves efforts to keep the family working as smoothly as before. These involve doing more things with family members or active efforts to build better relationships.

The present study assessed beliefs and behaviors in these three areas. Lazarus (1984) has suggested that the more strategies one has for coping, both direct behavioral action and cognitive appraisal, the more one is likely to prevent negative physical and mental health effects.

#### Rehabilitation Programs

A resource that is increasingly available to patients experiencing myocardial infarction is participation in exercise rehabilitation programs. Although there have been a number of reports of the positive effects of exercise (Frick & Katila, 1968; Hellerstein, 1968), most have not used control groups of non-exercising patients. Without the comparison, it

is hard to say whether the same results would have occurred with time alone or with normal post-infarction care.

The studies which have used comparison groups have evidenced mixed results. McPherson et al. (1967) found favorable changes in self-perceptions of the treatment group but no differences between treatment and no-treatment groups on the personality variables used. Stern & Cleary (1982) evaluated 651 males who had suffered from at least one myocardial infarction and were randomly assigned to either an exercise or a no-treatment control condition. Although the exercising subjects showed greater improvements in cardiovascular functioning, only 1 of the 34 comparisons on psychosocial variables evidenced a reliable difference. In a recent comprehensive evaluation of a cardiac rehabilitation program, Roviario, Holmes & Holmstein (1984) compared 28 patients participating in a 3 month exercise program with 20 other cardiac patients assigned to a routine care condition. Results indicated that patients in the rehabilitation group evidenced better cardiovascular functioning, better understanding of heart disease, better compliance with treatment recommendations, and better psychosocial functioning.

In summary, although results have been mixed, it is reasonable to see participation in a rehabilitation program as

a contributing personal resource to mental health.

### Family Resources

Family system resources will be included in the model. They are intrafamilial factors which allow a family to remain intact and well functioning while at the same time adapting to the stressful events. The two interactional variables proposed by Koch (1985) as particularly important in a family's adaptation to a medical stressor, role flexibility and expressiveness, are included, as well as the more fixed resources of family income, educational level and occupational prestige.

#### Role Flexibility.

Role flexibility has always been a part of the theoretical model of family stress (Burr, 1973; Hill, 1958; McCubbin & Patterson, 1982). Flexibility is defined as the degree to which spouses alter their relationship roles and responsibilities in response to a major stressor.

Role flexibility has been shown to distinguish between distressed and nondistressed families in qualitative studies and clinical observations. Koch (1983) interviewed 32 families of pediatric cancer patients and described several trends in the responses given. One was for parents to focus sole attention on the patient, while possibly neglecting the

developmental needs of other children. A second was for siblings to be forced into functioning in more mature ways. A third was for mothers and siblings to take on sole responsibility for emotional caretaking. When these predictable and necessary changes were resisted by family members, problems developed. Croog & Levine (1977) described their interviews with over 200 patients who had experienced a myocardial infarction. Two-thirds of the married men reported that their wives had made role changes. Most of these changes were perceived as involving greater responsibility and leadership in the home, as well as increased protectiveness of the husband. Further, about 75% of the patients reported a change in their own role in the direction of a decline in the level of activity. The ability to adapt and adjust to these changes would be expected to predict a more positive recovery and outcome for the patient and the family.

Quantitative data to support hypotheses about role flexibility and family adaptation are not available. Most that is published focuses on task related roles, such as home and child care. Other aspects, such as emotional caretaking, have not been studied as often (Koch, 1985).

### Expressiveness

Expressiveness is the degree to which spouses communicate to each other their thoughts, feelings and behavior in

relation to a major stressor. Previous qualitative research has reported that, after a myocardial infarction, patients, as well as spouses of patients, are more likely to withhold their feelings from each other for fear of further disruption (Skelton & Dominian, 1973; Speedling, 1985). However, family members may experience an increase in sadness, irritation, resentment, anger, anxiety, depression, worry about the patient, fear of death, jealousy, guilt and inadequacy following the diagnosis of a chronic illness. If these feelings are prohibited from being discussed at any time, they will appear hidden but not absent. Health and behavior problems may be more frequent in families which prohibit, rather than permit, the expression of emotions (Koch, 1983). If a couple is unable to discuss the cognitive and affective considerations around the event, the pile-up and its demands placed on the family, the adaptive process may stall. When families allow members to express thoughts and feelings in appropriate ways, individual and family adaptation is expected to be more effective.

#### Income, Educational Attainment, Occupational Prestige

In recovering from a crisis, it has been hypothesized that socioeconomic resources, such as money, educational level, and occupational prestige would be important to a family.



Previous research has been mixed in this area. Higgins (1968) used the return to work as an outcome measure for 83 patients who had experienced a MI 12 to 18 months previously. He found educational level and occupational level both positively related to ease of work return. Medical status was found to be less important. Monteiro (1973) found similar results with income and education positively related with return to work in 28 MI patients.

Other studies have used predictive mortality rates as an outcome measure for these socioeconomic variables. Croog & Levine (1977) found a positive but non-significant relationship between all three variables and mortality/non-hospitalization. Hrubec (1971) looked at the survival rate of 1,495 members of the U.S. Army as a function of education, occupation, and marital status. The more education and the higher the patients' occupational level, the greater were their chances for survival. Shirpiro, Wienblatt & Frank (1972) followed 882 first MI male patients for 4 years postinfarction. They also found positive correlations between education and occupational levels and survival.

#### Family Definition of Stress - The cC Factor

In traditional family stress theory, the C factor was the level of stress perceived by the family as the result of a significant event. In the Double ABCX model, the cC factor

includes the family's struggle throughout the adaptation process to give new "meaning" to the situation. For example, if the family is able to redefine events as challenges rather than burdens, it is expected that they will be better able to withstand the hardships involved. When this effort is constructive, the family will be able to clarify the issues and hardships present, decrease the emotional intensity associated with the crisis, and encourage the family unit to carry on with the development of itself and its members.

The work of Holmes & Rahe (1967), in which they demonstrated a relationship between major life events and near-future illness, provided a quantitative measure of stress associated with life events. This was without the person's own appraisal/perception of the level of stress.

In recent years, there has been a move away from these indices, which measure the cultural definition of the magnitude of a stressor, to the more subjective effect of the stress upon an individual or family. Research support for the significance of the perceived stress index is growing. There has been repeated emphasis upon the need to determine one's cognitive appraisal of stress (Lazarus, 1966), or as stated by family theorists, to determine the definition the family gives to an event (Hill, 1958; Hansen & Johnson, 1980; McCubbin &

Patterson, 1983).

Walker (1985) maintains that each family member experiences a stressful event or series of events in a unique way. Thus, obtaining a family definition of the event is not possible. If it were it would probably reflect only the views of the dominant voice in the family. At best, it would represent a compromise or average of differing views. There are no available data suggesting that agreement or disagreement is more adaptive or healthy in response to stressors. There is no empirical evidence in the heart literature for the importance of this perception factor other than the previously described perception of health studies. This model will include patient and spouse perceptions as separate variables.

#### Health and Adaptation - The xX Factor

This section will review selected studies which have described the relationship between heart disease, psychosocial variables, particularly those related to the family, and adjustment in the patient, spouse or family. Theorell (1979) notes that, in a number of his studies, both prospective and retrospective in design, an unusually high association was found between onset of myocardial infarct or sudden cardiac death and psychosocial pressures. His comparison of Swedish to American samples revealed that, while the Swedes fell prey to excessive pressures from the work place, the American

sample identified family pressures in association with the cardiac event. An examination of cardiac disease and the family seems warranted.

It seems particularly important to investigate the specific aspects of adaptation in order to provide accurate preventive information. Two studies which attempted to provide clinical intervention in "problem cases" (Hoebel, 1977; Tyzenhouse, 1973) tried to help husbands by empowering wives with information and responsibility. Both report mixed results. It may be that the interventions did not take into account relationship dynamics, such as protectiveness, communication and flexibility.

Overprotectiveness, reflecting a rigid overadjustment in family roles and responsibilities, is one consistent outcome described. Patients report being "watched over" by their spouses (Croog & Levine, 1976). Wives describe being afraid to make demands on their husbands, to upset them emotionally, to allow them to participate in many physical activities, and to be generally overprotective of them (Adsett & Bruhn, 1968). Cooley (1973) collected descriptive data on 400 cardiac patients visited by the student nurses she supervised. She concluded that patient acceptance of illness facilitated adjustment by the family, while overprotection of the patient

by the family frustrated the patient and resulted in family disequilibrium.

A study by Jacobson and Erickhorn (1964) described the impact of cardiac disease on the farm family. Their results reflect the major variables of flexibility, communication, perception, and coping included in this study. Using two different formats, husbands and wives were interviewed separately. By self-report, the major areas of adjustment included: (1) defining the seriousness of the event (wives feared husbands would die but later were confused about what their condition was); (2) communication (wives feared overprotection or nagging their husbands but felt that it was their responsibility to protect, even if husbands became angry); (3) getting work done (wives worked or relied on grown children to manage the farm and home); (4) finances; (5) shifts in family values and personal goals, as well as personality changes. As coping resources, the informants reported use of friends, values, financial resources, fate, and each other.

Some researchers have focused on the tendency for other family members to be more vulnerable to physical and emotional distress after a heart attack. Dhooper (1983) attributed this increased vulnerability to emotional and physical health to an increase in perceived responsibility. Skelton and Dominian

(1973) also found husbands' discharge a stressful one for wives. They investigated the psychological consequences of myocardial infarction in 65 wives of husbands admitted to a cardiac unit and found that 38% had a higher degree of stress characterized by feelings of loss, guilt and depression.

In a study of the spouses of men who had an initial MI, Stern and Pascale (1979) intended to document the psychosocial disability of spouses and identify the factors that put certain spouses at risk for psychological distress.

In-hospital interviews were followed up at 5 or 6 months. At both times, anxiety and depression were measured. Sample attrition rendered some valuable data. Only 48% of the initial 52 spouses participated in follow-up. Three major themes emerged from the spouse interviews: (1) preoccupation with patient's health and concern that any mistake they made might lead to another infarct; (2) family disequilibrium resulted from the constraints against sharing problems with the patient; and (3) spouses who had a history of becoming anxious or depressed when confronted with "uncontrollable" external events responded consistently with that history.

Mayou, Foster & Williamson (1978) reported a study in which they interviewed 82 wives of men suffering a first MI. Psychosocial disability was described as being comparable to

the patients themselves. If the wife was having emotional difficulty before the heart attack, this predicted to a poorer adaptation of both herself and her husband. However, if this was not the case, she was seen as helpful in encouraging, protecting, and understanding treatment regimens which influenced the patient's recovery.

All research, however, does not point toward an automatic causal relationship between MI and spousal distress. Subjective stress in spouses of heart patients was the subject of a prospective inquiry by Croog & Fitzgerald (1978). The investigators measured the subjective stress levels of 200 spouses at 3 intervals to evaluate change and correlates of high stress. They note no significant change in stress over 1 year. Personality variables, such as coping capacity and the resource variables of limited education and marital satisfaction, were described as mediating factors associated with high stress levels. In this study, no correlation was found between spousal stress and employment status, age, or occupational prestige.

#### SUMMARY

This review of family responses to heart disease has described studies which suggest that other family members may be affected when one has a heart attack. The ability to make adjustments in roles, to communicate about the difficulties

imposed by the illness, to utilize resources, and to perceive the situation as workable seem important. The present study will provide more clarity in how each of these, separately and together, predict positive mental health in the family.

#### MAJOR STUDY HYPOTHESES

1. There will be a positive relationship between the accumulation of stressors on a family and the patient's anxiety and depression.
2. There will be an inverse relationship between personal resources (coping strategies, patient health perception, rehabilitation program) and the patient's anxiety and depression.
3. There will be an inverse relationship between family resources (flexibility, expressiveness, income, social status) and the patient's anxiety and depression.
4. There will be a positive relationship between the difficulty of demands as perceived by the patient and his/her level of anxiety and depression.
5. The personal resource of perception of capabilities and the family resources of expressiveness and flexibility will be the best predictors of the patient's anxiety and depression.



6. There will be a positive relationship between the accumulation of stressors on a family and the spouse's anxiety and depression.
7. There will be an inverse relationship between personal resources (coping strategies, patient health perception, rehabilitation program) and the spouse's anxiety and depression.
8. There will be an inverse relationship between family resources (flexibility, expressiveness, income, social status) and the spouse's anxiety and depression.
9. There will be a positive relationship between the difficulty of demands as perceived by the spouse and his/her level of anxiety and depression.
10. The personal resource of perception of capabilities and the family resources of expression and flexibility will be the best predictors of the spouse's anxiety and depression.

## CHAPTER 3

### METHODOLOGY

#### Introduction

This chapter begins with an explanation of the study design and description of the participants. Instrumentation and the procedures employed for data collection follow. Finally, the plan for analysis of the data is developed.

