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Identification of factors contributing to family functioning following coronary artery bypass surgery

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Identification of Factors Contributing to Family Functioning Following Coronary Artery Bypass Surgery

by

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DISSERTATION

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ABSTRACT

IDENTIFICATION OF FACTORS CONTRIBUTING TO FAMILY FUNCTIONING FOLLOWING CORONARY ARTERY BYPASS SURGERY

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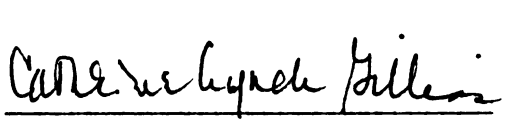
This study proposed to extend knowledge of the qualities of the family unit that enable it to remain well-functioning in the face of the stress of chronic disease. Families of patients suffering from coronary artery disease who had undergone coronary artery bypass surgery were sampled during the period of hospitalization and again six months after surgery in an attempt to identify the stressful impact of the surgical event, accumulation of recent stresses, coping strategies employed, resources employed, and the level of family functioning. In addition to refining methodological approaches in family research, the purpose of this inquiry was to determine the best predictor of family functioning in the recovery period.

The framework employed for this investigation was family stress theory, specifically the Double ABCX model. It represented the first

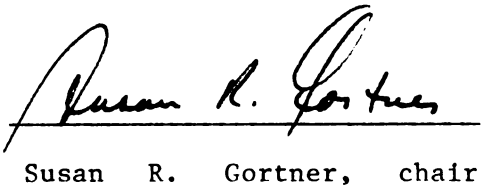
known attempt to use this framework to study the responses of families with a chronically ill adult member, rather than an ill child.

The study employed a longitudinal, descriptive design. The sample consisted of 43 couples. For these couples the patient was between 40 and 75 years old and had undergone a first, uncomplicated bypass. In addition to in-depth interviews and the observational field notes of the investigator, study instrumentation included: Impact of Event Scale; Family Inventory of Life Events and Changes; Family Inventory of Resources for Management; Coping-Health Inventory for Parents; and Family Adaptability and Cohesion Scales. Multiple correlation and regression techniques were used to examine the relationships between the major study variables and to determine their contribution to the dependent variable of family functioning. A matched pair t-test was used to detect differences between patient and spouse reports on major variables.

The findings from this study do not support the explanations offered by the Double ABCX framework. Less than 1% of the variance was accounted for within the spouse group; patient retrospective, subjective reports of the impact of the surgery and their reports of the resources available for coping, together, account for only 29% of the variance. Significant differences were detected between patient and spouse reports of the stressful impact of surgery at the time of hospitalization. A framework for viewing the family recovering from a stressful experience emerged from the data.



Catherine Lynch Gilliss, author



Susan R. Gortner, chair

Acknowledgments

I am indebted to the members of my committee for their support of my work. Dr. Susan R. Gortner, mentor, sponsor, and committee chairperson, has served as a model of scholarship in nursing. Dr. Joan Ablon has contributed significantly to my knowledge and attitudes about appropriate methods of inquiry in family research. Dr. Joseph Barbaccia has consistently recognized the importance of this study to the fields of family medicine and nursing. As a committee they have been challenging, helpful, and respectful.

In addition to my committee, significant roles were played by Ms. Patricia A. Sparacino, R.N., M.S., Cardiovascular Clinical Nurse Specialist at the University of California, San Francisco's Moffitt and Long Hospitals; Dr. Judith A. Moran, R.N., formerly research associate, School of Nursing, UCSF; Dr. Mark Hudes, Biostatistician, UCSF; and Mr. Donald B. Chambers, Data Analyst, UCSF.

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I am grateful to the patients and families who participated in this study. They recognized the importance of the work, and repeatedly expressed the hope that the results would have an impact on patterns of care. These families opened their homes and candidly shared their experiences with a stranger.

My own family has supported my work and adapted to my exits and entrances. They have reinforced for me the inherent interdependence of healthy families and healthy individuals. Thank you Tom, Edie, and Brian.

San Francisco, California

March, 1983

Dedication

To the memories of

James A. Lynch

1926 - 1979

James F. Balocki

1903 - 1982

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Coronary artery disease (CAD) ranks as the leading cause of premature death in the United States (The Review Panel on Coronary-Prone Behavior and Coronary Heart Disease, 1981). While CAD results in sudden cardiac death for some, most adults undergo years of treatment to ameliorate or control symptoms so as to remain functional in employment or familial roles. In addition to medical therapy, the surgical treatment of CAD has been available since 1967. The improved access to surgical treatment and the technical improvements, which have decreased mortality rates (Rahimtoola et al., 1981), have resulted in the selection of coronary artery bypass grafting (CABG) as the treatment of choice for many affected individuals. In 1980, approximately 100,000 of these surgeries were performed in the U.S. alone (Jenkins, 1980).

While the research literature acknowledges the surgical treatment of CAD as a stressful experience for the patient, little attention is paid to the impact of that surgery upon the social group of the family, with whom the patient is presumed to relate most intimately. Theoretical principles support the expectation that a change in one family member will effect a change for other family members, and similarly, in the family as a group. Despite this, little evidence has been systematically accumulated to support the expectation.

Purpose

This study proposed to extend our understanding of the qualities of the family unit which enable it to remain well-functioning in the face of the stresses of chronic disease. Families of patients suffering from coronary artery disease who had undergone coronary artery bypass grafting procedures were sampled during the period of hospitalization and again during the recovery period in an attempt to identify the stressful impact of the surgical event, accumulation of recent stresses, coping strategies employed, resources employed, and the level of family functioning. In addition to refining the methodological approaches to investigation of the family, the purpose of this inquiry was to determine the best predictor of family functioning in the recovery period.

Specific aims of the study were:

1. to describe the relationships among the subjective stress associated with the surgical event, the accumulation of stresses within the family, the resources for family coping, and the strategies employed in family coping;

2. to identify the variables, among those listed, that were significant contributors to family functioning in the post-hospitalization period;

3. to examine the relationship of patient reports of stress, resources, coping and adjustment to that of spousal reports; and

4. to describe some elements of the nature of the social process of recovery as related to the marital pair.

It was hypothesized that low levels of stress related to the surgical event, low accumulation of stresses, multiple resources for

coping and high levels of coping would be associated with high levels of family functioning, based upon family stress theory.

Background to the Problem

The study of the family as a unit experiencing stress has been of particular interest since the work of Angell documented family behavior changes during the Depression (1936). Theoretical development of Angell's observations by Reuben Hill (1949; 1958) led to Hill's explication of the salient and 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, the proposed equation failed to capture the experience of a family over time, as the original model was temporally static. Most recently McCubbin and Patterson (1981) have extended the Hill model so as 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. There are no reported attempts to describe family behavior changes when an adult is the chronically ill member.

Lovvorn (1982) has described the postoperative problems faced by the patient recovering from coronary artery bypass grafting. While acknowledging "behavioral disturbance" and "problems with long-term psychological and vocational adjustment" the nurse author focused upon the physiological problems encountered to the exclusion of socio-behavioral issues. The impact upon the family has not been

recognized as a contributor to patient recovery; neither has it been the target of nursing investigation or care.

The previous work of the investigator (Gortner, Sparacino, Gilliss, & Kenneth, 1982), which focused upon the stressful experience of the surgery at the time of hospitalization for aortocoronary bypass grafting, resulted in the demonstration of significant differences between subjective stress reported by patients and that reported by spouses; the difference was maintained following adjustment for gender. This finding and the qualitative data from lengthy interviews which supported the finding, led the investigator to an interest in the familial social process that would lead to reconciliation of these differences. Do the differences in perception persist? For how long following surgery does that event play a central role in the family experience? Does the resolution of that difficult experience represent an additional stressor to the family social process?

Significance of the Question

The theoretical relevance of these questions emanates from their relationship to the theoretical framework from which the questions are derived, family stress theory. The questions provide an opportunity to test McCubbin *et al*'s Double ABCX theory, with a group of families who have adult members with a chronic illness, specifically coronary artery disease.

The purposes of basic science are furthered by this study's attempt to describe some elements of the nature of the social process within the marital pair during the surgical recovery period (i.e. the negotiation process that emerges between spouses coping with the

stresses of this period). Such observation may result in concept clarification and a beginning framework for understanding and further testing the couple in response to stress.

The significance to nursing science is achieved through the study's aim to further describe the client phenomena of the family unit as it responds to stress. Through better understanding the family as a unit, we may more successfully identify the times and manner in which nursing intervention would be helpful to the family. Thus, we advance our scientific basis for practice. Further, it is hoped that specific observations about the adaptation of families over time will provide direction in the delivery of nursing care to families undergoing other, similar, stressful experiences.

Summary

Coronary artery bypass grafting has become a commonly available treatment for coronary artery disease. This surgery is acknowledged as stressful for the patient, but little is known of its impact on the family unit. This study proposes to explore the impact of the CABG surgery on the family and to describe the characteristics and abilities of the family which are major contributors to family functioning in the recovery period.

CHAPTER II

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Introduction

The second chapter begins with a discussion of the primary theoretical model upon which this study is based, family stress theory. Because several other frameworks are significant to the organization and measurement approaches used in this investigation, these are developed in a subsequent section entitled Secondary Paradigms. A review of related research is organized to follow the major variables of the primary theoretical model: (1) Family Definition of Stress; (2) Stress and Family Functioning; and (3) Family Response to Heart Disease. The chapter concludes with study hypotheses.

Theoretical Framework

Family stress theory has been selected as the organizing framework for this study. This approach has emerged from the general area of interaction. A discussion of the Interaction Approach and its assumptions will lead into development of family stress theory.

The interactional approach treats the family as a unit of interaction, or as stated by Burgess (1926), as "a unity of interacting personalities." The framework emphasizes the dynamic quality of the family's internal processes as well as the unique integrity of each of the participants. Each participant is viewed as occupying one or more positions within the family and thus, numerous roles (Hill & Hansen, 1960). Role behavior is viewed as prescriptive

by social norms; roles are the social reality of personality. The family is a social system with intricately related social positions, complex roles and norms. Among its chief objectives are reproduction, socialization, and emotionally intimate interaction (Burr, 1973).

This framework assumes that humans act in and react to a physical and symbolic environment. That is, humans create and use symbols to denote aspects of the world aroung them. The meaning and value attached to the symbols are taught and learned through communication with other people. It is through those symbols that humans continue to stimulate and respond to the environment. In interaction with the environment, humans attempt to utilize their experience through this symbol set to anticipate the reactions of others to persons or situations. This internal process is known as role-taking. Behavior is further refined through the process of role-playing, in which the action is modified in light of the group norms. Finally, modifications are made by the individual to provide consistency and congruence with the various roles performed: this is role-making. The basis for all of these changes is the meaning or value attached to the symbols within the environment,also referred to as the definition given to the event. The process through which symbols are valued or interpreted is thinking or cognition (Rose, 1962).

The self is regarded as a consequence of interaction in this framework. One learns to associate meanings and values to self, based upon those that others reflect (Stryker, 1964). The spontaneous self, in the process of action and not reflecting upon the self, is called "I." The objectified self, either perceived by others or reflected

upon by "I" is identified as the "me." Thus, within this framework, self-concept may serve as a dependent or independent variable to interaction, but it can only be measured in its "me" form.

The interaction framework assumes the following to be true:

1. Humans live in a complex symbolic environment as well as a physical environment.

2. The interpretation of these symbol systems is taught by the family and other institutions. This includes learning characteristic patterns of response to the physical, social, and emotional environments.

3. Social behavior is influenced by ideas in the mind.

4. Thinking is the process by which symbolic solutions are examined, assessed for their value to the individual, and chosen for action.