#### Sampling and Participants

All patients hospitalized with a discharge diagnosis of myocardial infarction from Roanoke Memorial Hospital or Lewis Gale Hospital during the period between August 1, 1984 and March 1, 1986 were contacted for participation in the study. Criteria for inclusion in the study were that patients were married, between the ages of 30-65, and were married at the time of the infarction. The total population was 251. Of this number 25 patients had died since the first heart attack, two couples had divorced and 21 surveys were returned with no forwarding address. This reduced the total sample to 203.

A response rate of 69 % (N=140) was obtained for patients and 66 % (N=134) for spouses. Of the 36 non-respondents who were contacted, 80% said they did not have enough time to complete the questionnaire. The majority of the remaining 20 % said the questions were too personal. Two patients

expressed extreme displeasure at the way they were handled in the hospital and did not wish to cooperate.

#### Descriptive Analysis

The demographic characteristics of the respondents are given in Table 1 (Patients) and Table 2 (Spouses). The majority of patients were male, reflecting the greater tendency for men to have heart attacks. The mean age of patients was 54 with a range from 36 to 65. The mean age of spouses was 52 with a range from 29 to 73. Mean education level was twelfth grade with a range of 5 to 20 years for both groups. The average income for families fell between \$28,000 and 33,000 with a range from less than \$3000 to over \$53,000. There was a fairly equal distribution of families in each income range. Couples tended to be married longer, which would be expected given the age of the majority of participants. The mean number of years married was 28 with only 20 % married less than 20 years.

The study selected patients with a discharge date from between 1 and 18 months. The mean for this variable was 10 months with fairly equal representation in all categories.

Patients and spouses were asked what they did for a job. This was to be factored into Hollingshead's index of social status. In response to this question 42 % of patients reported that they were disabled or retired and 36 % of

**Table 1**  
**Demographic Characteristics of Patients**

<u>Variable</u>		<u>%</u>
<u>Sex</u>		
Male	117	83.4
Female	23	16.6
<u>Age</u>		
36-45	22	15.7
46-55	50	35.7
56-65	68	48.6
<u>Years of Education</u>		
5-9	31	22.1
10-12	88	63.0
13-20	21	14.9
<u>Years Married</u>		
1-10	10	7.3
11-20	17	12.5
21-30	47	34.6
31-46	62	45.6
<u>Family Income</u>		
Less than \$3000-17,999	32	22.8
18,000-32,999	48	35.7
33,000-47,999	41	27.9
48,000 and over	19	13.6

**Table 2**  
**Demographic Characteristics of Spouses**

<b>Variable</b>		<b>%</b>
<b><u>Sex</u></b>		
Male	18	13.4
Female	116	86.6
<b><u>Age</u></b>		
29-45	32	24.8
46-55	51	39.5
56-73	46	35.7
<b><u>Years of Education</u></b>		
5-10	29	21.6
10-12	55	41.0
13-20	50	37.4

**Note:** Years married and family income numbers and percentages can be found on Table 1 for patients. The figures are identical.

spouses reported they were housewives or unemployed. As a result this variable was not considered in the index. Educational levels and income levels were used as separate measures of social status.

#### Procedures

The general procedure was that outlined by Dillman (1978) in what he has called the Total Design Method (TDM). First, an initial letter (see Appendix D) was sent to explain the study and ask for participation of both patient and spouse. Second, the letter was followed by a phone call (see Appendix E), which answered any further questions and asked permission for the questionnaires (See Appendices A and B) to be sent. All subjects were informed as to the purpose of the study, the investigators and how to contact them, the amount of time the questionnaire would take to complete, and assured of confidentiality in their responses. They were told that they may receive a copy of the major findings of the study, however, their individual responses would not be interpreted. They were invited to a seminar after the study was completed to respond to any questions they had.

If potential subjects did not have phones or were unable to be reached by phone, a questionnaire was still sent to them. Included in this first mailing was a cover letter (see

Appendix F). The cover letter explained the purpose of the study, promised confidentiality, allowed participants to withdraw from the study at any time, and enabled them to receive a copy of the results.

The follow-up sequence was three-fold. After 1 week, a reminder letter was sent (See Appendix G). It served as a thank you for those who had responded and as a friendly reminder for those who had not. At 3 weeks, a letter and replacement questionnaire were sent only to non-respondents (See Appendix H). It was nearly the same as the original mailing, however, a shorter cover letter was used that appealed for a return of the questionnaire. The final mailing was similar to the second, only it was sent by certified mail. (See Appendix I). Each questionnaire mailing had enclosed a stamped envelope addressed to the investigator.

#### Instrumentation

##### Stressor Accumulation (Pile-Up)

The Family Inventory of Life Events (FILE) was developed by McCubbin, Wilson, and Patterson in 1981 in an effort to assess the pileup of life events experienced by a family, the aA factor of the Double ABCX model. FILE has been revised several times. The current form is a 50-item self-report instrument which records the stressor events and strains experienced by any member of the family in the past 12 months.

Patients and spouses filled out FILE separately by answering yes or no to the events described. FILE includes both objective events, such as, "Husband and wife retired from work" or "Family member purchased a home," as well as more subjective events, such as "Increased conflict with in-laws" or "Increased difficulty in managing children." The full set of items is included in the questionnaires (see Appendix A, pages 103-106 and Appendix B, pages 118-121).

The total scale has a reported internal consistency reliability of .82 (Chronbach's alpha). Validity checks for the instrument have been made in two ways. A pile-up of life changes was found to be negatively correlated with desirable dimensions of the family environment, as measured by the Family Environment Scale (Moos, 1975). Predictive validity was assessed on a population of families having children with cystic fibrosis, cerebral palsy, or myelomeningocele. It was found that a pile-up of life changes was positively correlated with poor child physical functioning and high family conflict.

### Personal Resources

#### Perception of capabilities

Patients and spouses responded to 10 statements regarding perception of the patient's capabilities. These statements were drawn from a more general measure being used in an



ongoing study by Patterson and her colleagues at Oklahoma with cardiac surgery patients. The items were added together to derive a total score.

Six post-MI patients and spouses in Roanoke were given this measure as a pilot test. In response to their feedback, wording was changed in two items to increase understanding. A sample item is, I (My spouse) will never be as active as I (he/she) used to be. Patients and spouses responded to these statements on a four-point scale from definitely false to definitely true. The full set of items is on page 101 in Appendix A and page 116 in Appendix B. Internal reliability was computed on this study's population and found to be .82 for patients and .77 for spouses (Chronbach's alpha).

#### Coping strategies

The Coping Health Inventory for Parents (CHIP) was designed by McCubbin, McCubbin, Nevin and Cauble, in 1981, as an index of parental coping with the chronic illness of a child. Parents were asked to record their use of 45 coping strategies on a four-point scale from "extremely helpful" to "not helpful." A category for "not used at all" was included. The CHIP has been factor analyzed with three resulting coping patterns emerging. All three patterns include both cognitive appraisal and direct action behaviors.

- (1) Maintaining family integration, cooperation, and an optimistic definition of the situation. This coping pattern is composed of 19 behaviors which center around doing things as a family unit, strengthening family relationships, and developing and maintaining a positive outlook on life in general and, specifically, when a member has a chronic illness. Internal reliability for this scale was .79 (Chronbach's alpha). A sample item is for patients and spouses to rate, How helpful is telling myself that things will work out? The full set of items is included on pages 96-98 in Appendix A and pages 111-113 in Appendix B.
- (2) Maintaining social support, self-esteem, and psychological stability. This coping pattern consists of 18 behavior items which focus on the parent's effort to maintain a sense of his or her own "well-being" through social relationships, involvement in activities which have the potential of enhancing self-esteem, and managing psychological tensions and strains. Internal reliability for this scale was .79 (Chronbach's alpha). A sample item is for patients and spouses

to rate, How helpful is involvement in social activities with friends? The full set of items is included on pages 96-98 in Appendix A and pages 111-113 in Appendix B.

- (3) Understanding the medical situation through communication with other parents and consultation with medical staff. This coping pattern involves eight behaviors which focus on the relationships developed with other parents who have a child with a similar illness and the relationship developed with the medical staff. It includes behaviors directed at understanding and mastering the medical information needed to care for the chronically ill child and use the medical equipment in the home. Internal reliability for this scale was .71 (Chronbach's alpha). A sample item is for patients and spouses to rate, How helpful is reading more about the medical problem that concerns me? The full set of items is included on pages 96-98 in Appendix A and pages 111-113 in Appendix B.

The instrument has been modified for use with adults, and permission from the authors to use the revised version has been obtained. No items were deleted, and only minor wording changes reflecting the change of focus from child to spouse

were made.

The CHIP has been validated concurrently with the Family Environment Scale (Moos, 1974), using families of children with cystic fibrosis. Parents' use of these coping patterns was associated with cohesiveness and expressiveness. Validation was also obtained by an association between use of these patterns and physiological functioning of the child.

#### Participation in a Cardiac Rehabilitation Program

Patients were asked to record whether or not a formal rehabilitation program was recommended and their degree of participation. Spouses also answered these questions about their partners. Items are included on page 107 in Appendix A and page 122 in Appendix B.

#### Family Resources

##### Expressiveness

Expressiveness was defined as the degree to which spouses talk with each other about their thoughts, feelings and/or behaviors in relation to the heart attack. Six items were drawn from interviews with couples having gone through the experience, an interview with a cardiologist and a recent qualitative study of heart attack victims and their spouses (Speedling, 1985). These items were included in the pilot test discussed earlier. Reliability was computed with the

total sample and found to be .68 for patients and .68 for spouses (Chronbach's alpha). The items such as "I talk with my spouse about my physical activity level" were answered on a five-point scale from "almost never" to "almost always." The same questions were answered by both patient and spouse. Items are included on page 102 of Appendix A and page 117 of Appendix B.

### Flexibility

Flexibility was defined as the degree to which spouses report a change in role relationships and relationship rules in response to a heart attack. Five items were drawn from interviews with couples having gone through the experience, an interview with a cardiologist, and a recent qualitative study of heart attack victims and their spouses (Speedling, 1985). These items were also included on the pilot sample of six couples. Reliability was .78 for patients and .74 for spouses. The items such as "The way my spouse and I divide chores around the house is different since the heart attack" were answered by both patient and spouse. Items are included on page 102 of Appendix A and page 117 of Appendix B.

### Educational Level

Participants were asked to record to the number of years of school attended. This question is included on page 107 of Appendix A and page 122 of Appendix B.

Income

Information on total family income was obtained from the patient and coded into categories for analysis as a family resource. Income ranges were in \$5000 intervals from \$3,000 and below to \$50,000 and above.

Perceived Difficulty of Demands

As previously described, the FILE was used to gather information on the accumulation of family stressors. In addition to recording the number of events occurring in the past year, couples were also asked to record the Amount of Family Adjustment (on a scale of 1-5) that each experienced. These subjective weights were obtained from both patient and spouse. This variable should be correlated with the life event scale but measure the subjective dimension. A person having two events which they perceived as very difficult to handle received a score of ten as did someone with ten separate events which they perceived as easy to handle. FILE is included on pages 103-106 of Appendix A and pages 118-121 of Appendix B. In the second column, the perceptions are recorded.

Mental Health Outcome Depression and Anxiety

Current levels of anxiety and depression were assessed for both patient and spouse. These variables are the two most

frequently mentioned psychological distress syndromes in the cardiac rehabilitation literature and thus served as the dependent variables in this study.

Anxiety was measured by the trait section of the state-trait anxiety inventory (Spielberger, 1983). The directions were modified to ask the patient or spouse to answer with the degree to which they have felt anxious in the last week. An example of an item was "I feel nervous and restless," to which the response was, on a four-point scale, from "almost always" to "almost never." The full set of items is on page 100 (21-40) of Appendix A and page 115 (21-40) of Appendix B.

This scale has been widely used in assessing anxiety in medical, surgical, and psychosomatic patients. Internal consistency reliability has ranged from .88 to .92 for six subgroups of medical patients. Construct validity was evidenced by an analysis which discriminated general medical/surgical patients having emotional problems from those who did not. In concurrent validity studies, the measure correlates highly with other measures of anxiety and, with 20 items, is shorter than most.

The self-rating depression scale (SDS) has been developed by Zung (1973) as a readily administered screening instrument. It is often used in medical settings and has been found to

discriminate 88% of patients diagnosed by psychiatrists as depressed (Zung, 1972). The 20 items on the scale were chosen to follow the definition in the Diagnostic and Statistical Manual, published by the American Psychiatric Association (1980). These include two items reflecting affective disturbance (sad, tearful), eight items reflecting physiological disturbance (sleep, appetite), two items reflecting psychomotor disturbance (agitation), and eight items reflecting psychological disturbance (confusion, emptiness). The patient and spouse indicated the degree to which they experience the symptoms on a four-point scale from "almost always" to "almost never." Parallel administration of self-rating and interviewer-administered forms have yielded similar results as indicated by a correlation of .87 (Zung, 1972). The full set of items is included on page 99 (1-20) of Appendix A and page 114 (1-20) of Appendix B.

### Data Analysis

Descriptive statistics were used to describe the demographic characteristics of the sample. Hypothesized relationships between the independent and dependent variables were investigated using the correlation and regression procedures in the Statistical Analysis System (SAS) (1982). The level for inclusion of a variable in the equation was set



at .10.

Two additional analyses were done. First, because of the high number of males in the patient population and females in the spouse population, correlation and regression analyses were made excluding the minority sex. Second, because of the high correlation between the life events and perception of life events variables, the regression analyses were also done excluding life events to determine the effect of the perception factor.

The following assumptions were required for using regression analysis to test the relationships hypothesized in the present study.

1. Scores from the rating scales were assumed to represent measurements at the interval level.
2. Other variables included in the regression analyses were either measured at the interval level or as in the case of a dichotomous nominal variable, could be treated statistically as though they were measured at the interval level.
3. The significance level for all findings was set at  $p .05$ . This is the minimum requirement for support of a hypothesis. Higher significance levels will be reported.

## Chapter IV

### RESULTS

This chapter will first list each hypothesis. Tables of correlations between independent and dependent variables for both patients and spouses are included. The regression analysis for both models follows.

#### Results-Patients

The intercorrelations for both dependent and independent variables as well as the means and standard deviations are given in Table 3. Although there are statistically significant intercorrelations between the independent variables, they are relatively low and to be expected given the nature of the variables.

Item response analyses as well as reliability coefficients for multiple item scales developed for this study are reported in Appendix C.

In order to determine any differences when females were excluded from the total sample, means, standard deviations, and regression analyses were computed excluding them. There were small variations but the significant correlations and variables in the regression analyses remained the same. The results are thus reported using the total sample.

Table 3  
Correlations, Means, and Standard Deviations for the Patient Independent and Dependent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Pile-up of Life Events	--	--	--	--	--	--	--	--	--	--	--	--	--
2. Perception of Difficulty	.57**	--	--	--	--	--	--	--	--	--	--	--	--
3. Coping-Family Stability	-.31**	-.13	--	--	--	--	--	--	--	--	--	--	--
4. Coping-Self Esteem	-.22**	-.09	.76**	--	--	--	--	--	--	--	--	--	--
5. Coping-Medical Information	-.13	.00	.68**	.65**	--	--	--	--	--	--	--	--	--
6. Perception of Capabilities	-.27**	-.32**	.30**	.33**	.15	--	--	--	--	--	--	--	--
7. Partic. In Rehab. Program	-.02	-.03	.19	.25	.15	-.01	--	--	--	--	--	--	--
8. Expressiveness	-.08	-.12	.35**	.24**	.26**	.18*	-.01	--	--	--	--	--	--
9. Flexibility	.20	.11	.07	-.06	.08	-.40**	.08	.29**	--	--	--	--	--
10. Income	-.12	-.15	-.13	-.04	-.16	.10	-.20*	-.13	-.24**	--	--	--	--
11. Education	.00	-.17	-.04	.00	-.17	.13	-.05	-.13	-.14	.40**	--	--	--
12. Depression	.46†	.43†	.39†	.39†	.27†	.63†	.03	-.26**	.41†	.24**	-.22**	--	--
13. Anxiety	.55†	.46†	.41†	.39†	.19*	.54†	.06	-.25**	.30†	.23**	-.20*	.83†	--
M	57.35	2.87	2.34	2.19	2.01	2.95	1.54	3.45	2.53	7.00	12.09	40.15	39.38
SD	6.00	1.05	.42	.59	.47	.61	.50	.85	.95	4.12	2.83	9.20	11.34

† p .001 \*\* p .01 \*p .05

### Hypothesis 1

There will be a positive relationship between the accumulation of stressors on a family and the patient's depression.

This hypothesis was supported by this study. There was a significant ( $p \leq .01$ ) relationship between the number of stressful events in the past 12 months and the dependent variables of depression and anxiety. The correlation between pile-up and depression was .46 while that between pile-up and anxiety was .55.

### Hypothesis 2

There will be an inverse relationship between personal resources (coping strategies, patient health perception, rehabilitation program and the patient's depression and anxiety.

Correlations between the personal resource variables and depression/anxiety are included in Table 3. The more coping behaviors which patients describe using and being helpful in reaction to the heart attack, the lower their scores on both depression and anxiety ( $r$  ranged from  $-.19$ ,  $p \leq .05$  to  $-.41$ ,  $p \leq .001$ ). The higher their score on positive perception of present and future health capabilities, the lower their scores on depression ( $r = -.63$ ,  $p \leq .001$ ) and anxiety ( $r = -.54$ ,  $p \leq .001$ ).

The only personal resource relationship not supported by this study was that between participation in a rehabilitation program and depression ( $r=.06$ )/anxiety ( $r=.03$ ). In response to this question, 76 patients (55 percent) were not recommended by their physicians to participate in a rehabilitation program. Of those that did participate the great majority completed the program. However, there was a non-significant relationship between this participation and the depression/anxiety.

### Hypothesis 3

There will be an inverse relationship between family resource variables (flexibility, expressiveness income, education) and the patient's depression and anxiety.

Correlations between the family resource variables and depression/anxiety are included in Table 3. The more a patient reported talking with his/her spouse about various aspects of his/her condition (expressiveness), the lower their score on depression ( $r=-.26$ ) and anxiety ( $-.25$ ). The more income ( $-.24/-.23$ ) and higher educational level ( $-.22/-.20$ ) the lower his/her scores were on the depression/anxiety scales. Presumably being able to feel financially secure provided some relief with large medical bills.

On the flexibility variable there were significant

correlations but in a direction opposite from that which was predicted. The higher the patients score on flexibility, also the higher the depression (.41) and anxiety scores (.30).

#### Hypothesis 4

There will be a positive relationship between the difficulty of demands as perceived by the patient and his/her level of depression and anxiety.

The correlation between depression and perceived difficulty was .43 and between anxiety and perceived difficulty was .46. This hypothesis was supported by the data. The greater patients perceived events as difficult to manage, the higher were their scores on the dependent variables.

#### Hypothesis 5

The personal resources of perception of capabilities, and the family resources of expressiveness and flexibility will be the best predictors of the patient's depression and anxiety.

A summary of the stepwise regression analyses in which all independent variables were included with depression and anxiety as the dependent variables is shown in Table 4. Variables were included in the table if (a) they added at least one additional percent to  $R^2$  and (b) they had an overall significance level of  $F$  greater than .10 (SAS, 1982).

Table 4

Multiple Regression Summary Tables for Patients

	<u>Depression</u>		
<u>Independent Variables</u>	<u>b</u>	<u>Beta</u>	<u>Zero Order</u>
Life Events	.334	.218	.46
Perception of Capabilities	-5.840	-.428	-.63
Expressiveness	-2.546	-.235	-.26
Flexibility	2.368	.245	.42
Income	- .281	-.126	-.25
Education	- .480	-.147	-.22
<u>Coping-Med. Info.</u>	<u>-2.822</u>	<u>-.180</u>	<u>.27</u>

Multiple R=.794

(F=28.30, df=7,128. p&lt;.001)

R<sup>2</sup>=.630

	<u>Anxiety</u>		
<u>Independent Variables</u>	<u>b</u>	<u>Beta</u>	<u>Zero Order</u>
Life Changes	.665	.352	.55
Coping-Family Stability	-5.007	-.186	.55
Perception of Capabilities	-6.597	-.351	-.54
Expressiveness	-1.706	-.128	-.25
<u>Income</u>	<u>- .525</u>	<u>-.191</u>	<u>-.23</u>

Multiple R=.761

(F=30.64, df=5,129, p&lt;.001)

R<sup>2</sup>=.579

In the analysis using depression as a dependent variable, seven of the eleven independent variables entered with a resulting multiple R of .79 indicating that 62% of the variance was accounted for by these variables. The analysis using anxiety as a dependent variable resulted in five variables included with a multiple R of .76, thus accounting for 58% of the variance.

Four independent variables were included in both predictive equations for patient anxiety and depression. Perception of capabilities had the highest beta weight for depression ( $-.428$ ,  $F=33.60$ ,  $p \leq .001$ ) and was second in the anxiety analysis ( $-.351$ ,  $F=31.64$ ,  $p \leq .001$ ). Stressful life events had the highest beta in anxiety ( $.352$ ,  $F=30.07$ ,  $p \leq .001$ ) and was fourth in the depression ( $.218$ ,  $F=13.38$ ,  $p \leq .001$ ) analysis. Expressiveness had a beta of  $-.235$  ( $F=13.32$ ,  $p \leq .001$ ) in the regression on depression and  $-.128$  ( $F=3.78$ ,  $p \leq .05$ ) on anxiety. Finally, income had relatively the lowest contribution to depression ( $-.126$ ,  $F=9.83$ ,  $p \leq .01$ ) and was the third highest in anxiety ( $-.191$ ,  $F=9.83$ ,  $p \leq .01$ ). Flexibility, which had the second highest beta in the depression analysis ( $.245$ ,  $F=12.38$ ,  $p \leq .001$ ) was not selected in the analysis on anxiety.

A stepwise procedure excluding the variable of life events looked at the effect perception of life events had on the



final model. For both depression and anxiety it had significant beta weights (.285,  $F=9.45$ ,  $p \leq .001$ /.251,  $F=8.22$ ,  $p \leq .01$ ). It was the third strongest contribution to the predictions of depression and anxiety.

#### RESULTS-SPOUSES

The intercorrelations for the independent variables as well as the means and standard deviations are given in Table 5. The great majority (68 %) were non-significant at the .05 level. The majority of the ones that were significant were within the resources variables which would be expected to vary somewhat together.

In order to determine any differences when males were excluded from the total sample, means, standard deviations, and regression analyses were computed excluding them. There were small variations but the significant correlations and variables in the regression analysis remained the same. The results are thus reported using the total sample.

#### Hypothesis 6

There will be a positive relationship between the accumulation of stressors on a family and the spouse's depression and anxiety.

This hypothesis is supported by the data in this study. The correlation for depression was .36 ( $p \leq .001$ ) and .43 ( $p \leq .001$ ) for anxiety. As with the patient group the association

Table 5

Correlations, Means, and Standard Deviations for the Spouse Independent and Dependent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Pile-up of Life Events	--	--	--	--	--	--	--	--	--	--	--	--	--
2. Perception of Difficulty of Pile-up	.53***	--	--	--	--	--	--	--	--	--	--	--	--
3. Coping-family Stability	-.30***	-.17*	--	--	--	--	--	--	--	--	--	--	--
4. Coping- Self-Esteem	-.17*	-.08	.81***	--	--	--	--	--	--	--	--	--	--
5. Coping- Medical Information	-.11	-.02	.75***	.61***	--	--	--	--	--	--	--	--	--
6. Perception of Capabilities	-.27**	-.14	.14	.10	.13	--	--	--	--	--	--	--	--
7. Participation in a Rehab Program	.03	-.07	-.06	-.06	-.11	-.08	--	--	--	--	--	--	--
8. Expressiveness	.07	-.05	.25**	.15	.29**	.06	-.20*	--	--	--	--	--	--
9. Flexibility	.17	-.01	-.04	.01	-.04	-.49**	-.08	.47***	--	--	--	--	--
10. Income	-.15	-.18*	.04	.01	.06	.25**	-.09	-.07	-.27**	--	--	--	--
11. Educational Level	.00	-.12	-.11	-.15	-.12	.17*	-.04	-.19*	-.16	.48**	--	--	--
12. Depression	.36***	.23***	-.25***	-.23***	-.08	-.30**	.09	.05	.25**	-.27**	-.16	--	--
13. Anxiety	.43***	.34**	-.22**	-.15	-.01	-.37**	.00	.06	.27**	-.18*	-.20*	.81***	--
M	53.06	3.17	2.36	2.04	2.27	2.88	1.56	3.40	2.41	6.66	12.09	37.73	39.11
SD	5.34	.91	.45	.49	.62	.57	.49	.75	.84	2.87	2.83	8.76	11.11

\*\*\*p .001 \*\*p .01 \*p .05

between the number of stressful events happening to a family and mental health in one member is significant ( $p \leq .001$ ).

#### Hypothesis 7

There will be an inverse relationship between personal resources (coping strategies, patient health perception, rehabilitation program) and the spouse's depression and anxiety.

Correlations between personal resource variables and depression/anxiety are included in Table 5. This hypothesis was supported by the data although not as strongly as for the patient group. Coping efforts to keep the family functioning were associated with lower correlations with depression ( $-.25$ ,  $p \leq .01$ ) and anxiety ( $-.22$ ,  $p \leq .01$ ) This was also reflected in their comments at the end of the questionnaire. They wrote about the importance of maintaining family support, the family sharing religious convictions together, and helping the patient to have a positive attitude. The coping strategy involving obtaining greater medical knowledge was not significantly associated with mental health. This was surprising as the pilot sample spouses talked at length about their perception of their role as liaison between their spouse and the physician.