5. Humans are actors as well as reactors.

6. The family is an interacting and transacting organization.

7. The family has emergent properties, that is, it is greater than the sum of its parts.

8. Health behavior is a subset of human behavior which is best understood by studying the "mentalistic definitions people make of their unique situations" (Burr, Leigh, Day & Constantine, 1979, p. 49).

9. Family health affects individual health and individual health affects family health.

Employing these assumptions, the following relationship may be proposed for the family:

Any Event		Resources for Coping with the Event		Family Definition of the Event		Effect on Family Health
(A)	+	(B)	+	(C)	---→	(X)

This equation was originally proposed in a more limited form by family stress theorist Reuben Hill and elaborated upon by sociologist Wesley Burr. Hill's work focused on the interaction of three variables, (A) a crisis-provoking event, (B) the family's resources, and (C) the meaning attached to the event to predict (X) the crisis-proneness of a family (Hill, 1949, 1958). The family, explained Hill, is an interacting and transacting organization which has internal roles, positions, and norms. These, in addition to the life experience of the family, comprise its repertoire of resources for dealing with life events, some of which are potential crises. A stressful event, he acknowledged, is <u>defined</u> by the family alone.

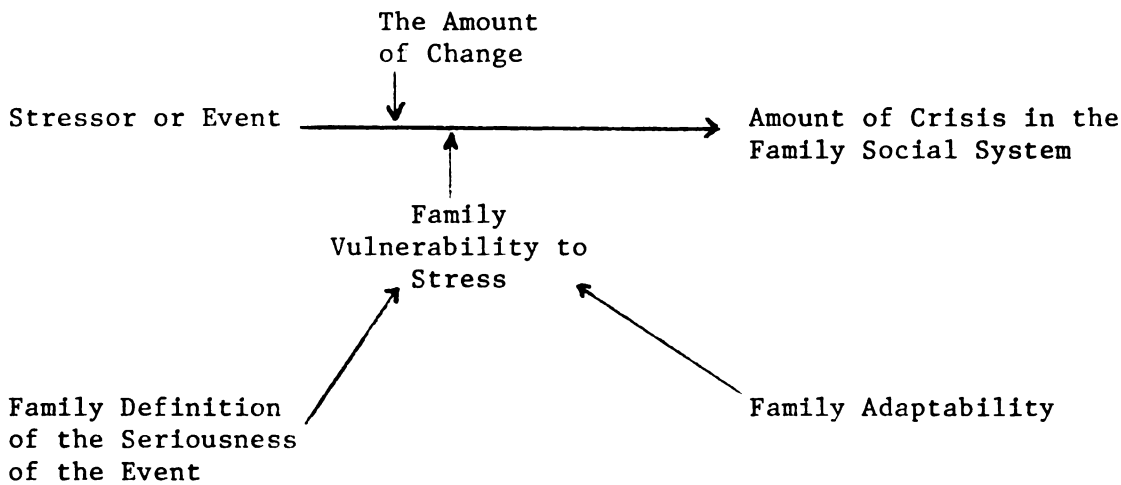
The following formula results:

> A (the event) + B (the family's crisis-meeting resources) + C (the definition the family makes of the event) --→X (produces the crisis). (Hill, 1958.)

Working this equation in reverse it is seen that crisis-prone families either (A) experience more frequent and severe stressful events, (B) have developed fewer resources for dealing with such events, or (C) define more of these events as crises than non-crisis-prone families.

A reworking of this formulation by Burr (1973) resulted in the identification of six variables which explain a family's behavior in response to "stressors." Directly impacting upon the linear course between event and outcome are two variables: the amount of change and

family vulnerability to stress. Impacting upon the vulnerability are: the definition of the seriousness of the event and the family adaptability. The following results:



(Burr, 1973)

Mediating between family vulnerability to stress and family regenerative power (which characterize the family's ability to withstand the impact of a stressor, and recover if disrupted) are personal influence, positional influence, family integration and family adaptability. Burr (1973) identified these as the core concepts in the study of family stress.

Despite the age and popularity of the Family Stress or Family Crisis Framework, development of the primary concepts has lacked the desired level of clarity. The major contributors are critical of each other's failure to define concepts and fully develop ideas as noted by Hansen and Johnson (1979). In view of this weakness, the major theoretical variables of the current investigation will be discussed and related to their origins.

Fundamental to this framework is the development of stress as a concept distinct from stressor. While stressor is used to describe a particular external event or demand, stress refers to the internal, subjective definition given to that event or experienced in response to a stressor. Therefore, a theoretical distinction is made between event and response to event.

Factor A, the crisis precipitating event, or stressor is 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 upon the individual family response to the event. Therefore, while theoretically distinct, the stress-stressor concepts are empirically interdependent.

Factor B, the family's crisis-meeting resources, is largely underdeveloped by Hill. He states that these resources lie within the family and must be distinguished from the attributes of the event itself. Burr's development of six new concepts actually serve to better describe the family's abilities and structure which impinge on the outcome variable of X, level of reorganization. These concepts are proposed as direct and indirect influences on the dependent variable, amount of crisis in the family social system. They include: family vulnerability to stress; amount of positional influence of the family; amount of personal influence by the family; family definition of the seriousness of the changes; family externalization of blame for the changes; and regenerative power of families (Burr, 1973). Despite the fact that these concepts are nearly ten years old, little has been done to further clarify them. Hansen and Johnson have suggested that several of these concepts are distracting (1979).

McCubbin (1979) has proposed that the B Factor includes the family use of community resources, as well as its intra-familial coping behaviors. He suggested that the family has been viewed only as a reactor to stressful events; yet the family has been shown to function pro-actively and to engage in transactions with the community as well. Specifically, McCubbin identified a need for familial development of integration and adaptability as internal resources, and a range of behaviors that strengthen the internal organization and functioning of the family, procure community and social supports and reduce or eliminate sources of stress. Coping was defined by McCubbin as a strategy for managing stress. He is one of the few family stress theorists to use the word "coping" to refer to resources of the B Factor.

The stress variable is also referred to as "C Factor" or "the definition the family makes of the event." In his early work, Hill distinguished between three types of definitions: (1) those formulated by an impartial observer; (2) those formulated by the community; and (3) those subjective definitions made by the family itself (Hill, 1949). Hill is careful to note that the latter description is appropriate to the C Factor. Thus, the definition made by the family is viewed as a subjective, personal determination of one's own particular situation.

The X Factor, or level of reorganization, is the dependent variable of the original Hill equation. Again, the lack of clarity associated with the concept is evident by listing several of the labels that have been used for this factor: type of adjustment (Cavan & Ranck, 1938); level of adjustment (Hill, 1949); recovery from crisis

(Dyer, 1963); magnitude of crisis (Hill, 1958); and level of reorganization (Hill & Hansen, 1962). Burr (1973) has described the X Factor as a continuous variable representing the amount of disorganization, disruptiveness, or inefficiency experienced by a family following a stressful event.

McCubbin and Patterson have proposed an elaboration, which they call the Double ABCX Model (1981). To the basic design of Hill, the Double ABCX Model adds four additional factors which are believed to influence the course of a family's adaptation over time: (aA) the "pile-up" or accumulation of additional stressors; (bB) family efforts to activate or acquire new coping resources; (cC) modifications by the family of their perception of the total crisis situation. The entire set of variables is believed to be related and contributing to a "post-crisis" level of family adaptation (xX), either bonadaptation or maladaptation (see Figure 1). This level of adaptation is achieved through a balancing of the reciprocal relationships that exist between the individuals and the family system, and the family system and the community.

While the development of this theoretical model is based upon inquiry into the characteristics which promote health, or healthy functioning in families, the model has not been rigorously tested with the families in which there is chronic illness in an adult member. Early work addresses the model's usefulness in explaining a family's chronic stresses in raising a handicapped child. Based upon the previous research, it is believed that the model may prove useful in explaining the adaptation of families with an adult member who is chronically ill.

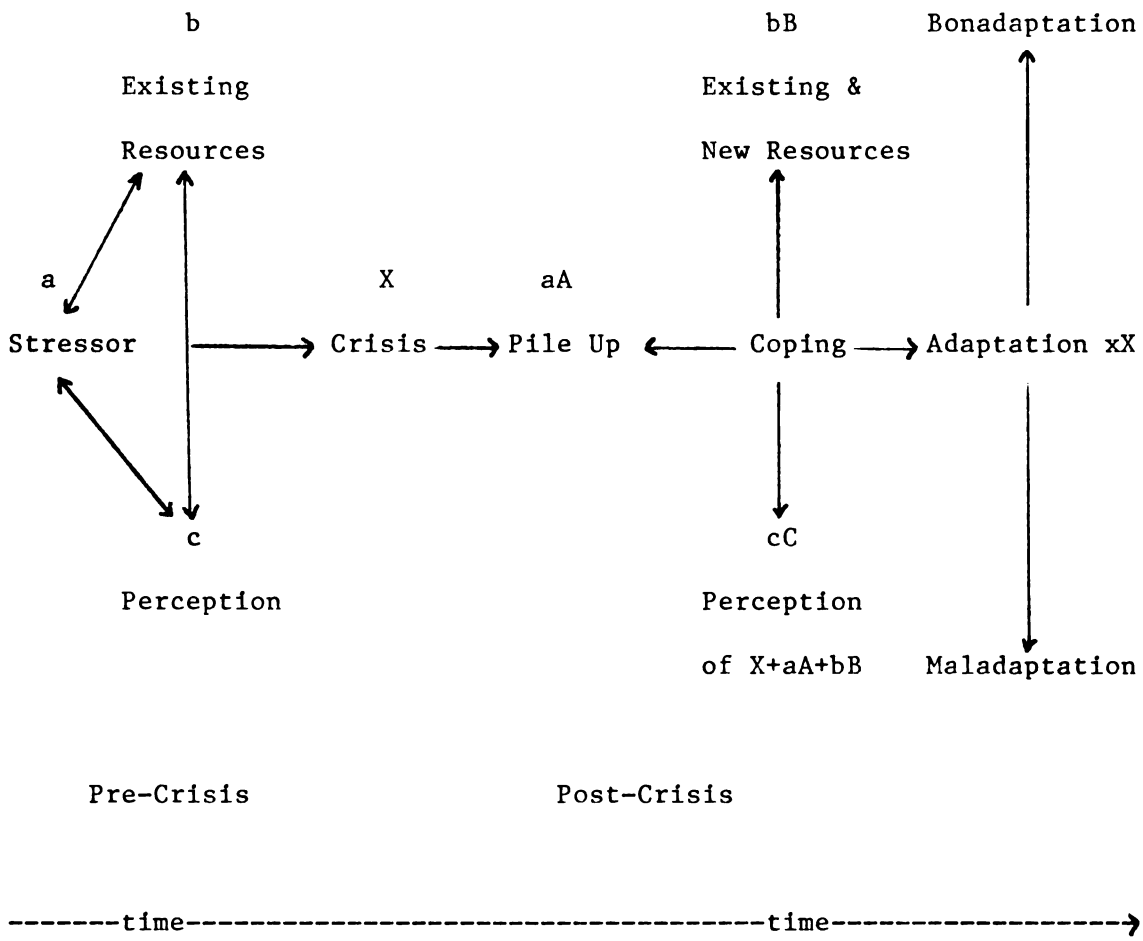


Figure 1. The Double ABCX Model

Secondary Paradigms

The Family Paradigm

The study of problem-solving in clinical (that is, families in treatment) and non-clinical families has led Reiss and Oliveri to the development of a classification system which discriminates among families by problem-solving style (Reiss & Oliveri, 1980; Oliveri & Reiss, 1981). Based upon the assumption that the family's intrinsic styles and capacities are manifest in the routines of typical, quiescent periods, and that these behaviors may be viewed on the level of the family group, Reiss and Oliveri have proposed that the family paradigm is responsible for explaining the family's response to stressful events.