The perception of health variable was again significantly associated with low levels of depression ( $-.30$ ,  $p \leq .001$ ) and

depression ( $-.37, p \leq .001$ ). The more optimistic the spouse was about their partner's recovery towards independent functioning the lower their scores on depression and anxiety. Another way to look at these relationships is that a depressed or anxious spouse may possibly cause themselves to have a pessimistic attitude toward their partner's recovery.

There was a non-significant relationship between the patient's participation in a rehabilitation program and the spouse's depression (.09) and anxiety (.00). The hypothesis that such participation would lower the dependent variables was not supported.

#### Hypothesis 8

There will be an inverse relationship between the family resources variables (expressiveness, flexibility, income, and educational level) and the spouse's depression and anxiety.

Correlations between family resource variables and depression/anxiety are included in Table 5. Unlike the patient group, the expressiveness variable was not associated with depression (.06) or anxiety (.05). However, questions comprising the flexibility scale were significantly associated (.25,  $p \leq .01$ /.27,  $p \leq .01$ ). This latter scale reflected the spouse's perception that the interpersonal process between the

couple had been able to remain the same rather than change as a result of the heart attack. As with the patient group the hypothesis of an inverse relationship between depression/anxiety and income ( $-.27, p \leq .01 / -.18, p \leq .05$ ) was supported. The relationships with educational level were supported although not as strongly ( $-.16, ns / -.20, p \leq .05$ ).

#### Hypothesis 9

There will be a positive relationship between the difficulty of demands as perceived by the spouse and his/her level of depression and anxiety.

The C-Factor for spouses was also significantly associated with depression ( $.36, p \leq .001$ ) and anxiety ( $.43, p \leq .001$ ). The greater spouses perceived stressful events to be difficult, the higher were their anxiety/depression scores. As with the patients, both the number of events and the perception of them were important. The perception factor is more subject to clinical intervention than the actual number of events

#### Hypothesis 10

The personal resource of perception of capabilities and the family resources of expressiveness and flexibility will be the best predictors of the spouse's depression and anxiety.

A summary of the stepwise regression analyses in which depression and anxiety were the dependent variables is shown

in Table 6. Variables were included in the table if they met the inclusion criteria of (a) contributing at least one additional percent to  $R^2$ , and (b) having overall significance of  $F$  greater than .10 (SAS, 1982).

In the regression analysis using depression as a dependent variable, four variables entered with a resulting multiple  $R$  of .51, indicating that 26% of the variance was accounted for by these variables. The analysis using anxiety as a dependent variable also resulted in four variables included with a multiple  $R$  of .57, thus accounting for 32% of the variance.

Relative comparison of the variables using beta weights showed life events to be the most important contributor to depression (.282,  $F=12.45$ ,  $p \leq .001$ ) and also to anxiety (.287,  $F=10.50$ ,  $p \leq .001$ ). Perception of capabilities was third in the depression analysis (-.180,  $F=4.81$ ,  $p \leq .05$ ) and second in the regression on anxiety (-.277,  $F=12.86$ ,  $p \leq .001$ ). Income was second in the depression analysis (-.219,  $F=7.35$ ,  $p \leq .05$ ) and did not appear in the analysis on anxiety. Variables least contributory but still included in the equation were coping-self esteem in depression (-.159,  $F=4.11$ ,  $p \leq .05$ ) and educational level (.148,  $F=3.39$ ,  $p \leq .05$ ) in anxiety.

The stepwise analyses were also done excluding the total life events variable to see if the perception of difficulty

variable would contribute. In the depression regression it had a beta of .121 ( $F=3.15$ , ns) while in the analysis on anxiety the perception of difficulty was significant (.250,  $F=10.13$ ,  $p \leq .001$ ).

Table 8

Multiple Regression Summary Tables for Spouse's

<u>Independent Variables</u>	<u>b</u>	<u>Beta</u>	<u>Depression</u>
			<u>Zero Order</u> <u>Correlation</u>
Life Events	.463	.282	.36
Perception of Capabilities	-2.722	-.180	-.30
Income	-.668	-.219	-.27
<u>Coping- Self Esteem</u>	<u>-2.820</u>	<u>-.159</u>	<u>-.23</u>
Multiple R=.510		(F=11.13, df=4, 126, p<.000)	
R <sup>2</sup> = .261			

<u>Independent Variables</u>	<u>b</u>	<u>Beta</u>	<u>Anxiety</u>
			<u>Zero Order</u> <u>Correlation</u>
Life Events	.597	.287	.43
Perception of Capabilities	-5.328	-.277	-.38
Perception of Difficulty	2.072	.156	.34
<u>Education</u>	<u>-.539</u>	<u>-.148</u>	<u>-.20</u>
Multiple R=.572		(F=15.28, df=4, 130, p<.000)	
R <sup>2</sup> = .327			



## Chapter V

### SUMMARY AND DISCUSSION

This chapter will begin by summarizing the implications of the results related to each major variable in the family stress model. The resource factor will be subdivided into personal and family resources and will then be discussed in relation to the individual scales which comprise these variables. A discussion of the similarities and differences between the patient and spouse models will be included in this discussion. The study's contributions to theory/research as well as the area of applied intervention will follow. Finally recommendations for future research will be made.

#### The Family Stress Model

#### Findings Related to the Pile-Up of Stressful Life Events

##### Patients

There were strong positive correlations between the number of stressful events which patients described as having occurred in their families in the past year and their scores on depression and anxiety. This supports the hypothesis that events other than the major stressor are contributing to the patient's recovery after a heart attack (Ell, Guzman, & Haywood, 1983). However, since these are correlational data it may also be that a patient who feels anxious or depressed

may have fewer coping skills to deal with crisis situations.

### Spouses

Spouse's scores were also significant at the  $p .001$  level for both anxiety and depression. When designing programs for patients and their families after a heart attack, the number of other stressful events both normative and crisis oriented should be considered. Physicians are perhaps in the best position to gather this data since it is only a small minority of families which are referred or involve themselves with mental health professionals. Primary care physicians such as family practitioners and general internists could be trained to routinely gather data in two areas. First, the progress of various members and the family as a whole in accomplishing life cycle tasks is important in assessing normative transitions. Second, a "preventive profile" which has patients list stressful events which have happened to them in the past year could alert physicians to potential problems. These physicians could then work with cardiologists in recommending services in addition to standard medical and rehabilitation prescriptions.

### Findings Related to Personal Resource Variables

#### Patients

A strong correlation was obtained between a patients'

perception of their capabilities and anxiety/depression. This supports the work of Garrity (1973) which identified this perceptual variable as important in relation to morale. Traditionally most rehabilitative efforts focus around behaviors and feelings. Patients are encouraged to discuss their feelings and look at new coping behaviors that will help them recover. Data from this study would suggest that the cognitive beliefs of the patient are also an important resource to consider.

The coping scales were all significantly correlated with depression and anxiety in the predicted direction. Of interest was the scale which was comprised of items measuring a patient's desire to obtain more information about heart disease. Scores on this scale were inversely correlated with scores on depression more strongly than on anxiety. It may be that if a patient feels anxious more information can just add to those feelings whereas if he/she is depressed the knowledge can combat some of the feelings of hopelessness.

It was of note that participation in a rehabilitation program was not associated with lower scores on anxiety and depression. Several explanations for this seem possible. First, as noted previously, the literature has been mixed in reporting psychological changes in relation to rehabilitation programs (Roviaro, Holmes, & Holmstem, 1984). Doehrman (1977)

reported on a World Health Organization study which reported that a rehabilitation program which improves the physiological status of heart patients will not necessarily add to their emotional well-being. Second, measurement error may have played a significant role. The item was originally designed with four responses; however, with few exceptions, only two of the responses were used. About half of patients reported participating in a recommended program while the other half said it was not recommended by their physician. This may have influenced the low correlations. Finally, measurement error notwithstanding, this finding should not be considered as a statement about rehabilitation programs. The question did not address the type of program and to what extent the patient was involved in it. Future study should explore this resource further to determine what recovery effects can be attributed to a comprehensive rehabilitation program.

### Spouses

All personal resource correlations for spouses were lower than that reported for patients. Of interest is that spouse's perception of their partner's capabilities was related to their own mental health. Again, the cognitive perceptual variable was important. Also of interest were the types of coping behaviors which seemed helpful. Efforts to give

stability to the family were associated with both lower anxiety and depression scores; however, efforts to enhance self-esteem were only related to lower scores on depression. It is possible that these latter efforts were perceived by the spouses as being insensitive to their partner's needs and thus did not decrease anxiety levels.

### Findings Related to Family Resource Variables

#### Patients

All hypotheses regarding the relationship for patients between family resource variables and anxiety/depression were supported by the data. This finding supports the more qualitative work of Koch (1985) in the process variables of expressiveness and flexibility. The results indicating significant relationships between the variables of income and educational level with anxiety and depression are not surprising and support the work of Monteiro (1973), Shirpiro (1972) and others.

The flexibility variable requires some explanation. There were significant correlations in opposition to what was predicted. A higher patient score on flexibility corresponded to higher depression and anxiety scores. Several explanations seem reasonable. The questions asked respondents to report changes in various aspects of their daily routine with high scores reflecting greater change. It may be patients

interpreted the questions in a negative way and responded as if it reporting change meant they had failed to adapt successfully.

Age may play a role with older patients/spouses having more traditional roles established because of habit or cultural value than younger patients. The idea of flexibility of decision making tasks and emotional support being a positive, healthy process is one that is probably not shared by the majority of couples responding to this questionnaire. Further analysis of this data could look at age as a factor in this set of items.

A second explanation is that since patients filled out the survey at a time close to the heart attack the results support the adaptation phase of a crisis as proposed by McCubbin and Patterson (1983). In this phase there is a resistance to change on the part of all family members. Clinical observations and theories of family therapy also suggest a family response to maintain homeostasis or resist change (Hoffman, 1978).

Denial as an active stress reducing process is a related hypothesis proposed by Hackett and Casseem (1973). Patients report no change in lifestyle or in relationships. Whether or not actual behavioral change has occurred could not be

determined.

### Spouses

Spouse's correlations with the family resource variables were again generally lower but still significant for flexibility and the socioeconomic variables of income and education. Flexibility scores were in the same direction as with patients where higher reported change was associated with higher emotional distress. The same propositions are made for them where there is either a culturally or age determined belief system operative or there is an effort to deny and/or resist change which has occurred as a result of the medical crisis.

Surprisingly the correlations between the spouse's reports of talking with their partners about the effects of the heart attack and their own anxiety/depression were extremely low. An accurate interpretation of this is somewhat unclear; however, spouse comments help derive one explanatory hypothesis. A number wrote that talking about the heart attack and the treatment was helpful; however, a number of them also expressed confusion over such talk. They either felt out of place in talking about it or received negative feedback from their spouse. This would support the work of Speedling (1985) and his qualitative study of differing family patterns. Some families, particularly those that were in

conflict prior to the heart attack, tended to see it as an event to talk about and come together over. Others who had more independent styles tended to work alone in coping with the recovery. It may be these individual opinions are reflected in the overall relationship between expressiveness and depression/anxiety.

Denial may also be a factor in the spouse's responses to expressiveness. Bedsworth and Moler (1982) noted a variety of threats listed by spouses in the literature: loss of mate, change in own life goals or motives, loss of healthy spouse, financial insecurity, change in responsibility and recurrence of the myocardial infarction. The spouse may feel that the more he/she is directly involved in the treatment the more likely these difficult areas will have to be addressed.

#### Findings Related to Perception of Difficulty

##### Patients

For patients, the greater their perceptions of significant events as difficult to handle, the higher were their scores on anxiety and depression. Although this variable did not enter into the original regression equations, when the life events variable was removed it did add significantly. From a practical intervention perspective the perception factor is more amenable to change than life events. Cognitive



restructuring and reframing are two commonly used therapeutic techniques which could be used. Both attempt to alter the thinking patterns of persons by seeing crises as opportunities for positive change and growth and by reducing the number of irrational self-defeating thoughts.

### Spouses

Spouse patterns were similar to previous discussion with lower but significant correlations. They also were analyzed by excluding the life change variable with similar results. It appears that in addition to perception of capabilities perception of changes or stress is also important.

### Similarities and Differences between Patient and Spouse

#### Regression Models

A relatively large percentage of the variance was explained by the variables in the patient regressions on anxiety and depression. This supports family stress theory by suggesting that multiple areas are important to consider in looking at the outcome of a crisis event. Both models contained variables from the three factors proposed in the theory. Both models also contained variables that addressed attitude (perception of capabilities), behavior (coping strategies), relationship (expressiveness), extrafamilial influences (life events), and socioeconomic (income) factors.

The spouse models explained much less of the variance in

the spouse's level of anxiety and depression. Two hypotheses related to the outcome measures seem plausible in explaining this difference. First is that spouses denied their own depression or anxiety in relation to the heart attack. Croog (1971) reported that masked depression or denial was a factor in a number of wives in his study. A second hypothesis again supports the work of Speedling (1985). He described an active disengagement process undertaken by several spouses to minimize potential conflict in the relationship. As mentioned previously, a number of spouses in the study reported in their comments a difficulty in knowing how to feel or what to do in relation to the heart attack. They also reported a feeling that it was their partner's responsibility to handle his/her treatment and they were unclear about their role. This may be reflected in the results of the regression analysis.