Consistent with the interaction approach, the family problem-solving framework assumes that each individual develops a personal system of social constructs and convictions about how these interrelate. These constructs and ideas guide behavior in novel, as well as familiar, situations. The shared system of family understanding results from reconciliation of the basic premises held by the involved individuals. Such reconciliation and integration must progress over time for a family to continue to develop. Conflict is viewed as a method undertaken by the family group to reconcile differences (Reiss, 1981).

Shared constructs may change throughout a family's history as a result of developmental and situational changes which the family faces. Recovery from a crisis can result in reconstruction of premises and a change in the typical mode of construing events. The

sum of the family's constructs and premises is described as the family paradigm.

Reiss and Oliveri contend that knowledge of the family paradigm enables prediction of family response to moderately stressful events. The dimensions of this family paradigm are three: configuration, coordination, and closure.

Configuration refers to the degree to which a family can organize or discover patterns in a stimulus. Coordination is the aspect which describes the family membership's abilities to organize themselves to work together. Finally, closure specifies the amount of time spent by families in collecting all the available information pertaining to the awaited decision. Consistent with the primary framework, the family paradigm views family stress as a response to an event, and therefore, intimately linked to the "C Factor," the definition the family makes of an event. This factor is recognized as being subjectively defined and culturally influenced (Reiss & Oliveri, 1980).

Three conceptual vantage points are identified for viewing the family response to a stressful event: (1) the definition and search for information; (2) the initial response and trial solutions; and (3) the final decision and the family's commitment to that position. They may occur in any order or simultaneously. The style within each phase is explained as a result of the dimensional qualities of the family paradigm.

The Circumplex Model

Developed as a tool for the clinical diagnosis of families, the circumplex model of marital and family systems is an attempt to

describe family behaviors along two significant dimensions: cohesion and adaptability. The model is curvilinear, proposing that optimum health is represented by a balance between too much and too little closeness (cohesion) and too much and too little change (adaptability). The position occupied by a family on each of these dimensions results in description of the family by one of sixteen marital or family types.

As seen in Figure 2, family cohesion is used to describe "the emotional bonding members have with one another and the degree of individual autonomy a person experiences in the family system" (Olson, Sprenkle, & Russell, 1979, p. 5). Extremes in the cohesion dimension result in either emeshment or disengagement, each of which is believed to limit autonomy. Likewise, the strength of the marital coalition is a strong correlate to balanced family cohesion.

Family adaptability represents "the ability of a marital/family system to change its power structure, role relationships, and relationships rules in response to situational and developmental stress" (p.12). Based upon principles of general systems theory, it is proposed that an adaptive system requires balance between morphogenesis (change) and morphostasis (stability).

This model proposes two testable hypotheses:

1. Families/Couples with balanced cohesion and adaptability will generally function more adequately than those at the extremes of these dimensions, and
2. Couples/Families will change their cohesion and adaptability to deal with situational stresses and changes in the family life cycle.

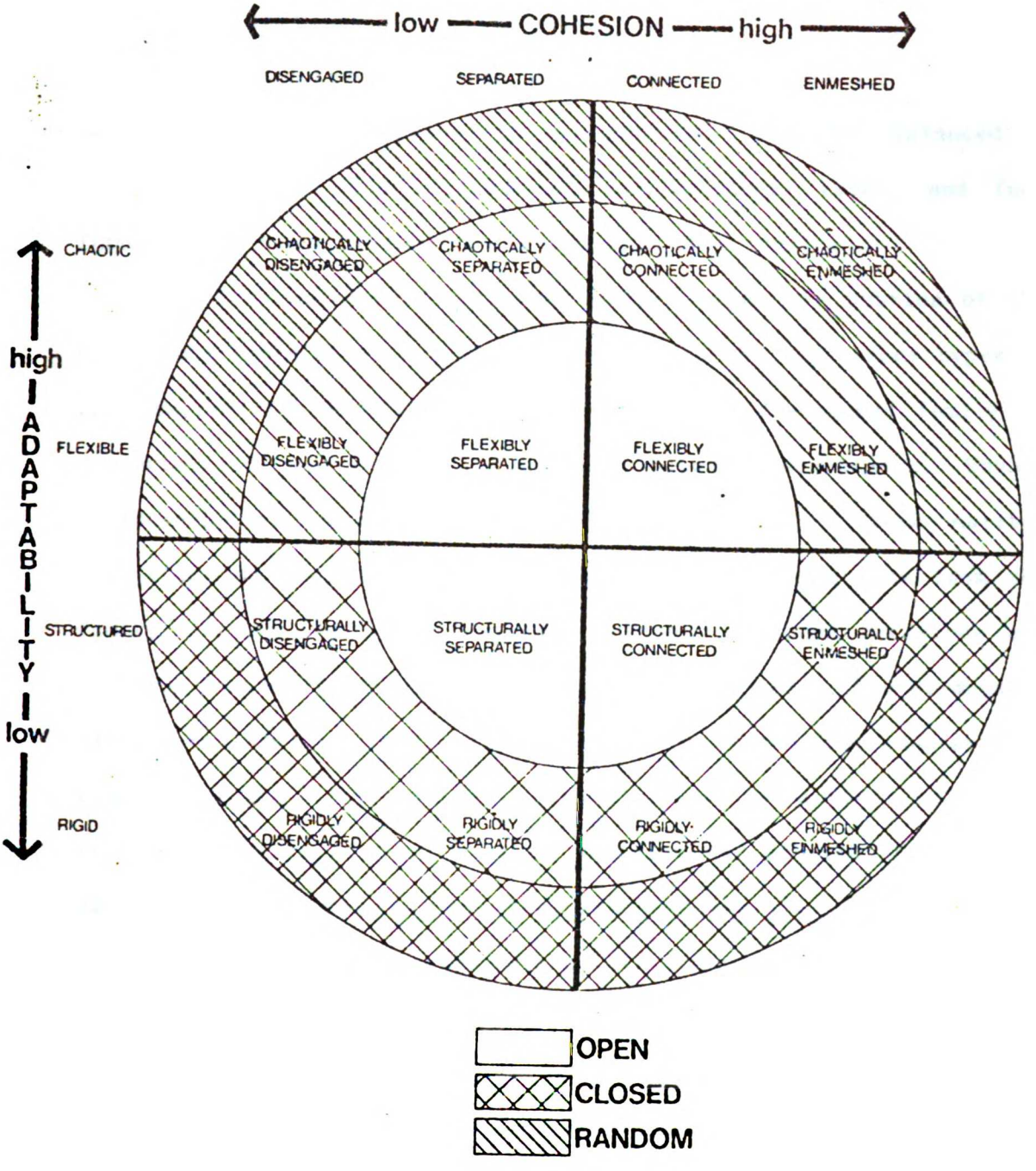


Figure 2. Sixteen possible types of marital and family systems derived from the circumplex model (Olson, Sprenkle, & Russell, 1979).

The Family Adaptability Cohesion Evaluation Scales (FACES) has been developed from the circumplex model, to describe families according to their adaptability and cohesion. The four balanced or functional types, four extreme or non-functional types, and four intermediate types of families emerge from this typology.

Behaviors associated with the sixteen types are hybrids of the basic four types of the cohesion subscale and the basic four types of the adaptability subscale. For instance, the disengaged family is characterized as lacking closeness, highly independent, keenly influenced by extra-familial sources, evidencing a weak marital coalition and poor sibling bonds, spending much time away from the family, having few family friends, making individual decisions and engaging in individual rather than family activities. This disengaged pattern may occur in combination with any one of the four adaptability types: rigid, structured, flexible, or chaotic. Complete characterizations of each type of cohesion and adaptability pattern are displayed in the Clinical Rating Scales for the Circumplex Model of Marital and Family Systems (Olson & Killorin, 1980), in Appendix A.

Beavers-Timberlawn Model of Family Competence

Based upon principles of General Systems Theory, this approach is concerned with organization and entropy (Lewis et al., 1976). It is proposed that healthy families produce healthy, productive, autonomous offspring and allow the adult members to continue to develop their autonomous identities. The family qualities which are important to these developments are: (1) power distribution; (2) a degree of family

individualization; (3) acceptance of separation and loss; (4) perception of reality; and (5) affect. By assessment of these five areas a family competence may be assessed and families categorized as: (1) severely disturbed; (2) mid-range; or (3) healthy.

In addition, Beavers (1982) describes two family styles: centripedal and centrifugal. The centripedal family style involves looking for gratification primarily within the family, and less often trusting the outside world. In contrast, the centrifugal family is dependent upon the resources beyond the family for gratification. These external resources are more trusted than the family's own. Neither style, in extreme, is particularly desirable; each extreme poses particular risks. For instance, the centrifugal families tend to propel children from the home before the optimal time, while the centripedal families make leaving difficult. Healthy families vary in their style so as to meet the demands of the current situation.

The Global Health Pathology Scale permits assessment of the family and categorization into a level of family competence.

Review of Related Literature

I. Family Definition of Stress

While much has been written of stress and its relationship to prospective cardiac illness in individuals (Friedman & Rosenman, 1974; Jenkins, 1971; 1976; Mattsson & Ivancevich, 1980; Theorell, Lind, Floderus, 1975) there has been little systematic accumulation of evidence to support familial stress and prospective cardiac disease. To a large extent, this results from the methodological obstacles to measuring familial stress.

A. Measurement Issues:

The measurement of stress has been of particular interest to health care providers since the seminal work of Hinkel and his associates (1952). He followed, over 20 years, the relationship of life events to illness among telephone company employees. The work of Holmes and Rahe (1967), in which they demonstrated the relationship between major life events and near-future illness, provided the first quantitative measure of stress associated with life events. Despite periodic criticisms of the research relating life events to illness (Minter & Kimball, 1978) the belief in their relatedness is commonly shared in the research literature.

There has been a move from the indices which focused upon presumed levels of stress, as measured through the life change units, toward indices which allow the subject to describe the personal or subjective effect of the stress upon his life. It was been suggested that the presumed indices actually measure the cultural definition of magnitude of a stress while the subjective instruments permit the individual (or family) to define the personal or subjective magnitude (Reiss & Oliveri, 1980).

Research support for the significance of the subjective stress index over the presumed stress index is growing. More frequent use of the subjective measures appears in the literature (Horowitz, 1979; Reeder, 1973). There is repeated emphasis upon the need to determine one's cognitive appraisal of stress (Lazarus, 1966; Lazarus, Averill & Opton, 1974) or, as stated by family theorists, to determine the definition the family gives to an event (Hill, 1958; Hansen & Johnson, 1980; Reiss & Oliveri, 1980).

To summarize, the majority of work in stress measurement has focused upon measuring the presumed value of an event to an individual and relating that to its impact, operationalized through various patterns of physical or mental illness.

Green (1982) has presented a convincing argument for the relevance of assessing family stress in nursing; however, her methodological suggestions for such assessment direct the nurse toward instruments which measure individual stress or role satisfaction. Such direction reflects the state of the art; however, summative measures are inconsistent with the theoretical assumption that the family is greater than the sum of its parts.

A refinement of approach to measuring stress in families has been attempted by Stein & Riessman (1980). Their Impact-on-Family Scale is intended to determine the effects of a child's chronic illness on the family. The Scale is conceptually flawed as it employs mother (or father) as proxy for the family. Further, normative data to date has been collected on a population of low-income, non-married Hispanics, thereby limiting the generalizability of the available findings.

Gilliss (1981) attempted to quantify the family's subjective response to the stress of an event, by collecting measures of stress by two methods and comparing these. The Horowitz Impact of Event Scale (1979) was employed with individuals in a family and meaned for comparison with a score that the family group arrived at collectively. No differences were found between the two approaches, leading Gilliss to conclude that one member might be a reliable predictor of family stress. However, this work acknowledged the investigator's concern

that the instrument, while valid for an individuals use, might not validly measure impact of stress at the level of the family group.

In their discussion of the analysis of data taken from couples, Ahrons and Bowman (1981) point to the need to consider the degree of correlation, as well as the degree of difference between measures taken from two family members. It is the combination of analyses which provides insight into the family process.

Despite the complexities that can be applied to these individual measures to enhance their validity as measures of family group experience, something is lost unless one captures the quality of experience which occurs at the level of the family group.

The work of McCubbin, Patterson & Wilson (1981) in development of the Family Inventory of Life Events and Changes attempts to bridge tha conceptual/methodological gap. Based upon items selected from individual life stress and change inventories, the authors developed items which reflected a need for change or adjustment at the family level. These adjustments or strains on the family included: intra-familial strains; marital strains; pregnancy and childbearing strains; finance and business strains; work-family transition strains; illness and family "care" strains; losses; transitions "in" and "out"; and legal strains. This conceptual shift has enabled researchers to measure the impact of any happening or series of events on the family as an organized group.

B. Family Stress and Its Relationship to Disease:

The relationship between family stress and disease of individual members remains poorly defined. While some believe that family stress

precedes disease, others claim that stress results in response to disease. Evidence has been accumulated for both positions, but the nature of the question defies a controlled, experimental approach to determining the answer.

Much of the literature on stress and health state of the family focuses upon individuals in families and their particular symptomatology in relation to a family nodal event, that is, a presumed stressful experience which has been shared by the family. The work of Meyer and Haggerty (1969) demonstrated increased incidence of streptococcal sore throats among children whose family had recently experienced a major change (eg. death, unemployment). Roghmann and Haggerty (1972) later gave evidence of increased use of health care facilities by children whose families, specifically mothers, were experiencing high levels of stress.

Similarly, recognizing the stressful nature of various familial developmental phases, Medalie (1979) and others (Anderson, 1968) have identified increased frequency of the presentation of complaints to primary care providers associated with stressful developmental periods.

The work of Widmer and Cadoret (1978, 1979, 1980) further supports the relationship between stress, developing symptomatology and increased use of health services. Their work chronicles the multiple office visits made by family members in the months preceding father's development of a clinical depression.

Based on their belief in the association between stress and disease, several clinical investigators have attempted to treat

families to alter the course of a clinical problem. Minuchen, Rosman and Baker (1978) reported success in treating critically ill asthmatic, anorexic and diabetic children with family therapy. Their recognition of the stress-generating, illness inducing roles played by families has resulted in the description of the psychosomatic family by Minuchen and associates (1975). These families encourage somatization and are characterized by emeshment, overprotectiveness, rigidity and an underdeveloped ability to resolve conflict (1976). A similar contribution was made by Straker and Jacobson (1979) who successfully treated individual symptomatology of encopresis, through changing family patterns of interaction. Most interestingly, they demonstrated that changes in family interaction have more influence on changes in the symptoms than the changes in the symptoms have on changes in interaction.

Work focused on the family response to chronic illness, particularly of children, has repeatedly documented the increased stress and family disruption which arises (Barsch, 1968; Howell, 1973; Mattsson, 1972). Kruger and colleagues (1980) described changes in sibling behavior following the diagnosis of cystic fibrosis in a child. Davis documented changes in family functioning associated with childhood polio victims (1963).

Litman (1971) concluded that perceived severity of a member's illness was directly related to its impact on family relations. In examination of the impact of one member's illness upon the other, Litman demonstrated that the wife-mother role experienced the greatest impact during illness. His findings regarding effect on family

solidarity were inconclusive. Kellner (1963) explained that effect of an illness is dependent upon the severity, duration and type of illness, the emotional bond between patient and relative, and the latter's susceptability. Klein and associates observed the development of role tensions and multiple somatic symptoms among "healthy" spouses when one spouse became ill (1968). There appears support for the notion that illness in one has multiple effects on others within the family.

In summary, the relationship between stress and disease has become widely accepted in the scientific community. While not specifically developed in this review, several recent reviews serve as background to the assumption that the stress level of an individual, indeed, plays a role in disease onset (Haggerty, 1980; Hyman and Woog, 1982). The relationship between stress of the family and individual disease onset has been developed. No assumption is made about the causal nature of the relationship; however, the correlatedness of the two seems evident.

II. Family Stress and Its Relationship to Family Functioning

Literature which attributes wellness and illness to the family unit is more recent. Though viewed as a behavioral social unit and developed as such by early rural sociologists, much of the early clinical discussion of the family originated in the psychiatric literature. In this body of literature it was assumed that the "identified patient" was only serving as a symptom of dysfunction within the family or the marital pair. Early efforts of Bateson and associates (1956) to understand schizophrenia proposed such a family

phenomenon, in which a parent consistently issued messages with conflicting meanings to a child. Such messages were described as "double binds" because the child perceived the conflict and appreciated the "no win" aspect of the messages. The lack of effect over the contingency resulted in increasing ambivalency, autism, flattening of affect, and increasingly loose associations for the child who became diagnosed as schizophrenic.

Barnhill's (1979) work has stimulated interest in viewing the family unit behaviorally. His identification of the dimensions of family health are organized into four themes: (1) Identity Processes; (2) Change; (3) Information Processing; and (4) Role Structuring. The generation of new categories for evaluating family health allows the beginning dialogue about the family as a unit of health, (eg. clear vs. unclear communication; flexibility vs. rigidity in response to change; role reciprocity vs. role rigidity or role conflict).

Numerous approaches have been proposed for organizing observations about the family as a unit of health. Of greater interest to this discussion is the accumulation of a body of evidence to support the relationship between family stress and family dysfunction.

Several subject groups have been the target of investigation into the relationship between family stress and family function. Among the normative events, transition to parenthood and child launching are popular foci; among the non-normative, events such as war-related and occupational absenses have been studied.

LeMasters (1957) described parenthood as a crisis to families because it required "reorganization of the family as a social system."

In a study of forty-six couples, 83 percent reported extensive or severe crises in adjusting to their first child. This finding has been further explored by others (Russell, 1974; Ventura, 1982) who have attempted to describe the reorganization or coping behaviors undertaken by parents. The particular stresses have been reviewed by Miller and Sollie (1980).

The phase of child launching has been described as the most challenging time of family development (Aldous, 1978). It is a time when demands for change and task completion are great, resources few and satisfaction is greatly reduced (Burr, 1970).

Prolonged absence from home due to war conditions has been shown by McCubbin and associates (1976) to produce predictable reorganizing strategies in the social group at home. The frequency and length of the separation was related to the quality of the adjustment. Additionally, Boss has studied the families of those missing in action and described the concept of boundary ambiguity which she claims also influences the quality of family adjustment (1977). Prolonged or frequent corporate absences from the home have been reported by Boss, McCubbin and Lester (1979) to lead to similar, predictable family adjustments to both incorporate the absent member and to function without him when necessary. This literature supports the notion that faced with a new demand, a change, or challenge the family, as a social group, must reorganize or readjust to accomplish the new activity.

III. Family Response to Heart Disease

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, however, 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. Thus, an examination of stress, cardiac disease and the family seems warranted.

Byrne and White (1980) have compared a recently discharged cohort of men with diagnosed myocardial infarcts (M.I.) to those discharged after no infarct was diagnosed. A retrospective analysis of stress for one year revealed that while life change units were similar for the two groups, the subjective stress associated with events was significantly greater for the infarcted group.

Subjective stress in spouses of heart patients was the subject of a prospective inquiry by Croog and Fitzgerald (1978). Over one year the investigators measured the subjective stress levels of 200 spouses at three intervals to evaluate change and correlates of high stress. They note no significant change in stress over one year. Significant correlates of high subjective stress before and after M.I. were: limited education, low marital satisfaction and Italian ethnic origin. No significant correlations were found with: age, employment status, occupational level of patient, educational level of husband, or family income. The authors conclude that the subjective stress level of the

spouse may be associated less with external circumstances than with personality orientation and coping capacity.

Few researchers have recognized the stressful impact of surgery on the members of the patient's family, particularly the spouse. Silva (1977, 1978a, 1978b, 1979) has not only described the spouse's need for nursing care, but developed and tested an approach to reducing spousal anxiety. She concludes "greater consideration should be given to preparing families for surgery.... In this way, both patient and family well being may be enhanced" (1979, p.135).

While the lay press has presented several personal accounts of spouses or other family members reactions to a cardiac illness (Lear, 1980; Wharton, 1981), the research literature offers little. Cooley (1937) 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 over-protection of the patient by the family frustrated the patient, and resulted in family disequilibrium.

Jacobson and Erichhorn ((1964) focused on the impact of cardiac disease on the farm family. Their work offers insight into the "cardiac family style."

Using two differing 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. (Some husbands became aggressive, dependent, fearful, or insistent). As coping resources, the informants reported use of friends, values, financial resources, fate, and each other.

In a study of the spouses of men who had an initial M.I., 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 five or six 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 the patient's health and concern that any "mistake" they made might lead to another infarct; (2) family <u>dis</u>equilibrium resulted from the constraints against sharing problems with the patient. Spouses felt compelled to be self-reliant, yet felt overwhelmed; and (3) those spouses who had a history of becoming anxious or depressed when confronted with "uncontrollable" external events responded consistently with that history.

Stern & Pascale noted the lack of correlation between patient and spouse behaviors. When wives were anxious, husbands were deniers. The spouses of deniers who did not become anxious were self-reliant. The spouses who were married to deniers and felt the need for additional support reported that they frequently had to badger or nag to be supported. Pre-infarct some reported feeling lonely and

deprived of companionship. Post-infarct these spouses were more constrained and reported extreme feelings of frustration and anger.

Speedling's (1982) account of eight stable, lower-middle class families commenced with the diagnoses of heart attack of the husband-father and concluded at three to four months after the cardiac event. With the aid of case study examples, he attempted to describe the process of the family group in early recovery. Speedling reported that family conflict began to appear once the at-home patient attempted to become more active. This conflict was problematic to the studied families who tended to respond in one of three ways: (1) by coercing the patient to comply with the wife's definition of appropriate role behavior; (2) by disengagement from each other, so as not to interfere with roles taken; and (3) by reorganization, which involved a mutually acceptable change.

Several accounts of the family's relationship specific to the recovery process have been published. Tyzenhouse (1973), in a small clinical study (n=20) attempted to prove that wives who have the most knowledge of their husband's condition and who understand the desired effect of the physician's orders will have (1) husbands with the greatest progress and (2) families with the best adjustment to the illness. Unfortunately, when the hypothesis was unproved the investigator concluded that wives should only be "supportive" because taking a "direct" role would <u>not</u> influence patient outcome. The investigator failed to appreciate the complexity of interacting variables.

Finally, in another small study (n=9) of clinical intervention Hoebel (1977) attempted to treat the individual heart patient by

shifting the focus of intervention to the family unit. The operationalization of this was through contact with wives. The sample consisted of post-M.I. patients who were "difficult-to-manage" and were referred to the researcher by the patient's physician. Contact with the wife enabled her to select a lifestyle behavior which she wished to assist her husband to change. Wives were then "coached" in their role to interact to facilitate the change. The results were not conclusive.