Two of the primary contributors to the patient model (life events and perception of capabilities) were also important for the spouse in predicting their emotional status. The life events variable is most likely a universal contributor and reflects the early work of Holmes and Rahe (1967). The perception factor however, is more specific to this population and expands the work of Garrity (1973) to include the spouse population.

Other variables have been suggested in previous work and could be added to the spouse model to increase the amount of explained variance. Marital satisfaction both before the MI and currently is a family resource which could be included as a predictor (Dhooper, 1983). The level of satisfaction spouses report with their self esteem, job status, or leisure activities is a personal resource which has been identified as important (Skelton & Dominian, 1973). Finally, social support has been described as a community level resource for spouses in feeling they have someone to back them up when they need support (Cobb, 1976).

#### Contributions to Theory and Research

This study provides support for use of the Double ABCX model in talking about adult crises since previous efforts have been focused on children. Similarities in the variables which are included are evident. Expressiveness and family coping, important in this study, were also significant in Patterson's (1985) study on families with a child having cystic fibrosis. Work with families having a mentally retarded child placed emphasis on the careful assessment of family hardships and stresses (Holroyd & McArthur, 1976). The difference between a family adapting to a childhood illness and one adapting to an adult illness is likely (a) greater demands on existing financial and emotional resources in a

young family and (b) the greater likelihood that an adult illness is perceived as a more "on schedule" event in the life cycle (Harkins, 1978).

The study identified several predictor variables which can be useful in future development of causal models for the dependent variables. This is especially true for the perception of capabilities variable which supports not only the work of Garrity (1981) but also the more general health belief model used to study participation in preventive health behavior (Kasl & Cobb, 1966). Both of these models emphasize the importance of decisions made by patients to reduce threats posed by illness and propose that many physical, psychosocial, and sociological predictors of post-MI adjustment may be mediated by the patients' perception of health status. However, neither of these models considered the spouses' perceptions. Results from the present study would lead to the conclusion that these be included.

Scales were constructed to measure three important independent variables, were analyzed using a large sample and found to have high internal reliability coefficients. The perception of capabilities scale was strongly associated with depression and anxiety in both patient and spouse models. The expressiveness and flexibility scales were associated with the

dependent variables for patients. All three of these measures are short, have good content validity, and are easily understood by respondents. They could be used in further research on the effect of cognitive perceptions and relationship process variables on health. The three scales could also be used to predict one spouse's emotional/physical health from the other's responses. For example, a model looking at the effect of a spouse's perceptions of their partner's health on the partner's recovery or emotional state could be developed.

The problem of multiple perceptions of family members is a major issue in family research (Klein, 1984) and is reflected in the literature on heart disease. Some studies focus on the victims themselves and their reaction while others focus on the spouses. This study, while analyzing the two as separate groups, is a step toward using strategies to combine scores. For example, a model which looked at the influence of the discrepancy between a patient's and spouse's perception of capabilities on their mental health could be utilized.

#### Contributions to Applied Practice

Education, assessment of those at risk, and intervention are applied areas to which this study contributes. Rehabilitation efforts tend to typically focus on

exercise/diet regimes and on compliance with medication. The psychological state of the patient is not often addressed in a direct way. Patients and their families could be assessed with consideration to how the heart attack contributes to their current overall level of stress, their previous efforts to cope with crisis events, their perceptions of the patient's recovery potential, and the previous and current relationship patterns. Those identified as being at high risk could be referred for specialized assistance. However, all could receive education in what they might expect physically, psychologically, and in their family relationships. By using a local sample, results from this study could provide support for these programs. In the intervention area, couples or unmarried individuals identified as being at high risk for future difficulties could meet on a regular volunteer basis for more direct therapeutic support. Adsett and Bruhn (1968) conducted such a structured group which met for 10 weeks. Spouses and patients met separately as well as together to discuss issues related to adaptation. Having a comprehensive screening procedure such as the measures included in this study could facilitate inclusion in such a group.

#### Recommendations for Future Research

Analysis of the data revealed that the multiple correlation

coefficients for depression and anxiety in the patient were statistically significant and accounted for more than half of the variance in the dependent variables. The model for spouses, while significant, was more moderate. Therefore, it would seem advisable for future research to examine other factors which could reduce the amount of unexplained variance, particularly in the spouse. Several possibilities were discussed earlier. One additional factor could be spouse's perception of his/her ability to support and assist the patient as well as the extent to which this support is appreciated by their partner. From the comments made by spouses in this study it seems reasonable that the overwhelming responsibility of the caretaker role is a significant factor in their mental health.

The effects of each partner's attitudes and behavior on the other is an area deserving further inquiry. It is most likely that a reciprocal relationship exists whereby each partner's beliefs and emotions influence the other. Hellerstein and Friedman (1970) reported that anxiety and depression in the wife can serve further to stimulate the same reactions in the male patient. It may be that these are mediated to a large extent by the spouse's perception of the patients capabilities. Krovik (1962), in a study looking at rehabilitation of stroke patients reported that progress was

often facilitated by the spouse's beliefs that the patient can perform various life roles at a level in excess of what the patient believes.

There was some support for Koch's (1983) theory of the variables of expressiveness and flexibility being important to the mental health of the patient. In order to more accurately assess the effects of the heart attack on the relationship and the effectiveness of these as coping strategies, a prospective study should be accomplished. Some measure of these variables pre-MI would be ideal followed by assessment in the hospital and several follow-up assessments. Multimodality assessments where both attitudes and behaviors are examined would be important. Outcomes in both psychological, physiological, and work/leisure areas should be included.

The strongest recommendation for further study is in continuing the process to look for the most relevant set of variables after a heart attack which would put a patient and his/her family at high risk for significant mental health problems. Present findings suggest the family stress model to be a good one. If premorbid factors such as quality of marriage and patient's/spouse's emotional state are known more accurate predictions might be made.



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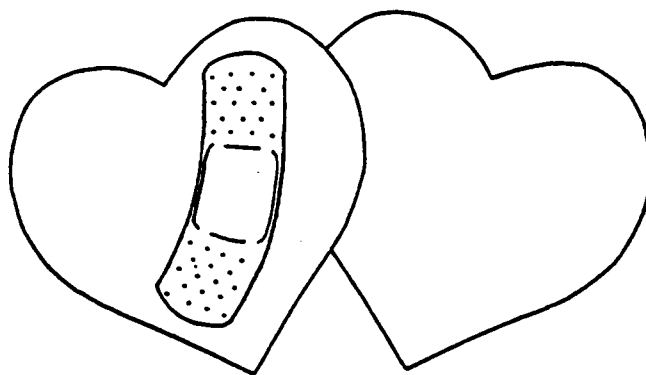
## APPENDICES

APPENDIX A

Patient Questionnaire

# Heart Disease and the Family

Patient Booklet



If envelope is lost, please return to:  
William B. Gunn, Jr.  
Southeast Family Medical Center  
2145 Mt. Pleasant Blvd., SW  
Roanoke, VA 24015

We are interested in what life has been like in your family since your heart attack last year. Please consider your family to be those persons living in your home as well as those to whom you have a long-term commitment.

The first questions record what coping behaviors people find helpful or not helpful to them in the management of family life when one or more family members is ill for a brief period or has a medical condition which calls for continued medical care. For each coping behavior, please circle the number indicating how helpful it was to you.

	<i>Extremely helpful</i>	<i>Moderately helpful</i>	<i>Minimally helpful</i>	<i>Not helpful</i>	<i>Not used at all</i>
1. Trying to maintain family stability. . . . .	3	2	1	0	NU
2. Engaging in relationships and friendships which help me feel important and appreciated. . . . .	3	2	1	0	NU
3. Trusting my spouse or partner to help support me and our children . . . . .	3	2	1	0	NU
4. Sleeping. . . . .	3	2	1	0	NU
5. Talking with the medical staff (nurses, social worker, etc.) when we visit the doctors/clinic . . . . .	3	2	1	0	NU
6. Believing that I will get better . . . . .	3	2	1	0	NU
7. Working, outside employment . . . . .	3	2	1	0	NU
8. Showing that I am strong . . . . .	3	2	1	0	NU
9. Purchasing gifts for myself and/or other family members . . . . .	3	2	1	0	NU
10. Talking with other individuals/families in my same situation . . . . .	3	2	1	0	NU
11. Planning ahead so I can follow through with the medical treatment prescribed for me (medications, diet, exercise, etc.) . . . . .	3	2	1	0	NU
12. Eating . . . . .	3	2	1	0	NU
13. Getting other members of the family to help with chores and tasks at home . . . . .	3	2	1	0	NU
14. Getting away by myself . . . . .	3	2	1	0	NU

Extremely helpful  
 Moderately helpful  
 Minimally helpful  
 Not helpful  
 Not used at all

15. Talking with doctor(s) about my concerns about my medical condition . . . . .	3	2	1	0	NU
16. Believing that the doctors/clinic/hospital has my family's best interest in mind . . . . .	3	2	1	0	NU
17. Building close relationships with people . . . . .	3	2	1	0	NU
18. Believing in God . . . . .	3	2	1	0	NU
19. Developing myself as a person . . . . .	3	2	1	0	NU
20. Talking with other people in the same type of medical situation and learning about their experiences . . . . .	3	2	1	0	NU
21. Doing things together as a family (involving all members of the family) . . . . .	3	2	1	0	NU
22. Investing time and energy in my job . . . . .	3	2	1	0	NU
23. Believing that I am getting the best medical care possible . . . . .	3	2	1	0	NU
24. Entertaining friends in our home . . . . .	3	2	1	0	NU
25. Reading about how other persons in my situation handle things . . . . .	3	2	1	0	NU
26. Doing things with family relatives . . . . .	3	2	1	0	NU
27. Becoming more self-reliant and independent . . . . .	3	2	1	0	NU
28. Telling myself that I have many things to be thankful for . . . . .	3	2	1	0	NU
29. Concentrating on hobbies (art, music, jogging, etc.) . . . . .	3	2	1	0	NU
30. Explaining our family situation to friends and neighbors so that they will understand us . . . . .	3	2	1	0	NU





THESE QUESTIONS ASK HOW YOU HAVE GENERALLY FELT IN THE LAST WEEK. THERE ARE NO RIGHT OR WRONG ANSWERS. DO NOT SPEND TOO MUCH TIME ON ONE STATEMENT, BUT GIVE THE ANSWER WHICH DESCRIBES HOW YOU GENERALLY HAVE FELT.

FOR EXAMPLE, FOR NUMBER 1, IF YOU HAVE OFTEN FELT DOWNHEARTED AND SAD, CIRCLE 3. FOR NUMBER 2, IF YOU ALMOST ALWAYS FEEL BETTER IN THE MORNING, CIRCLE 4.

	<i>Almost Never</i>	<i>Sometimes</i>	<i>Often</i>	<i>Almost-Always</i>
1. I feel downhearted, blue and sad.	1	2	3	4
2. Morning is when I feel the best.	1	2	3	4
3. I have crying spells or feel like it.	1	2	3	4
4. I have trouble sleeping through the night.	1	2	3	4
5. I eat as much as I used to.	1	2	3	4
6. I enjoy looking at, talking to and being with attractive women/men.	1	2	3	4
7. I notice that I am losing weight.	1	2	3	4
8. I have trouble with constipation.	1	2	3	4
9. My heart beats faster than usual.	1	2	3	4
10. I get tired for no reason.	1	2	3	4
11. My mind is as clear as it used to be.	1	2	3	4
12. I find it easy to do the things I used to.	1	2	3	4
13. I am restless and can't keep still.	1	2	3	4
14. I feel hopeful about the future.	1	2	3	4
15. I am more irritable than usual.	1	2	3	4
16. I find it easy to make decisions.	1	2	3	4
17. I feel that I am useful and needed.	1	2	3	4
18. My life is pretty full.	1	2	3	4

	Almost Never	Sometimes	Often	Almost Always
19. I feel that others would be better off if I were dead.	1	2	3	4
20. I still enjoy the things I used to do.	1	2	3	4
21. I feel pleasant.	1	2	3	4
22. I tire quickly.	1	2	3	4
23. I feel like crying.	1	2	3	4
24. I wish I could be as happy as others seem to be.	1	2	3	4
25. I am losing out on things because I can't make up my mind soon enough.	1	2	3	4
26. I feel rested.	1	2	3	4
27. I am "calm, cool, and collected."	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them.	1	2	3	4
29. I worry too much over something that really doesn't matter.	1	2	3	4
30. I am happy.	1	2	3	4
31. I am inclined to take things hard.	1	2	3	4
32. I lack self-confidence.	1	2	3	4
33. I feel secure.	1	2	3	4
34. I try to avoid facing a crisis or difficulty.	1	2	3	4
35. I feel blue.	1	2	3	4
36. I am content.	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me.	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind.	1	2	3	4
39. I am a steady person.	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests.	1	2	3	4

THESE NEXT STATEMENTS ARE ABOUT HOW YOU FEEL ABOUT YOUR CURRENT HEALTH AND ABILITIES. IF YOU STRONGLY AGREE WITH A STATEMENT, CIRCLE 1. IF YOU MOSTLY AGREE WITH A STATEMENT, CIRCLE 2. IF YOU MOSTLY DISAGREE WITH A STATEMENT, CIRCLE 3. IF YOU STRONGLY DISAGREE WITH A STATEMENT, CIRCLE 4.