In summary, this discussion has attempted to review: the obstacles to measuring stress of the family group; briefly, the relationship between stress and prospective disease; the relationship between stress and the health and functioning of the family group; and the response of the family to heart disease, including its coping strategies and use of resources.

Hypotheses

While major gaps appear in the research literature on heart disease and the family, support generally exists for the assumptions that quality and amount of stress will affect the outcome variable of family health or functioning. Secondly, it is believed that the quality and amount of coping abilities and resources for coping will also influence the outcome variable.

However, because of the lack of evidence to support otherwise, the study hypotheses will be stated in their null form:

1) There are no significiant relationships among subjective stress associated with the surgical event, accumulation of

stresses within the family, resources for family coping and strategies for family coping;

2) Family functioning at six months is not significantly contributed to by subjective stress associated with the surgical event, accumulation of stresses within the family, resources for family coping, or strategies for family coping.

3) There are no differences between patient reports of: stress associated with the surgical event, accumulation of stresses within the family, resources for family coping, strategies for family coping, and family functioning and spouse reports of same.

Summary

Family stress theory was developed as the primary theoretical framework for this study. Competing paradigms were presented. A review of relevant research literature included topics in family stress measurement, family stress and functioning, and family coping and use of resources in response to heart disease. Three null hypotheses were presented for testing.

CHAPTER III

METHODOLOGY

Introduction

This chapter begins with an explanation of the study design and sampling approach. Instrumentation and the procedures employed for data collection follow. Finally, the plan for analysis of the data is developed, outlining the approach specific to each study hypothesis.

Design

This descriptive study was longitudinal in design. Subjects were interviewed during the time of hospitalization for surgery and again at home between the fifth and seventh month following surgery.

Operational Definition of Family

The methodological obstacles to the conduct of family research are well reviewed in the literature (Brown & Kidwell, 1982; Gilliss, 1983). Of particular significance to this study is the question of logical consistency between collection of data from multiple family members and analysis of that data as representative of the family unit. Miller, Rollins, and Thomas (1982) reiterate the widely-held position that data collected from more than one family member provides the researcher with improved reliability and greater insight into family functioning.

Dyadic research, that which focuses on the marital pair, is acknowledged by family methodologists to represent a valid form of family research. Logically, however, the marital dyad serves as the

unit of analysis for the relationship itself. Further, dyadic research is characterized by: (1) conceptualization of the problem at the level of the relationship; (2) sampling of one or more persons representative of such relationships; (3) measurement of self, other, or the relationship; (4) analysis focused on the pattern between individuals; and (5) interpretations which refer to the relationship in question (Thompson & Walker, 1982).

In the current investigation, "family" is represented by the dyad. Therefore, family health is operationalized through the health of the marital relationship.

Sampling

A convenience sample of fifty husband-wife pairs was sought from a group of 71 subjects who were between the ages of 40-75, were married to a consenting spouse, had undergone a first CABG procedure not associated with other cardiac repair or immediate post-operative complications at one of two large academic medical centers on the West Coast, University of California, San Francisco's Herbert C. Moffitt Hospital and Stanford University Medical Center. This group had been part of a larger study conducted earlier in the 1981-82 academic year (Gortner, et al, 1982). Of this number forty-three consented to participate in the present, follow-up study.

Invitations to participate in the parent study and in the follow-up were given simultaneously for the Stanford University cohort. Invitations to participate in the follow-up occurred after participation in the parent study for most couples in the Moffitt cohort. In both settings, the initial contact was made by the cardiac

surgery nurse clinicians, and opportunity was given patients and families to review the consent form and to raise questions about the studies.

All subjects signed a printed consent form, reviewed and approved by the Human Subjects Review Boards of both the University of California, San Francisco and Stanford University Medical Center. The form detailed the purpose of the study; identified the investigators and provided information regarding how to contact them through the School of Nursing; detailed the activities in which the subject would be involved and the amount of time these were expected to take; clarified that participation would not affect treatment nor would it result in remuneration to the patient; and finally, that the subject could chose to withdraw from the study at any time. (The Consent Form appears in Appendix B.)

The participants were not judged to be at any risk by their participation in the study. In contrast, except for the possibility that they would become anxious by speaking about potentially unpleasant experiences, the participating subjects were expected to receive the added benefits of catharsis, retrospective review of their experiences, and the additional attention of both a clinical specialist in cardiovascular surgery and a certified adult nurse practitioner.

Instrumentation

The Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979) was designed to measure subjective stress experienced by an individual in relation to a particular event. The instrument was empirically

developed, normed, and validated on a sample of patients seeking psychiatric out-patient treatment in response to stressful life events. Concurrent validity has been reported for this instrument by correlation with clinical assessment of patients by clinicians. A test-retest reliability of r=0.87 has been demonstrated. Internal reliability, calculated with a split-half, has been reported to be r=0.86 (Horowitz et al, 1979).

The instrument consists of sixteen items which address the frequency with which one has been troubled by thoughts or behaviors related to a particular event. Two subscales, Intrusion and Avoidance, each consist of eight items. These subscales reveal the classic psychoanalytic underpinnings of this instrument, based upon ego-defense theory. High levels of stress are reflected by frequent intrusions of the event into one's thoughts or activities. Correspondingly, frequent behavioral efforts aimed at avoiding the memories or feelings related to the event are reflected as high levels of subjective stress. This instrument is unique in its effort to capture personalized, subjective responses to an event. However, as operationalized within this instrument, subjective stress includes only that stress of which the subject is consciously aware. Therefore, it measures the extent of stress which is not abated by the functioning of intact ego defenses (that is to say, if one were able to effectively deny a stress, one would not be judged to be stressed using this instrument).

Family Inventory of Life Events and Changes (FILE) (McCubbin, Patterson & Wilson, 1981) was developed as an index of family stress which represents the aA Pile-Up factor in the Double ABCX Model. Nine

subscales emerge from factor analysis; factor loadings are reported for each item. The reported overall Cronbach Alpha was 0.72. Attempts at establishing concurrent validity, using the Family Environment Scale (FES) by Moos (1974), demonstrate the expected significant correlations between high stress and poor functioning.

The inventory includes seventy-one items, each consisting of a family life change and two corresponding dichotomous choices, stating whether the change had occurred within that family during the last 12 months, or before the last 12 months.

Permission was sought and obtained from the authors to shorten the seventy-one item FILE to forty-eight items. This was accomplished by elimination of several items believed to be inappropriate to this age group (i.e., "increased difficulty in managing toddlers") and by deleting items whose reported Eigen Value was less than 0.40. One item was added to the FILE ("Have any other events been stressful or required changes? Please name these") in an attempt to yield any item the Inventory might have overlooked.

The score of this instrument reflects the amount of stressful experiences accumulated by a family in a year's time and separates that from the stressful experiences of the preceeding years.

The Family Inventory of Resources for Management (FIRM) (McCubbin, Comeau & Harkins, 1981) is an index of the repertoire of the family's resources. Four subscales emerge from factor analysis; factor loadings are reported for each item. The reported overall Cronbach Alpha was r=0.89. Validity checks were conducted using the Moos FES, and demonstrated the expected significant correlations between presence of resources and high levels of family functioning.

In its original form, the FIRM consisted of 69 family statements which describe the subject's family across a four-point range ("not at all" to "very well"). Conceptually, FIRM assessed three areas: personal resources, family internal resources and social supports, each of which is a component of the "B Factor."

Permission was sought and obtained from the authors to reduce the number of items to 54. Again, this was accomplished by deleting most items with Eigen Values less than 0.40.

The use of the FIRM yields a profile of family resources which may be compared to values which have been normed from a group of families experiencing chronic illness. In addition, a Social Desirability score emerges. This, when used with normed data, may be used to determine the bias of the Social Desirability Factor.

Finally, a subscale is available to compare sources of financial support. Again, data may be compared to published results.

The Coping-Health Inventory for Parents (CHIP) (McCubbin, McCubbin, Nevin & Cauble, 1981) is an index of parental coping with the chronic illness of a child. Designed for administration to each parent, it provides a profile of coping for each parent along three patterns: (1) monitoring family integration and optimistic definition of the situation; (2) maintaining social support, self esteem and psychological stability; and (3) understanding the medical situation through communication with other parents and consultation with medical staff. An overall Cronbach Alpha is not reported; subscale coefficients are r=0.79, r= 0.79, and r=0.71 respectively. Concurrent validity using the FES has supported the construct.

The instrument lists 45 coping behaviors and the subject is asked to respond regarding the helpfulness of those behaviors. Six possible choices include "extremely helpful; moderately helpful; minimally helpful; not helpful; I did not cope this way because I chose not to; and I did not cope this way because it was not possible."

Permission was sought and obtained from the authors to adapt CHIP to situations in which an adult, rather than a child member, was ill. Minor alterations in terminology were made, leaving the items conceptually intact (eg: "Believing that my child will get better" was changed to "Believing that I/my spouse will get better"). The Eigen Values reported for CHIP all exceeded 0.480. No items were deleted.

The Family Adaptability Cohesion Evaluation Scales I (FACES) (Olson, Bell & Portner,1978) was developed to assess the two core dimensions of the circumplex model, adaptability and cohesion. The Couples Form was used for this investigation. Cronbach Alpha's reported for the Adaptability and Cohesion Subscale are high (r=0.75 and r=0.83, respectively).

The instrument consists of 111 statements about the family, to which the subject is asked to respond with one of four choices: "always true, usually true, sometimes true, rarely true."

The instrument yields a level of cohesion (disengaged, separated, connected or emeshed) and a level of adaptability (chaotic, flexible, structured, or rigid) which are jointly used to place the family into one of the 16 possible family types. Parameters for healthy and

unhealthy families are established; therefore, the use of this instrument allows for operationalization of the dependent variable, family adaptation.

In addition to the score the two primary factors, a social desirability score can be calculated. Normed data for each factor and the social desirability score allows the investigator to compare scores and to determine the degree to which subjects may have been biased by social desirability.

Beavers-Timberlawn Family Evaluation Scale (Beavers, Lewis, Gossett, Phillips, 1976) is an observational checklist of family competence. In a Likert fashion, ranging from 1 to 5, clinical observations of family interaction may be categorized in the following areas: structure of the family, including overt power, coalitions, and closeness; family self-concept or mythology; family efficiency in goal directed negotiation; family autonomy, including clarity of expression, responsibility for actions, invasiveness, and permeability to the statements of others; and family affect, including, range of feelings, mood and tone of interaction, degree of unresolvable conflict, and empathy. Finally, a Global Health-Pathology Scale allows the scoring of an overall clinical impression of family competence.

While the theoretical organization, and thus categorization, of behaviors as healthy or pathological does differ from that of the circumplex model, the Family Evaluation Scale was used in this study as a tool for organizing clinical impressions of each family.

Procedures

At the time of hospitalization each patient was interviewed preoperatively and between the third and eight postoperative day, for the parent study. Those procedures included a one hour, semi-structured interview that focused on the illness experiences of the patient and the family prior to hospitalization, and the Gortner Values Inventory. Findings from the parent study appear elsewhere (Gortner et al., 1982). Following the interview, the Impact of Event Scale (Horowitz, 1979) was completed by the patient and spouse. Findings related to the Scale are reported for 70 surgical cases in the parent study; the present study includes only findings for the 43 families who participated in the hospital and follow-up visits. (The Scale appears in Appendix C).

The follow-up was to occur in the home five to seven months following hospitalization. Contact was re-established by a letter (Appendix D) which reintroduced the investigator and the purpose of the follow-up visit. The letter indicated that the investigator would be calling to establish an appointment for the visit. Telephone contact was then made to renew acquaintances, identify the purpose of the visit and inquire about the health of the patient and family. Following the establishment of a time for the interview, the investigator indicated she would be mailing two questionnaire booklets with instructions to the couple. She indicated that if they would complete them prior to the visit, she would carry them back with her.

A packet consisting of two instrumentation booklets (containing the FILE, FIRM, modified CHIP, and FACES) (Appendix E) and a cover letter

were then placed in the mail (see Appendix F). The cover letter confirmed the appointment time, thanked the couple for their participation, reiterated the purpose of the visit, and instructed them in the completion of the booklets. Each person was advised that there were no correct or incorrect answers, and that spouses often disagree. They were asked to work independently and to try to complete the booklets before the visit. It was suggested to them that most people complete the booklets in one hour. In addition to the instruments of the booklet, the subjects were asked several identifying questions in the booklet: age, sex, state of health, employment status and job, and level of education. Finally, subjects were asked to rate the surgical experience in relation to other difficult experiences. This was accomplished through a single, four-point Likert scale whose choices included: "the least difficult, among the least difficult, among the most difficult, the most difficult."

The follow-up visit was scheduled at the convenience of the couple, in their home. It was expected to take one to two hours to complete. A semi-structured interview guide was employed, focusing on the patient's return to health, changes in lifestyle and health behavior, and the impact of the experience upon the couple's life together. (The interview guide appears in Appendix G.)

Following each visit, brief field notes of the visit were recorded and the Beavers-Timberlawn Family Evaluation Scale was completed by the investigator. (This Scale appears in Appendix H.)

A Typical Home Visit

The study families were well prepared to receive the investigator. With few exceptions, the investigator arrived at the exact time of appointment to be greeted by a waiting couple.

Introductions were made and followed by a family member asking if the directions had been accurate. Nearly every family offered coffee; some offered liquor or food. Two visits were scheduled to include the evening meal.

An exchange of pleasantries and "warm up" conversation followed. This sometimes related to the length of time in the home, where the family had lived prior to California, or a briefing on the other members of the family. In most homes this lasted 5-10 minutes.

The signal to begin the interview usually came from the couple, as one would ask, "Well now, do you have special questions to ask us or should we just tell you what's happened?" In response, the investigator confirmed that she did have questions, but she found most people answered them by telling their story. This was followed by the first question: Why don't you tell me how you've been doing since we saw you in the hospital. For the next hour most families needed very little direction. When they spoke of related issues, the interview questions were interjected in search of specific, uniform information. By permitting such freedom, the couples demonstrated a style of interaction believed to be representative of their routine. In addition, the investigator began to appreciate the strong need to relive the hospital experiences by sharing this story again. Families often commented, "I guess we never told all of that to anyone else. Who would listen to it?" Most families took an hour or more to

reconstruct their experience. In contrast, most families moved quickly through discussion of current happenings; few were able to discuss their futures.

The historical reviews retrieved such vivid, specific detail that it was sometimes difficult to remember that six months had elapsed. Couples recalled the hair and eye color (but not names) of nurses who had cared for them, the kind comments made to them while waiting for word from the operating room, their reactions when first seeing each other after surgery, and, of course, the errors made by medication nurses or young residents. Couples did not appear self-conscious or ill at ease during this hour of recollecting.

It was more difficult, and often quite emotional, for the couples to respond to questions about the impact of surgery on their relationship. Male patients often cried as they spoke of gratitude to a waiting, serving wife. Wives often cried in frustration for their inability to "control" their husband's behaviors. Many families reported, as the visit concluded, that those questions helped them focus their feelings and tell each other things they had wanted to say since the surgery. Other couples, anticipating such questions, had talked to each other at length before the interview, rather than use the interview as a time for telling each other. They said the interview as a "healing" opportunity for them.

Once the interview questions had been covered, the investigator commented: "You have been very helpful in answering all of my questions. I wonder if you have any questions of me? Perhaps about the surgery or about the study?" This prompted a period of humanizing questions about the dissertation and where study results would be

published. Couples also expressed curiosity at their similarity/dissimilarity to others in the study. Anecdotes were sometimes shared, sometimes generalizations from the study findings. In closing, the investigator always tried to be hopeful, pointing out individual differences and the extreme stress people had been living with during this recovery. For some families in which interaction had been particularly emotional and candid, the investigator commented that she viewed such interaction positively -- for it represented a struggle to change and resolve their conflicts.

Each family meeting was comfortable. Even those families who were unhappy with their doctors or the surgery treated the investigator as distinct from that experience. Interviews often ended with a walk through the family garden or the recreational vehicle, or the home to "show off" some of the results of the recovery leisure time. Couples frequently asked when they would see the investigator again.

Data Analysis

Scoring

Each of the instruments employed in this investigation was scored in a similar manner. Raw data were entered into a computerized data bank. Each family unit represented a case in which several variables would be analyzed. Further, within each family the scores of both patient and spouse were available for analysis. After the data was entered into the computer, file print outs were read against the raw data set to check for transcribing errors. After correcting errors in

the data set, computer programs were developed (in SPSS) for scoring each of the variables for the patient and for the spouse.

Missing Values. The treatment of missing data on the study instruments was varied according to the unique structure of each tool. The intent of the investigator was to preserve the integrity of the extant data and minimize the impact of the absent values.

Data were complete, or nearly so, for all families except one. During the study one spouse expired. Though the patient was interviewed and completed study instrumentation for the follow-up, data were not available to analyze in relation to the study research questions. The patient has been included in sample description and report of interview findings; however, at follow-up the data from the FILE, FIRM, CHIS, and FACES were only used in reliability reports.

The Family Inventory of Life Events and Changes (FILE) collects data on changes occurring during the last 12 months and distinguishes those data from changes prior to the last 12 months. Additionally, it provides for a weighted adjustment of the scores. Having completed and evaluated these analyses, it was decided to employ only the "During the last 12 months" data in its unweighted form. The "Prior" data appeared unreliable when compared to interview data and was frequently missing. The weighted scores were cumbersome and provided no additional information in the analysis. A total of 49 missing values appeared in the scores of 17 of the 79 participating individuals (i.e., 39 couples plus one widower). These were treated as negative reports and tallied as zero. This scoring assumption may have slightly reduced the magnitude of stress as measured by the FILE.

The Family Inventory of Resources for Management (FIRM) includes several items which required recoding to account for intended reversal of values or collapsing of four categories into two. Among the 79 participating individuals (i.e., 39 couples and one widower), 15 subjects' scores account for 40 missing values. The absent data were converted to represent the central position on the various scales (eg., 1.5 if choices ranged from 0 to 3; 0.5 if choices ranged from 0 to 1). Thus, the treatment of missing values may have centralized the resource scores as reported by the FIRM.

The Coping-Health Inventory for Spouses (CHIS) attempts to identify positive approaches and behaviors in coping. Scoring includes the 0-3 rating of behaviors employed as well as the notation that particular behaviors were not employed. Those behaviors identified as not helpful or not employed were directed to be scored as zeros. Missing values were included in this ctegory and scored as zeros in the current study. Twenty-eight subjects' scores were responsible for a total of 120 missing items.

The Horowitz Impact of Events Scale was completed by 80 individuals (i.e., 40 couples). Twelve individuals' scores accounted for a total of 20 missing values. The absent values were simply omitted when determining the mean value of the completed items. Therefore, the score of this instrument reflects a single mean score of the completed items.

The Family Adaptability and Cohesion Scales (FACES) were completed by 79 individuals (i.e., 39 couples and one widower). Ninety-four missing values were distributed during the scores of 31

individuals. These missing values were recoded as 2.5 on a 1 to 4 scale, representing the mean position.

Analysis

The plan for the overall analysis of the data included strategies from both quantitative and qualitative approaches. The hypotheses and study aims serve to organize the plan for analysis.

Hypothesis One and Hypothesis Two were addressed through a multiple correlation and regression procedure, employing a simultaneous approach. This was accomplished by analyzing the spouses separately from the patients and reporting the results of each analysis. This was a necessary treatment of the data as the patient-spouse scores were recognized to be non-independent samples and there was no provision for treatment of their score as a single unit. While the scores for the couple could have been meaned to present a single score for the couple, this approach was not chosen as it was believed to obliterate potentially valuable insights into the data.

Hypothesis Three. Each of the separate variables was analyzed for the level of internal reliability, again separating the patient from the spouse scores. For each variable a score was reported for patient and a separate score for spouse. The differences between scores for each patient-spouse pair were calculated with a matched pair t-test. The correlations of the scores were reported with a Pearson Product Moment.

Aim Four. The social process of recovery was described from the data source of the in-home interview and observations. A grounded theory approach, as described by Glaser and Strauss (1967), which employs analytic techniques described by Schatzman (1973), was used to analyze the data.

Summary

Following a review of the instrumentation to be employed in this investigation, the methods for the sampling, for obtaining subjects and securing consent were reviewed. Procedures for the study were discussed, including a typical home visit. Finally, a plan for analysis of the data was developed around the three study hypotheses and the final study aim which does not lend itself to quantitative analysis.

CHAPTER IV

FINDINGS

The study findings will be presented in this chapter. A description of the study sample prefaces the findings. This description incorporates a comparison of this study sample to the samples of the parent project (Gortner et al., 1982) and to the national randomized sample discussed in the Collaborative Study in Coronary Artery Surgery (CASS Study) (Kennedy et al., 1981)[1]. The purpose of this is twofold: (1) to illuminate hidden data pertinent to attrition in the current investigation, and (2) to evaluate the comparability of this small convenience sample to the larger randomized sample, in the hope of adding to the generalizability of the study findings.

The findings will be presented in three sections: Interview Findings; Instrument Findings; and Emergent Findings. A summary of the findings concludes the chapter.

The Sample

Size and attrition

The sample for this investigation was made available through an earlier study initiated by Gortner et al. (1982) and previously referred to. Seventy-one surgical couples participated in the

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[1] The CASS Study summarizes the data of 15 institutions who have performed CABG on 6630 patients. The available data have been used to predict operative mortality. Among the significant contributors are: advanced age, female sex, symptoms of heart failure, Left Main Coronary Artery Stenosis, impaired left ventricular function and non-elective surgery (Kennedy et al., 1981).

hospital data collection phase (time #1). As indicated earlier, the 46 couples from the Stanford cohort consented to the follow-up visit (time #2) when they were inducted into the Gortner study; the 25 couples in the Moffitt cohort were contacted by mail to request their further participation in thefollow-up study. Thus, subject recruitment procedures were varied.

The sample attrition reflects this variation (see Table 1). Of the initial Moffitt cohort, there were 13 refusals (52%). Only eight of the Stanford families refused to participate (18%). The overall refusal rate for the study was 30%. Seven families were considered "lost" to the sample. Three were located too far from the area to visit after project funds were exhausted; one was willing to participate, but unable to schedule the visit due to "on-call" status of the patient's employment; one family participated in piloting the study procedures; one family participated by mail, but was too late for inclusion in the analysis; and one family was not contacted because of an incomplete data file from the hospital visit.

While most refusals were communicated by mail or telephone, one family refused to see the investigator after she drove to their home in central California. Other patients indicated that their spouses were unwilling to participate.