	<u>Strongly Agree</u>	<u>Mostly Agree</u>	<u>Mostly Disagree</u>	<u>Strongly Disagree</u>
1. I am unsure about which things I can and can't do that may be harmful to my heart.	1	2	3	4
2. I will never be as active as I used to be.	1	2	3	4
3. I am afraid I will die suddenly.	1	2	3	4
4. I am not sure I will be needed or worth much to anyone any more.	1	2	3	4
5. How well I recover from this heart condition is totally my responsibility.	1	2	3	4
6. I will never be able to do my work as well as I used to.	1	2	3	4
7. I am determined not to let this heart condition make me weak or dependent.	1	2	3	4
8. I expect to lead a long life.	1	2	3	4
9. Having a heart attack stands in the way of my doing the things I want to do.	1	2	3	4
10. My heart attack will prevent me from doing the places I want to go.	1	2	3	4

USING THE SCALE BELOW, READ EACH STATEMENT AND PUT THE MOST APPROPRIATE NUMBER IN THE SPACE PROVIDED. FOR EXAMPLE, IF YOU ALMOST NEVER TALK WITH YOUR SPOUSE ABOUT YOUR ACTIVITY LEVEL, PUT 1 IN THE SPACE BY THAT STATEMENT.

1. ALMOST NEVER 2. ONCE IN AWHILE 3. SOMETIMES 4. FREQUENTLY 5. ALMOST ALWAYS

1. I talk with spouse about my physical activity level. \_\_\_\_\_
2. The way my spouse and I divide chores around the house (laundry, repairs, etc.) is different since the heart attack. \_\_\_\_\_
3. I talk with my spouse about my medication. \_\_\_\_\_
4. The way my spouse and I divide chores outside the hours (shopping, errands, etc.) is different since the heart attack. \_\_\_\_\_
5. I talk with my spouse about the doctor's advice following my heart attack. \_\_\_\_\_
6. The way my spouse and I make major decisions for our family has changed since the heart attack. \_\_\_\_\_
7. I talk with my spouse about my diet. \_\_\_\_\_
8. The way my spouse and I make minor decisions for our family has changed since the heart attack. \_\_\_\_\_
9. I stay much closer to my spouse since my heart attack. \_\_\_\_\_
10. I keep my feelings inside so as not to upset my spouse. \_\_\_\_\_
11. The way my spouse and I work out our daily routine is different since the heart attack. \_\_\_\_\_

This group of questions is very important in understanding how all families experience change. The following list of family life changes can happen in a family at anytime. Because family members are connected to each other in some way, a life change for any one member affects all the other persons in the family to some degree. Think about "family" in these questions as you did in the previous group of questions.

Read each FAMILY LIFE CHANGE and decide if it happened in your family last year.

If it did happen, check YES in Column A and then indicate how difficult it was for your family in Column B.

If it did not happen, check NO and proceed to the next family change.

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1 Very easy	2 Easy	3 Average	4 Difficult	5 Very Difficult
1. Increase of husband's time away from family . . . . .			(Write in a number)				
2. Increase of wife's time away from family . . . . .							
3. A family member appeared to have emotional problems . . . . .							
4. A family member appeared to depend on alcohol or drugs							
5. Increased conflict between husband and wife . . . . .							
6. Increase in arguments between parent(s) and child(ren) . . . . .							
7. Increase in conflict among children in the family . . . . .							
8. Increased difficulty in managing child(ren) . . . . .							
9. Child(ren)'s increased involvement in outside activities . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1 Very easy	2 Easy	3 Average	4 Difficult	5 Very difficult
10. Increased disagreement about a family member's friends or activities . . . . .			(Write in a number)				
11. Increase in the number of problems or issues at home which don't get resolved . . . . .							
12. Increase in the number of tasks or chores at home which don't get done . . . . .							
13. Increased conflict with in-laws or relatives . . . . .							
14. Husband or wife had an "affair" . . . . .							
15. Increased difficulty in resolving issues with a former spouse . . . . .							
16. Increased difficulty with sexual relationship between husband and wife . . . . .							
17. A family member had a problem pregnancy or abortion . . . . .							
18. Took out or refinanced a loan to cover increased expenses . . . . .							
19. Went on welfare . . . . .							
20. Change in conditions (economic, political, weather) which hurt family investments or the family business . . . . .							
21. A family member started a new business . . . . .							
22. Family purchased or built a home . . . . .							
23. A family member purchased a car or other major item . . . . .							
24. Increased financial debts due to over-use of credit cards . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1	2	3	4	5
			Very easy	Easy	Average	Difficult	Very difficult
			(Write in a number)				
25. Increased strain on family "money" for medical/dental expenses . . . . .							
26. Increased strain on family "money" for food, clothing, energy and home care . . . . .							
27. Increased strain on family "money" for children's education . . . . .							
28. A family member started a new job or career . . . . .							
29. A family member lost or quit a job							
30. Husband or wife retired from work . . . . .							
31. A family member stopped working for extended period (e.g., laid off, leave of absence, strike) . . . . .							
32. A family member had decreased satisfaction with job/career . . . . .							
33. A family member had increased difficulty with people at work . . . . .							
34. A family member was promoted at work or given more responsibilities							
35. Family moved to a new home/apartment . . . . .							
36. A family member became seriously ill, injured, or disabled . . . . .							
37. Close relative or friend of the family became seriously ill, injured, or disabled . . . . .							
38. Increased difficulty in managing the care of an ill or disabled family member . . . . .							
39. A family member or close relative went to a nursing home or institution . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1	2	3	4	5
			(Write in a number)				
40. Increased responsibility to provide help (direct care or financial) to husband's or wife's parents? . . . . .							
41. Death of an immediate family member							
42. Death of husband's or wife's parent, close relative, or close friend . . . . .							
43. Married son or daughter was separated or divorced . . . . .							
44. A family member was married . . . . .							
45. Young adult member moved away from home to begin college or to live independently . . . . .							
46. A family member moved back home or a new person moved into the household . . . . .							
47. A family member was arrested or went to jail or juvenile detention							
48. Physical or sexual abuse or violence in the home . . . . .							
49. A family member ran away from home							
50. A family member dropped out of school or was suspended from school . . . . .							
Have any other events or changes happened in your family in the last year? Write them here:							
51. _____							
52. _____							
53. _____							



This is the last group of questions. Please fill in the information as requested or place a check next to the appropriate answer. As with all the questions, your answers are confidential.

1. Are you \_\_\_\_\_ Male or \_\_\_\_\_ Female.
2. How old are you? \_\_\_\_\_
3. How many years of school have you completed? \_\_\_\_\_
4. Describe for me in sentence what you do for a job.  
\_\_\_\_\_  
\_\_\_\_\_
5. The total gross family income last year before income taxes were paid: (Please check one).
  - \_\_\_\_\_ Less than \$3,000
  - \_\_\_\_\_ \$3,000 - 7,999
  - \_\_\_\_\_ \$8,000 - 12,999
  - \_\_\_\_\_ \$13,000 - 17,999
  - \_\_\_\_\_ \$18,000 - 22,999
  - \_\_\_\_\_ \$23,000 - 27,999
  - \_\_\_\_\_ \$28,000 - 32,999
  - \_\_\_\_\_ \$33,000 - 37,999
  - \_\_\_\_\_ \$38,000 - 42,999
  - \_\_\_\_\_ \$43,000 - 47,999
  - \_\_\_\_\_ \$48,000 - 52,999
  - \_\_\_\_\_ \$53,000 and over.
6. How long have you been married to your current spouse?  
\_\_\_\_\_ years, \_\_\_\_\_ months.
7. Please check the statement that fits for you regarding participation in a cardiac rehabilitation program.
  - \_\_\_\_\_ 1. I did not participate in such a program, but it was recommended to me by my doctor.
  - \_\_\_\_\_ 2. It was recommended by my doctor, and I went a few times.
  - \_\_\_\_\_ 3. It was recommended by my doctor, and I completed the program.
  - \_\_\_\_\_ 4. It was not recommended by my doctor.

Thank you for completing this questionnaire. Your experiences will contribute to a better understanding of the factors which help families cope with a heart attack.

Would you like a copy of the results?

Yes  No

Would you be interested in attending a seminar that discusses these results and any other questions you may have?

Yes  No

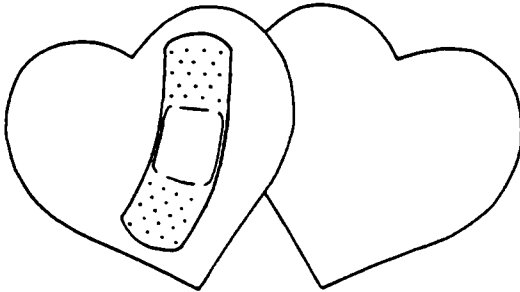
Please use this space to add anything you feel is important for individuals, as well as couples, to know in dealing with the adjustment to heart disease.

APPENDIX B

Spouse Questionnaire

# Heart Disease and the Family

Spouse Booklet



If envelope is lost, please return to:  
William B. Gunn, Jr.  
Southeast Family Medical Center  
2145 Mt. Pleasant Blvd., SW  
Roanoke, VA 24015

We are interested in what life has been like in your family since your spouse's heart attack last year. Please consider your family to be those persons living in your home as well as those to whom you have a long-term commitment.

The first questions record what coping behaviors people find helpful or not helpful to them in the management of family life when one or more family members is ill for a brief period or has a medical condition which calls for continued medical care. For each coping behavior, please circle the number indicating how helpful it was to you.

	3	2	1	0	NU
1. Trying to maintain family stability . . . . .	3	2	1	0	NU
2. Engaging in relationships and friendships which help me feel important and appreciated . . . . .	3	2	1	0	NU
3. Trusting my spouse or partner to help support me and our children . . . . .	3	2	1	0	NU
4. Sleeping . . . . .	3	2	1	0	NU
5. Talking with the medical staff (nurses, social worker, etc.) when we visit the doctors/clinic . . . . .	3	2	1	0	NU
6. Believing that he/she will get better . . . . .	3	2	1	0	NU
7. Working, outside employment . . . . .	3	2	1	0	NU
8. Showing that I am strong . . . . .	3	2	1	0	NU
9. Purchasing gifts for myself and/or other family members . . . . .	3	2	1	0	NU
10. Talking with other individuals/families in my same situation . . . . .	3	2	1	0	NU
11. Planning ahead so that my spouse can follow through with the medical treatment prescribed for him/her (medications, diet, exercise, etc.) . . . . .	3	2	1	0	NU
12. Eating . . . . .	3	2	1	0	NU
13. Getting other members of the family to help with chores and tasks at home . . . . .	3	2	1	0	NU
14. Getting away by myself . . . . .	3	2	1	0	NU

Extremely helpful  
 Moderately helpful  
 Minimally helpful  
 Not helpful  
 Not used at all

Extremely helpful  
 Moderately helpful  
 Minimally helpful  
 Not helpful  
 Not used at all

31. Encouraging my spouse to be more independent. . . . .	3	2	1	0	NU
32. Keeping myself in shape and well groomed . . . . .	3	2	1	0	NU
33. Involvement in social activities (parties, etc.) with friends . . . . .	3	2	1	0	NU
34. Going out with my spouse or partner on a regular basis . . . . .	3	2	1	0	NU
35. Being sure prescribed medical treatments are carried out at home on a daily basis . . . . .	3	2	1	0	NU
36. Building a closer relationship with my spouse . . . . .	3	2	1	0	NU
37. Allowing myself to get angry . . . . .	3	2	1	0	NU
38. Investing myself in my family . . . . .	3	2	1	0	NU
39. Talking to someone (not professional counselor/ doctor) about how I feel . . . . .	3	2	1	0	NU
40. Reading more about the medical problem which concerns us . . . . .	3	2	1	0	NU
41. Talking over personal feelings and concerns with spouse (or partner) . . . . .	3	2	1	0	NU
42. Being able to get away from the home care tasks and responsibilities for some relief . . . . .	3	2	1	0	NU
43. Going to the doctor on a regular basis . . . . .	3	2	1	0	NU
44. Believing that things will always work out . . . . .	3	2	1	0	NU
45. Doing things with my children . . . . .	3	2	1	0	NU



Extremely helpful  
 Moderately helpful  
 Minimally helpful  
 Not helpful  
 Not used at all

15. Talking with doctor(s) about my concerns about my spouse's medical condition . . . . .	3	2	1	0	NU
16. Believing that the doctors/clinic/hospital has my family's best interest in mind . . . . .	3	2	1	0	NU
17. Building close relationships with people . . . . .	3	2	1	0	NU
18. Believing in God . . . . .	3	2	1	0	NU
19. Developing myself as a person . . . . .	3	2	1	0	NU
20. Talking with other people in the same type of medical situation and learning about their experiences . . . . .	3	2	1	0	NU
21. Doing things together as a family (involving all members of the family) . . . . .	3	2	1	0	NU
22. Investing time and energy in my job . . . . .	3	2	1	0	NU
23. Believing that I am getting the best medical care possible . . . . .	3	2	1	0	NU
24. Entertaining friends in our home . . . . .	3	2	1	0	NU
25. Reading about how other persons in my situation handle things . . . . .	3	2	1	0	NU
26. Doing things with family relatives . . . . .	3	2	1	0	NU
27. Becoming more self-reliant and independent . . . . .	3	2	1	0	NU
28. Telling myself that I have many things to be thankful for . . . . .	3	2	1	0	NU
29. Concentrating on hobbies (art, music, jogging, etc.) . . . . .	3	2	1	0	NU
30. Explaining our family situation to friends and neighbors so that they will understand us . . . . .	3	2	1	0	NU

THESE QUESTIONS ASK HOW YOU HAVE GENERALLY FELT IN THE LAST WEEK. THERE ARE NO RIGHT OR WRONG ANSWERS. DO NOT SPEND TOO MUCH TIME ON ONE STATEMENT, BUT GIVE THE ANSWER WHICH DESCRIBES HOW YOU GENERALLY HAVE FELT.