A total of 43 families (patients and spouses) did participate in the study representing the parent sample. Sixty-one percent of these, 38 were interviewed in their homes and completed the study instrumentation. Of these, one patient had been widowed since interviewed in the hospital; thus, no spouse data were available for analysis. Three families were interviewed at home but failed to

complete the instrumentation. Among these were: one family in which the patient appeared to have such difficulty responding to abstract questions that the investigator deemed it a burden to request participation in that component of the study; a second with severe marital dysfunction as reported by patient and spouse; and a third in which the patient's physical status was judged by him to have deteriorated with surgery. This last family was extremely angry about

Table 1

Description of Sample

	Moffitt	Stanford	Total
# of Couples Participating at Time I	25	46	71
# of Refusals	13 (52%)	8 (18%)	21 (30%)
# Otherwise "Lost" to to Study	1 (Pilot Study)	3 (distance) 1 (Willing: unable to schedule) 1 (By mail; too late for analysis) 1 (Incomplete data file at Time I)	7
Interviewed at Time II and completed Study Instrumentation	11 (incl. one widower)	27	38
Interviewed at Time II but did not complete Study Instrumentation	0	3	3
Not Interviewed at Time II but completed Study Instrumentation by Mail	0	2	2
		TOTAL SAMPLE =	43

the entire surgical experience and while they did not direct that anger at the investigator, they did not wish to be "bothered" further with reminders of the experience. In addition, two families who lived out of the area and could not be interviewed at home participated in the study by completing the study instrumentation.

As a result of the different forms of participation, the sample size varies in the presentation of the findings. The sample of 43 is described; the sample of 41 provides interview data; the sample of 39 (40 less the widower) provides the basis for the Instrument data. The emergent findings are not presented as data representative of the study sample, but as a framework which developed from interviewing people over the eight months of home follow-ups.

Sample characteristics. Despite attrition, the sample remained quite similar to the profile of the parent study with respect to demographic characteristics. Males outnumbered females by 6 to 1, as in Gortner et al. (1982). This represented 37 males and 6 females in the current study. Comparable figures for the CASS Study reveal a male:female ratio of 5.25:1 (see Table 2).

The mean age of patients at hospitalization was 56.6 years. For females the figure was several years higher, 62.3 years; and for males 55.7 years. While the mean age of females was nearly identical to Gortner's sample (62.4 years), the male mean was several years younger than Gortner's reported 59 years. Figures were not available for the CASS comparison.

The patient age range was restricted to 40-75 by sampling criteria. Within that range the greatest represented decade was the

Table 2

Sample Characteristics

	Current Study	Parent Study[1]	CASS Study[2]
Pt. sex:			
Females	6 (14%)	10 (14%)	16%
Males	37 (86%)	61 (86%)	842%
Ratio males:females	6:1	6:1	5.25:1
Pt. age: combined	56.6 years		
Females	62.3	62.4	N.A.
Males	55.7	59	
Ethnicity:			
Caucasian	37 (86%)	59 (83%)	N.A.
Asian/Indian	3 (7%)	8 (11%)	
Black American	2 (5%)	3 (5%)	
Hispanic	1 (2%)	1 (1%)	
Socioeconomic status (Hollingshead)	Median= 30 (Class 2) Class $\bar{x}$= 32 (Class 3) (1-5)	N.A.	N.A.
Frequencies:	Class 1 = 10 (23%) Class 2 = 13 (30%) Class 3 = 11 (26%) Class 4 = 7 (16%) Class 5 = 2 (5%)		
Length of time Married at Follow-up	$\bar{x}$ = 27.1 years range = 1 yr - 51 yrs		

[1] Gortner et al., 1982
[2] Kennedy et al., 1981

51-60 year old group (15 subjects, 35%). Eight subjects (19%) were between the ages of 41 and 50 and 3 (7%) were between 71 and 75 years. It should be noted that the final interval is not equal to the other intervals.

As with Gortner's sample, the sample ethnicity was representative of the cultural groups in California. Caucasians predominated (37 subjects, 86%). Also represented were 3 Asian or Indian families (7%), 2 Black American families (5%), and 1 Mexican American family (2%). These proportions were nearly identical to the Gortner sample.

Socioeconomic status was calculated with Hollingshead's Two Factor Index of Social Position (Miller, 1977). A seven-point scale was used to categorize subjects by educational and occupational background. These scales were then weighted to determine an overall rating into one of five socioeconomic categories (1 = most affluent, 5 = least). Only occupational categories were known for the Gortner sample. These categories appeared to be evenly distributed across the seven categories, with minimal skewing toward the executive/managerial group represented by Category I. In the present study the mean of subjects fell into Class 3 (of 5), or the middle income group. The median status, however, was several points higher and moved into the Class 2 group. This appeared more representative of the sample, which while distributed across the five groups, was more heavily skewed toward the top two classes. Classes 1-2 combined represent 53% of the sample, while Classes 4-5 combined represent only 21%.

The physiological characteristics of the sample are displayed in Table 3. At the time of hospitalization, data were collected from the medical record employing abstracting forms developed by Gortner et al.

Table 3

Physiological Characteristics of the Sample

	Current Study	Parent Study[1]	CASS Study[2]
	(n=43)	(n=71)	(n=6630)
Surgical priority:			
Elective	32 (74%)	49 (69%)	(78.7%)
Non-elective	11 (26%)	22 (31%)	(19.8%)
Anginal class[3]:			
1	6 (14%)	9 (13%)	248 (4%)
2	7 (16%)	11 (15%)	1390 (23%) } 27%[4]
3	14 (33%)	26 (37%)	2541 (42%)
4	16 (37%)	25 (35%)	1373 (23%) } 61%
Previous M.I.:			
No	14 (32%)	28 (39%)	3133 (47.3%)
Yes	29 (67%)	43 (61%)	3497 (52.7%)
Suspected	2 (5%)		
One	17 (40%)		
Two	9 (21%)	(χ^2 = n.s.)	
Three	1 (2%)		
Number of Occluded Vessels:			
One	2 (5%)	9 (13%)	
Two	11 (26%)	26 (38%)	(49.9%)
Three	20 (47%)	28 (41%)	
Four	10 (23%)	6 (9%)	(50.1%)
Left Main Disease	1 (2%)	22 (32%)	
		(χ^2 = p<.05)	
Symptomatic Period Before Surgery:	$\bar{x}$ = 7.75 yrs range = 2 wks - 18 yrs		

[1] Gortner et al., 1982
[2] Kennedy et al., 1981
[3] Based on Canadian Cardiovascular Society criteria. See Campeau, 1976
[4] Not all 6630 subjects experienced angina

(1982), consistent with the CASS Study variables and definitions (Kennedy et al., 1981) and the original grading system used by the Canadian Cardiovascular Society (Campeau, 1976). Abstracting was done by two experienced nurse clinicians who were experts in cardiovascular nursing, and was reviewed for consistency by an independent rater.

Surgical priority was categorized as follows in the CASS Study: "emergent," performed on day of angiography; "urgent," performed one to six days after angiography; and "elective," after six days post-angiography. Elective surgeries outnumbered non-elective surgeries by 3:1 in the present study's sample. Thirty-two (74%) subjects elected surgery. This was comparable to CASS figures, in which 78.7% of the surgeries were elective, but higher than Gortner's report of 69% elective procedures.

Anginal classification, based upon the Canadian Cardiovascular Society criteria (Campeau, 1976), was comparable across groups. In the current study, 16 subjects (37%) experienced Class 4 angina. Fourteen (33%) suffered from Class 3; seven (16%) were characterized as Class 2 and six subjects (14%) as Class 1. These distributions were nearly identical to Gortner et al. The CASS sample reflected fewer Class 1 subjects (4%), more Class 2 (23%) and Class 3 (42%), and fewer Class 4 (23%). However, the differences were obliterated by collapsing the 1 and 2 classes (30% versus 27%) and the 3 and 4 classes (70% versus 65%). With respect to anginal class a Chi-square procedure supported the inference that the groups were comparable.

Among the subjects of the current investigation, 29 (or 67%) had suffered one or more previous myocardial infarctions (M.I.). Gortner

reported 61%; CASS reported 52.7% with previous M.I. The present study appeared to have proportionately more subjects with a history of infarct; however, this difference was not statistically significant.

Patients reported a wide range of experience with coronary artery disease prior to surgery. Though some had first been symptomatic 18 years before surgery, others became ill as recently as two weeks before surgery. The mean length of time patients were symptomatic before surgery was 7.75 years.

Data revealed a higher percentage of subjects with three and four vessel disease in the present study than that reported by Gortner or CASS. Two subjects (5%) had single vessel disease, and eleven (26%) had significant (70%) blockages in two vessels. Twenty patients (47%) suffered from blockages in three vessels and ten (23%) from four vessel disease. CASS and Gortner reported percentages on the collapse of the categories 1-2 vessel disease and 3-4 vessel disease. Each observed approximately half the sample in each group. In contrast, the present study split 30% for 1-2 vessels, and 70% for 3-4 vessels. A Chi-square procedure revealed this difference to be significant at $p=.05$. The incidence of Left Main Disease was also markedly different. While Gortner reported 32%, the present study had only one subject (2%) with Left Main Disease.

The risk factors were reported by patients, were summarized and compared to Gortner's report. Subjects reported from none to five risks, the mean per subject being 2.35 risks. The most frequently reported risk factor was a history of smoking cigarettes (67%). Sixty-three percent of the sample reported a positive family history

for coronary artery disease. Hypertension and elevated cholesterol levels were reported by 44% of the subjects. Sixteen percent of the group suffered from adult onset diabetes. The profile was similar to Gortner with two exceptions: (1) a lower percentage of hypertension (44% versus 56%); and (2) a higher percentage of elevated cholesterol (44% versus 28%).

In summary, the sample for this investigation included 43 families. This represented a 39% rate of attrition during the six month interval between hospitalization and follow-up. Male patients exceeded female patients at a 6:1 ratio and were several years younger than the study females (55.7 years versus 62.3 years). Upper middle class Caucasians dominated the sample. The physiological characteristics of the sample were comparable to Gortner et al. (1982) and CASS (Kennedy, 1981) with respect to the higher proportion of elective surgery, the frequency distribution of anginal classifications, and percentage of previous myocardial infarctions. The current study sample had significantly more 3-4 vessel disease than either the Gortner or CASS reports.

Interview Findings

The interviews were conducted in the homes of consenting families five to seven months after surgery. The mean interval for the 41 visits was 5.83 months following surgery. All visits were conducted with couples, at minimum; however, some couples had invited other family members to be present. Though designed to be a one to two hour visit, the mean length of the actual visits was two hours (range: 45 minutes to 4 hours). Despite well-tailored plans for coordinating

visits into regional clusters, the mean length of travel associated with each visit was 2.27 hours (range: 30 minutes to 10 hours). Actual travel computations do not include the weeks spent "on the road" away from hearth and home.

Most visits (25 or 61%) were scheduled for the daytime hours during weekdays. Fifteen visits (37%) took place in the evening and one (2%) was conducted during the daytime hours of the weekend.

Work status. The majority of subjects reported that their status with respect to employment was unchanged by surgery (41 or 95%). Twenty-five (58%) who were employed in the six months preceding surgery returned to work by the six-month follow-up. Thirteen (30%) who reported their status as retired while hospitalized continued to be retired. Three subjects (7%) who were disabled during the six months preceding surgery continued to report themselves as disabled.

Among those in the disabled category were: a 57 year old female whose disability arose from a severe stroke five years earlier; a 57 year old male who became disabled after his second M.I. in three months, which occurred seven months prior to surgery; and a 45 year old male who became disabled after he suffered his second M.I. in 15 months, which occurred seven months prior to surgery.

A change in status from working to disabled was reported by two subjects. The first was a 67 year old male who had retired several years earlier, but had returned to work during the preceding year. After the return to work, described by the spouse as extremely stressful, the patient developed shingles which affected his vision. He stopped working again and in two months experienced a myocardial

infarction. Two months later he underwent bypass surgery. While he would like to return to work and claimed to feel able, he was wary of trying. The second subject was a 57 year old housewife, depressed and moderately overweight, who continued to experience swelling and discomfort at the graft site. She has been unable to resume her housekeeping responsibilities and has hired someone to assist her.