FOR EXAMPLE, FOR NUMBER 1, IF YOU HAVE OFTEN FELT DOWNHEARTED AND SAD, CIRCLE 3. FOR NUMBER 2, IF YOU ALMOST ALWAYS FEEL BETTER IN THE MORNING, CIRCLE 4.

	Almost Never	Sometimes	Often	Almost Always
1. I feel downhearted, blue and sad.	1	2	3	4
2. Morning is when I feel the best.	1	2	3	4
3. I have crying spells or feel like it.	1	2	3	4
4. I have trouble sleeping through the night.	1	2	3	4
5. I eat as much as I used to.	1	2	3	4
6. I enjoy looking at, talking to and being with attractive women/men.	1	2	3	4
7. I notice that I am losing weight.	1	2	3	4
8. I have trouble with constipation.	1	2	3	4
9. My heart beats faster than usual.	1	2	3	4
10. I get tired for no reason.	1	2	3	4
11. My mind is as clear as it used to be.	1	2	3	4
12. I find it easy to do the things I used to.	1	2	3	4
13. I am restless and can't keep still.	1	2	3	4
14. I feel hopeful about the future.	1	2	3	4
15. I am more irritable than usual.	1	2	3	4
16. I find it easy to make decisions.	1	2	3	4
17. I feel that I am useful and needed.	1	2	3	4
18. My life is pretty full.	1	2	3	4



	<i>Almost Never</i>	<i>Sometimes</i>	<i>Often</i>	<i>Almost Always</i>
19. I feel that others would be better off if I were dead.	1	2	3	4
20. I still enjoy the things I used to do.	1	2	3	4
21. I feel pleasant.	1	2	3	4
22. I tire quickly.	1	2	3	4
23. I feel like crying.	1	2	3	4
24. I wish I could be as happy as others seem to be.	1	2	3	4
25. I am losing out on things because I can't make up my mind soon enough.	1	2	3	4
26. I feel rested.	1	2	3	4
27. I am "calm, cool, and collected."	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them.	1	2	3	4
29. I worry too much over something that really doesn't matter.	1	2	3	4
30. I am happy.	1	2	3	4
31. I am inclined to take things hard.	1	2	3	4
32. I lack self-confidence.	1	2	3	4
33. I feel secure.	1	2	3	4
34. I try to avoid facing a crisis or difficulty.	1	2	3	4
35. I feel blue.	1	2	3	4
36. I am content.	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me.	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind.	1	2	3	4
39. I am a steady person.	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests.	1	2	3	4

THESE NEXT STATEMENTS ARE ABOUT HOW YOU FEEL ABOUT YOUR SPOUSE'S CURRENT HEALTH AND ABILITIES. IF YOU STRONGLY AGREE WITH A STATEMENT, CIRCLE 1. IF YOU MOSTLY AGREE, CIRCLE 2. IF YOU MOSTLY DISAGREE WITH A STATEMENT, CIRCLE 3. FINALLY, IF YOU STRONGLY DISAGREE, CIRCLE 4.

	<u>Strongly</u> <u>Agree</u>	<u>Mostly</u> <u>Agree</u>	<u>Mostly</u> <u>Disagree</u>	<u>Strongly</u> <u>Disagree</u>
1. I am unsure about which things my spouse can and can't do that may be harmful to his/her heart.	1	2	3	4
2. My spouse will never be able to be as active as he/she used to be.	1	2	3	4
3. I am afraid my spouse will die suddenly.	1	2	3	4
4. I am not sure my spouse will be as needed or worth as much to anyone as before.	1	2	3	4
5. How well my partner recovers from this heart condition is her/her responsibility.	1	2	3	4
6. My spouse will never be able to do his/her work as well as before.	1	2	3	4
7. My spouse seems determined not to let this heart condition make him/her dependent on others.	1	2	3	4
8. I expect my spouse to lead a long life.	1	2	3	4
9. Having a heart attack has stood in the way of my spouse doing the things he/she wants to do.	1	2	3	4
10. Having a heart attack will prevent my spouse from going the places he/she wants to go.	1	2	3	4

USING THE SCALE BELOW, READ EACH STATEMENT AND PUT THE MOST APPROPRIATE NUMBER IN THE SPACE PROVIDED. FOR EXAMPLE, IF YOU ALMOST NEVER TALK WITH YOUR SPOUSE ABOUT HIS/HER PHYSICAL ACTIVITY LEVEL, PUT 1 IN THE SPACE BY THAT STATEMENT.

1. ALMOST NEVER 2. ONCE IN AWHILE 3. SOMETIMES 4. FREQUENTLY 5. ALMOST ALWAYS

1. I talk with my spouse about his/her physical activity level. \_\_\_\_\_
2. The way my spouse and I divide chores around the house (laundry, repairs, etc.) is different since the heart attack. \_\_\_\_\_
3. I talk with my spouse about taking his/her medication. \_\_\_\_\_
4. The way my spouse and I divide chores outside the house (shopping, errands, etc.) is different since the heart attack. \_\_\_\_\_
5. I talk with my spouse about the doctor's advice following his/her heart attack. \_\_\_\_\_
6. The way my spouse and I make major decisions for our family has changed since the heart attack. \_\_\_\_\_
7. I talk with my spouse about his/her diet. \_\_\_\_\_
8. The way my spouse and I make minor decisions for our family has changed since the heart attack. \_\_\_\_\_
9. I stay much closer to my spouse since his/her heart attack. \_\_\_\_\_
10. I keep my feelings inside so as not to upset my spouse. \_\_\_\_\_
11. The way my spouse and I work out our daily routine is different since the heart attack. \_\_\_\_\_

This group of questions is very important in understanding how all families experience change. The following list of family life changes can happen in a family at anytime. Because family members are connected to each other in some way, a life change for any one member affects all the other persons in the family to some degree. Think about "family" in these questions as you did in the previous group of questions.

Read each FAMILY LIFE CHANGE and decide if it happened in your family last year.

If it did happen, check YES in Column A and then indicate how difficult it was for your family in Column B.

If it did not happen, check NO and proceed to the next family change.

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1 Very easy	2 Easy	3 Average	4 Difficult	5 Very Difficult
1. Increase of husband's time away from family . . . . .			(Write in a number)				
2. Increase of wife's time away from family . . . . .							
3. A family member appeared to have emotional problems . . . . .							
4. A family member appeared to depend on alcohol or drugs							
5. Increased conflict between husband and wife . . . . .							
6. Increase in arguments between parent(s) and child(ren) . . . . .							
7. Increase in conflict among children in the family . . . . .							
8. Increased difficulty in managing child(ren) . . . . .							
9. Child(ren)'s increased involvement in outside activities . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1 Very easy	2 Easy	3 Average	4 Difficult	5 Very Difficult
10. Increased disagreement about a family member's friends or activities . . . . .			(Write in a number)				
11. Increase in the number of problems or issues at home which don't get resolved . . . . .							
12. Increase in the number of tasks or chores at home which don't get done							
13. Increased conflict with in-laws or relatives . . . . .							
14. Husband or wife had an "affair" . . . . .							
15. Increased difficulty in resolving issues with a former spouse . . . . .							
16. Increased difficulty with sexual relationship between husband and wife . . . . .							
17. A family member had a problem pregnancy or abortion . . . . .							
18. Took out or refinanced a loan to cover increased expenses . . . . .							
19. Went on welfare . . . . .							
20. Change in conditions (economic, political, weather) which hurt family investments or the family business . . . . .							
21. A family member started a new business . . . . .							
22. Family purchased or built a home . . . . .							
23. A family member purchased a car or other major item . . . . .							
24. Increased financial debts due to over-use of credit cards . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1	2	3	4	5
			Very easy				
			Easy				
			Average				
			Difficult				
			Very difficult				
			(Write in a number)				
25. Increased strain on family "money" for medical/dental expenses . . . . .							
26. Increased strain on family "money" for food, clothing, energy and home care . . . . .							
27. Increased strain on family "money" for children's education . . . . .							
28. A family member started a new job or career . . . . .							
29. A family member lost or quit a job							
30. Husband or wife retired from work . . . . .							
31. A family member stopped working for extended period (e.g., laid off, leave of absence, strike) . . . . .							
32. A family member had decreased satisfaction with job/career . . . . .							
33. A family member had increased difficulty with people at work . . . . .							
34. A family member was promoted at work or given more responsibilities							
35. Family moved to a new home/apartment . . . . .							
36. A family member became seriously ill, injured, or disabled . . . . .							
37. Close relative or friend of the family became seriously ill, injured, or disabled . . . . .							
38. Increased difficulty in managing the care of an ill or disabled family member . . . . .							
39. A family member or close relative went to a nursing home or institution . . . . .							

FAMILY LIFE CHANGES	A		B				
	Did this happen in your family in the last 12 months?		How difficult was it for your family to adjust to this?				
	NO	YES	1 Very easy	2 Easy	3 Average	4 Difficult	5 Very Difficult
40. Increased responsibility to provide help (direct care or financial) to husband's or wife's parents? . . .			(Write in a number)				
41. Death of an immediate family member							
42. Death of husband's or wife's parent, close relative, or close friend . . . . .							
43. Married son or daughter was separated or divorced . . . . .							
44. A family member was married . . .							
45. Young adult member moved away from home to begin college or to live independently . . . . .							
46. A family member moved back home or a new person moved into the household . . . . .							
47. A family member was arrested or went to jail or juvenile detention							
48. Physical or sexual abuse or violence in the home . . . . .							
49. A family member ran away from home							
50. A family member dropped out of school or was suspended from school . . . . .							
Have any other events or changes happened in your family in the last year? Write them here:							
51. _____							
52. _____							
53. _____							

This is the last group of questions. Please fill in the information as requested or place a check next to the appropriate answer. As with all the questions, your answers are confidential.

1. Are you \_\_\_\_\_ Male or \_\_\_\_\_ Female.
2. How old are you? \_\_\_\_\_
3. How many years of school have you completed? \_\_\_\_\_
4. Describe for me in sentence what you do for a job.  
\_\_\_\_\_  
\_\_\_\_\_
5. The total gross family income last year before income taxes were paid:  
(Please check one).
  - \_\_\_\_\_ Less than \$3,000
  - \_\_\_\_\_ \$3,000 - 7,999
  - \_\_\_\_\_ \$8,000 - 12,999
  - \_\_\_\_\_ \$13,000 - 17,999
  - \_\_\_\_\_ \$18,000 - 22,999
  - \_\_\_\_\_ \$23,000 - 27,999
  - \_\_\_\_\_ \$28,000 - 32,999
  - \_\_\_\_\_ \$33,000 - 37,999
  - \_\_\_\_\_ \$38,000 - 42,999
  - \_\_\_\_\_ \$43,000 - 47,999
  - \_\_\_\_\_ \$48,000 - 52,999
  - \_\_\_\_\_ \$53,000 and over.
6. How long have you been married to your current spouse?  
\_\_\_\_\_ years, \_\_\_\_\_ months.
7. Please check the statement that fits for you regarding participation in a cardiac rehabilitation program.
  - \_\_\_\_\_ 1. My spouse did not participate in such a program, but it was recommended to him/her by the doctor.
  - \_\_\_\_\_ 2. It was recommended by his/her doctor, and he/she went a few times.
  - \_\_\_\_\_ 3. It was recommended by his/her doctor, and he/she completed the program.
  - \_\_\_\_\_ 4. It was not recommended by his/her doctor.



Thank you for completing this questionnaire. Your experiences will contribute to a better understanding of the factors which help families cope with a heart attack.

Would you like a copy of the results?

Yes  No

Would you be interested in attending a seminar that discusses these results and any other questions you may have?

Yes  No

Please use this space to add anything you feel is important for individuals, as well as couples, to know in dealing with the adjustment to heart disease.

APPENDIX C

Item analysis of scales  
Flexibility, Expressiveness, Perception of  
Capabilities

RESPONSES TO FLEXIBILITY SCALE ITEMS-PATIENTS

ITEM	MEAN	S.D.
1. The way my spouse and I divide up chores around the house is different since the heart attack.	2.37(P) 2.29(S)	1.48(P) 1.35(S)
2. The way my spouse and I divide chores outside the house is different since the heart attack.	2.28(P) 2.10(S)	1.52(P) 1.39(S)
3. The way my spouse and I make major decisions for our family has changed since the heart attack.	2.07(P) 1.91(S)	1.40(P) 1.22(S)
4. The way my spouse and I make minor decisions for our family has changed since my heart attack.	1.89(P) 1.91(S)	1.34(P) 1.27(S)
5. The way my spouse and I work out our daily routine is different since the heart attack.	2.39(P) 3.44(S)	1.43(P) 1.23(S)
MEAN	2.53(P) 2.41(S)	CHRONBACHS ALPHA .783(P) .738(S)
S.D.	.95(P) .84(S)	RANGE 1-5 1-5

RESPONSES TO EXPRESSIVENESS SCALE ITEMS - PATIENTS(P)

SPOUSES(S)

1. Almost Never 2. Once in awhile 3. Sometimes 4. Frequently 5. Almost  
Always

ITEM	MEAN	S.D.
1. I talk with my spouse about my physical activity level.	3.45(P) 3.50(S)	1.20(P) 1.16(S)
2. I talk with my spouse about taking my medication.	3.48(P) 3/35(S)	1.38(P) 1.36(S)
3. I talk with my spouse about the doctors advice following my heart attack.	3.91(P) 3.72(S)	1.25(P) 1.12(S)
4. I talk with my spouse about my diet.	3.65(P) 3.68(S)	1.37(P) 1.22(S)
5. I stay much closer to my spouse since my heart attack.	3.32(P) 3.39(S)	1.54(P) 1.45(S)
6. I keep my feelings inside so as not to upset my spouse.	2.90(P) 2.75(S)	1.36(P) 1.32(S)
MEAN	3.45(P) 3.40(S)	CHRONBACHS .680(P) .675(S)
S.D.	.85 .75	RANGE 1-5 1-5

## RESPONSES TO PERCEPTION OF CAPABILITIES SCALE ITEMS - PATIENTS

1. STRONGLY AGREE 2.MOSTLY AGREE 3.MOSTLY DISAGREE 4.STRONGLY DISAGREE

ITEM	MEAN	S.D.
1. I am unsure about which things I can and can't do that may be harmful to my heart.	2.62(P) 2.55(S)	1.00(P) 1.09(S)
2. I will never be able to be as active as I used to be.	2.23(P) 2.49(S)	1.08(P) 1.16(S)
3. I am afraid I will die suddenly	3.05(P) 2.63(S)	1.00(P) 1.13(S)
4. I am not sure I will be as needed or worth	3.37(P) 3.50(S)	.90(P) .85(S)
5. How well I recover from this heart condition is my responsibility.*	3.16(P) 2.42(S)	.88(P) 1.04(S)
6. I will never be able to do my work as well as before.	2.49(P) 2.84(S)	1.16(P) 1.11(S)
7. I am determined not to let this heart condition make me dependent on others.*	3.55(P) 3.54(S)	.76(P) .73(S)
8. I expect to lead a long life.*	3.26(P) 3.31(S)	.87(P) .79(S)
9. Having a heart attack has stood in the way of my doing the things I want to do.	2.57(P) 2.51(S)	1.10(P) 1.07(S)
10. Having a heart attack will prevent me from going the places I want to go.	3.16(P) 3.00(S)	1.07(P) 1.04(S)

\* Coding reversed in analysis

MEAN 2.95(P)

2.88(S)

S.D. .61(P)

.58(S)

CHRONBACHS ALPHA .822(P)

.768(S)

RANGE 1-4

1-4

APPENDIX D  
Initial Letter

**SOUTHEAST ROANOKE FAMILY MEDICAL CENTER**

*A Division of Roanoke Memorial Hospitals*  
2145 Mount Pleasant Boulevard, S. E.  
Roanoke, Virginia 24014

March 13, 1986

Dear Sir or Madam:

We obtained your name from the hospital where you or your spouse was admitted in the past year due to a heart attack. We are beginning a project in western Virginia which will add to our knowledge about what this experience is really like for families. Most important we wish to use this knowledge to develop programs, brochures, etc. which will help families in the future effectively deal with this crisis.

Your thoughts and experiences are vital to this effort. One of us will be calling you in the next few days to discuss the project further and answer any questions you may have. We will ask for approximately thirty minutes of your time to complete a questionnaire booklet which will be mailed to you. No individual names will ever be used. You will be able to receive a copy of the results as well as attend a seminar which will describe the effects of heart disease on both patient and family.

We hope you will be able to take the time to complete the questionnaire, and look forward to talking with you in the near future.

Sincerely yours,

William Gunn, Jr.  
Roanoke Memorial Hospitals  
(703) 342-3144

Cathy Dickinson, M.N.  
Roanoke Memorial Hospitals  
(703) 981-7634

Jay-Mancini, Ph.D.  
Virginia Polytechnic Institute & State University  
(703) 961-6110

WG/ams



APPENDIX E

Telephone Protocol

## FAMILY STRESS AND CORONARY HEART DISEASE

## TELEPHONE PROTOCOL

Hello, \_\_\_\_\_ . My name is Bill Gunn. Did you receive a letter from me regarding a survey of families where one person had a heart attack? (If so) Do you have any questions about the study? (If not) May I explain the study to you in hopes you will be willing to participate? There is absolutely no cost except a few minutes of your time to fill out an anonymous survey I will send to you. In collaboration with Roanoke Memorial Hospital and Virginia Tech, I am conducting a research project to help with understanding and education of patients and families who have had a member experience a recent heart attack. Your name was drawn from the medical records at Roanoke Memorial Hospital. Would you and your spouse be willing to participate in the project, which will involve about thirty minutes of your time to fill out a questionnaire? If no, why? \_\_\_\_\_

If yes, thank you, and please understand you may refuse to participate at any time. Names will not appear on the questionnaires. They will be coded only to identify which ones have been returned and to provide you with brief copy of results, if desired. Thank you for participating. You will be receiving the questionnaire in a couple of days. If you have any questions, please call William Gunn at 342-3144.

APPENDIX F

Cover Letter with Questionnaire

## SOUTHEAST ROANOKE FAMILY MEDICAL CENTER

A Division of Roanoke Memorial Hospitals  
2145 Mount Pleasant Boulevard, S. E.  
Roanoke, Virginia 24014

May 26, 1986

Dear Sir or Madam:

Recently one of us talked with you or your spouse about participating in an important study. Some of you were unable to be contacted by phone but received a letter describing the project. You were chosen because you are married and either you or your spouse had a heart attack two to eighteen months ago. As more and more people experience this event, it is important to understand how families adjust to the demands it creates. It is even more important that we use the understanding gained from your responses to develop programs which help families in the future who experience this crisis.

You may receive a copy of the results, which will be reported as a total group. No individual names will ever be used. The number on the questionnaire is simply for our convenience in checking off our mailing list when responses are returned. The number will be removed from the questionnaire as soon as it is received by us. If, after reading the questions, you do not wish to participate, you may withdraw from the study.

We hope you will take the time to complete the questionnaire and return it to us. Your thoughts can then be combined with other families who have experienced a heart attack and used to develop effective prevention programs for families in the future. On the last page there is space for you to add any comments you have that were not included in the questionnaire.

It is important that both of you complete the booklets. The yellow one is for the person who had the heart attack. The pink one is for his or her spouse.

If you have any questions, please call or write to us. We thank you for your cooperation and help!

Sincerely,

William B. Gunn Jr.  
Chief Investigator  
(703) 342-3144

Cathy Dickinson  
Cardiac Nurse Specialist  
(703) 981-7634

APPENDIX G

Follow up Letter

**SOUTHEAST ROANOKE FAMILY MEDICAL CENTER**

*A Division of Roanoke Memorial Hospitals*  
2145 Mount Pleasant Boulevard, S. E.  
Roanoke, Virginia 24014

June 25, 1986

Dear Sir or Madam,

Questionnaire surveys entitled Heart Disease and the Family were sent to you and your spouse in the last two weeks. They are part of a project designed to help us develop programs for patients and their families.

We have yet to receive your response and are unable to contact you by phone. If you have mailed the questionnaires we appreciate your help. If you do not plan to fill them out please send them back so we will not contact you further. If you have not received the questionnaires or have questions regarding them, please call one of us.

Thank you for your assistance. We hope that we will be able to design better programs for families who have had a heart attack as a result of this project.

Sincerely,

William B. Gunn Jr. M.Ed.  
Chief Investigator  
(703) 342-3144  
(703) 982-2841

Cathy Dickinson  
Cardiac Nurse Specialist  
(703) 981-7634

APPENDIX H

Second Follow Up Letter

**SOUTHEAST ROANOKE FAMILY MEDICAL CENTER**

*A Division of Roanoke Memorial Hospitals*  
2145 Mount Pleasant Boulevard, S. E.  
Roanoke, Virginia 24014

July 6, 1986

Dear

Two weeks ago we wrote to you or talked with you by telephone about seeking your opinion on the effects of heart disease on your family. As of today we have not received your completed questionnaires.

We strongly believe this study will lead us to develop meaningful programs for patients and their families after a heart attack. Only those who have been through the experience can describe what it was like and what was helpful in coping with it.

I am writing to you again because of the significance each questionnaire has to the usefulness of this project. We have contacted two hundred families in the Roanoke area thus far. We need to hear from as many as possible in order to make the results most meaningful. As mentioned in our last letter, the questionnaires should be completed by both of you.

In the event that your questionnaire has been misplaced, a replacement is enclosed.

Your cooperation is greatly appreciated.

Sincerely,

William Gunn Jr.  
Project Director  
(703) 982-2841

Cathy Dickinson  
Cardiac Nurse Specialist

P.S. A number of people have written to ask when results will be available. We hope to have them out sometime next month.



APPENDIX I

Third Follow-up Letter

**SOUTHEAST ROANOKE FAMILY MEDICAL CENTER**

*A Division of Roanoke Memorial Hospitals*  
2145 Mount Pleasant Boulevard, S. E.  
Roanoke, Virginia 24014

July 23, 1986

Dear

I am writing to you about our study of heart disease and the family. We have not received your completed questionnaires.

The large number of questionnaires returned is encouraging. But whether or not we will be able to describe accurately how family members feel about their experience depends upon you and others who have not yet responded.

This is the first area study of this type which has been done. Therefore, the results are important in designing programs which will be helpful to patients and their families in the future.

We plan to begin analyzing the results by August 1, 1986. Your response is crucial so it is for that reason we are sending this by certified mail to ensure we have the correct address.

If you have any questions please feel free to call us. We'll be happy to send you a copy of the results if you want one. Simply check the request at the end of the questionnaire. We expect to have them ready to send out early this fall.

Your contribution to this study will be appreciated greatly.

Sincerely,

William R. Gunn Jr. M.Ed.  
Chief Investigator  
(703) 982-2841

Cathy Dickinson M.N.  
Cardiac Nurse Specialist  
(703) 981-7634

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PSYCHOSOCIAL FACTORS AFFECTING ADAPTATION  
OF PATIENTS AND SPOUSES TO  
MYOCARDIAL INFARCTION

by

William Bessent Gunn Jr.

(ABSTRACT)

Former heart attack patients and spouses in 140 families completed a mailed self-report questionnaire containing the Family Inventory of Life Events and Changes, the Coping and Health Inventory for Parents, three scales developed for this study measuring family process variables and demographic questions. Dependent measures were the Spielberger trait anxiety and Zung depression scales. Criteria for inclusion in the study were (a) a heart attack in the past 18 months (b) married at the time of infarction and (c) ages between 30-65.

The analyses included frequency distributions, correlations between the 11 variables and depression/anxiety and stepwise regression analyses using each dependent variable for both patient and spouse. Eighty-two percent of the independent variables in the patient group were correlated with anxiety and depression at at least the  $p \leq .01$  level. Thirty-nine percent of the spouse variables were correlated at at least the  $p \leq .01$  level. Variables from each of the major factors of the Double ABCX model were included. Regression analyses for the patient population showed 7 variables contributing 63 % of

the variance in predicting depression and 5 variables contributing 58 % of the variance in predicting anxiety. Regression analyses for the spouse population showed 4 variables that contributed 26% of the variance in predicting depression and 4 variables that contributed 32 % of the variance in predicting anxiety.

The results were discussed in reference to the use of these measures in further theory development and in clinical settings. Implications for further research are presented.