Among those who returned to work several reported difficulty in carrying out their responsibilities. One subject who believed his condition had not been changed by surgery was trying to work as a truck driver. The continued anginal pain and loss of upper body strength made it difficulty for him to load or unload his truck or to spread the heavy canvas tarp across the loaded truck. He believed that his impairment was limiting the amount of work he was being assigned.

Other subjects reported changes in their approach to work: "I do less;" "I protect myself from stress;" "I have considered retiring."

Clearly, work for those were were employed was a significant influencing variable for recovery. Men (there were no females employed out of the home in this sample) generally knew the exact date on which they returned to the office. Though often before they were able to drive, wives would drive them to the office to "putter" for several hours. Farmers and those with desk jobs reported working half days for a period of several weeks before returning full time. The time interval between surgery and return to work was often identical to the interval described by the family as that needed to reorganize following surgery.

In the at-home recovery phase, subjects reported worrying about whether they could perform their jobs successfully again. While eager to be in contact with those at the office, they feared exposing their easy distractibility or inability to concentrate, emotional lability and frequent tears. To combat these fears one subject had his secretary come to his home to review materials with him and receive his instructions. This same subject held a small meeting with his associates in his own home, where he felt he could be more comfortable.

Once returned to work, the workmates provided a ready audience for telling the story of surgery and recovery. While this appeared to be useful to some, others reported receiving erroneous information from well-intentioned friends. Many people "knew someone" who was back at his desk and playing tennis seven days after surgery. Others never knew anyone who had survived for a year after the surgery. In both cases, false expectations were established which the subjects found disturbing.

In some cases information provided by friends was not recognized as erroneous by the subject. Families often presented such information to the investigator to question whether a particular outcome would also result from their surgery.

Recovery. In response to the question, "How have you been doing since we saw you in the hospital?" most subjects were launched into elaborately detailed recollections of the peri-operative period and first few days at home. Overwhelmingly, they agreed that the surgery had been an ordeal for them and their spouses, but that they were

improved and glad to have had surgery. (Data collected on the realization of expected benefits is presented in Gortner et al., 1982).

In addition to serving as an invitation to tell their story, this prompt elicited information about the problems or complications that were encountered by the patient during the six months of recovery.

Only eleven (27%) of the interviewed subjects reported no problems in their recovery. Eleven (27%) reported cardiac-related problems which included angina, pericarditis, premature ventricular contractions, other arrhythmias, congestive heart failure, and a drop in blood pressure. The graft site was problematic for eleven subjects (27%) who reported cellulitis, infections, swelling, and pain. Depression and worry were identified as issues in recovery for seven subjects (17%). Among these, several patients have been placed on tricyclic antidepressants with good results. Two subjects complained of severe general pain after surgery; two contracted hepatitis as a result of surgery.

A series of seemingly unrelated problems was reported by patients. The individual case histories provide insight, however, into how the bypass surgery triggered such problems. Four cases of genitourinary and gastrointestinal problems were reported. One of these was actually a perforated ulcer which occurred following the patient's therapeutic use of Indocin for six weeks to combat the pain and inflammation of pericarditis. One person reported seeing spots before his eyes, a common problem after being on the heart-lung machine. Another reported his medications were so nauseating that he became dehydrated and required hospitalization. Still another became dehydrated following two months of dysgeusia (the impairment of the

gustatory sense such that normal tastes are interpreted as unpleasant). This also required hospitalization. One subject has been told that doctors believe his diaphragm is partially paralyzed as a result of surgery. A total of seven patients (16%) reported that they had been hospitalized since the bypass.

Treatments. Patients were asked what treatments, medications, foods, or exercises they were using to improve their health. Only seven were not using medications; 34 (83%) were taking at least one medication daily. Seventy-one percent of the sample (29 subjects) reported either a change in diet following surgery, or the continued use of a modified diet. These modifications included low sodium (8, 20%); low sodium and low fats (9, 22%); low sodium, low fats and low sugars (7, 17%); modified Pritikin (2, 5%); bland (1, 2%); weight control (1, 2%); and stopping a low sodium diet (1, 2%). Twelve subjects (30%) were making no attempt to modify their diet. Six subjects who had stopped smoking cigarettes at surgery admitted to resuming the habit. Three subjects drank rather heavily during evening interviews (four highballs in two hours).

With respect to exercise, 19 subjects (46%) reported regular walking or other planned form of exercise. An additional four subjects (10%) carried out that planned exercise as part of an organized rehabilitation program. Yard work was the reported form of exercise for six subjects (15%); three more believed that their physically demanding job served as exercise (7%). Thus, nine reported no exercise plan (22%); 9 reported unplanned activity (22%); and 25 had a regular and planned form of exercise (61%).

Table 4 displays the kinds of recovery problems identified by patients and relates these to the patient's health practices. While the numbers are small and need to be viewed with caution, several observations are noteworthy. Those who reported no problems were using less medication and more exercise. Those who reported depression and worry were taking medication but not dieting or exercising. Those with graft site problems were taking medications, but limiting their use of diet and probably restricted in their use of exercise. In general, these observations are not intended to suggest the nature of the associations.

Appraisal of health. In response to the question, "How would you describe your health?" most study participants expressed their belief that they were healthier now after the surgery. Thirty-one subjects (76%) described their health as either "better than ever" or "better than before the surgery." One patient believed his condition was unchanged following surgery. Six subjects (15%) indicated that they were not as well as they had expected to be.

Three (7%) stated, quite definitely, their belief that they were worse than before surgery. Among these three, one was a 46 year old male who had hoped to be off medication following surgery. In fact, he continued to have angina, took more medications, and now was experiencing extreme financial pressures as he tried to pay his hospital bills following his prolonged lay-off from work.

The case of the second subject was similar. While he acknowledged his belief that surgery had saved his life, this 45 year old man had encountered a series of events following surgery which left him critically ill for months and still unable to return to work.

Table 4

Relationship of Patient Problems to Health Practices
(n = 41)

Problem		Health Practices		
		Medication	Exercise	Diet
None	11 (27%)	6 (55%)	10 (91%)	7 (64%)
Cardiac	11 (27%)	10 (91%)	8 (73%)	7 (64%)
Graft site	11 (27%)	11 (100%)	7 (64%)	7 (64%)
Hepatitis	2 (5%)	2 (100%)	2 (100%)	1 (50%)
Depression or worry	7 (17%)	7 (100%)	4 (57%)	4 (57%)
General pain	3 (7%)	3 (100%)	3 (100%)	3 (100%)
GI	6 (15%)	5 (83%)	4 (67%)	4 (67%)
GU	1 (2%)	1 (100%)	1 (100%)	0 (0)
Neuro	2 (5%)	2 (100%)	1 (50%)	1 (50%)
Pulmonary	1 (2%)	1 (100%)	1 (100%)	1 (100%)
Vision	1 (2%)	0 (0)	1 (100%)	1 (100%)

He had not worked in one year and was experiencing difficulty with disability payments. Only one month prior to his M.I. (one year ago) he and his wife had purchased a home. After mortgage payments they had little left for food. The home had very few furnishings. Due to the spouse's employment they were able to survive financially, but the patient was worried and eager to return to work.

The final subject, a 70 year old retired male, believed that the discomfort of his graft site outweighed the value of the surgery. He was angry at the surgeons and believed they had "botched" his leg. He went so far as to share his belief that the surgeons had left the operating room while he was stitched by a junior attendant who made a mistake on his leg.

When asked about their physician's impression of their health, subjects displayed a similar profile of their progress as seen through the eyes of their doctor. As judged by the patient, 34 physicians (85%) believed patients were doing well. Some six (15%) of these were described by patients as having said the patient was "Great!" or "Better than I've ever seen." Two physicians were reported as believing patients were unchanged; four were described as having some continued concerns about the patients or believing the health was worse since surgery. Among these were subjects who had developed extenuating complications not yet resolved, or those whose first stress test was not normal but had not yet been repeated. One subject had been told that he continues to have blocked vessels. One subject reported that by five months he had not yet seen or contacted a physician. This was unique in this group, for almost without exception patients returned to the cardiac surgeon at four to six weeks and then began to visit an internist or cardiologist at regular intervals (every two weeks, every month, every two months, every six months).

The relationship between the patient's self-appraisal and patient's report of physician appraisal appears in Table 5. This

Table 5

Relationship Between Patient Self-Appraisal of Health at Follow-up to Patient Report of Physician Appraisal*

Report of Physician Appraisal	Self Appraisal: Same	Worse	Not What I Expected	Better Than Before Surgery	Better than Ever or Before MI
Same 2	1	1	0	0	0
Worse/ Some Concerns 4	0	0	1	2	1
Better 29	0	2	5	18	4
"Great!" 6	0	0	0	2	4

* n=40; one subject had not seen a physician at follow-up

visual display reinforces the observation that most patients who believe they are doing well also believe their physicians believe that they are doing well.

Changes. Couples were asked "How does life at home now compare to before surgery?" Then specifically, they were asked about recreation ("For instance, are you able to spend recreational time differently?"), communication ("For instance, do you think about each other differently now, or speak to each other differently?"),

affection ("Do you demonstrate your affection for each other any differently?"), and problem-solving ("Do you approach your problems differently? Or solve them differently?").

Most couples reported no change in their recreational habits (14, 34%). Those who reported changes identified: more recreation or travel (10, 24%); less recreation or more selectivity in choosing events (9, 22%); a reduction due to financial strains related to surgery (5, 12%); a normalization or increase in recreational freedom (2, 5%); and recognition of recreation as the competitive arena to replace work (1, 2%).

Several couples reported extensive trips that had been made or were being planned for the near future. One subject who had been uncomfortable at home in the early weeks of recovery went to Hawaii in the third week "to be warm, exercise by walking on the beach, and let that salt water heal my leg." For some who had not been available to spend such time together this change was rewarding.

In contrast, those couples who used activity (dancing), meals, or money for recreation in the past found themselves cutting back their former activities. For them the change in style represented a hardship. One innovative couple apparently overcame the hardship as they reported that they had found a Chinese restaurant which would prepare their meals without salt. A few families, however, reported that they could not afford the gasoline to take their campers into the mountains for the weekend.

New activities were undertaken by some. In addition to those four subjects who joined rehabilitation programs for exercise, one

male and one female patient in their middle 60's joined "rehabilitation groups" to develop the new skills of painting, ceramics, and stained glass window-making.

In addition to those changes which were attributed to the surgery, there were changes attributed to other events. One family predated the change in their recreational patterns to the stroke suffered by the patient five years earlier. The photo album shared with me by this patient's husband was filled with snapshots of an unknown beautiful woman dressed in formal gowns decorated with orchids. The woman was the patient. Other reports were less dramatic. One thoughtful and sensitive subject brought tears to his wife's eyes as he spoke of his pleasure in sharing more time with her now that their five children were grown and living away. Being able to pace one's self was attributed to the process of aging by one subject.

The most prevalent change in communication was the report of increased worry by 17 spouses (35% of the reported changes and 41% of families). Only one spouse reported decreased worry or concern about her mate following surgery. Eleven couples reported increased conflict following surgery. While this represents 23% of the total communication changes, it represents 27% of the sample. As an example, in one family the patient had taken to teasing his wife by threatening her with "I'm going to have a heart attack." He generally said this when she refused to find his cigarettes or he was losing an argument. She became simultaneously frightened and outraged.

Seven families reported a "personality change" in the patient. Such changes ranged in description from more relaxed, or more

impatient, to more argumentative. Three couples recounted their ability to discuss death or estate-related matters for the first time following this surgery. One spouse reported a decreased ability to trust her spouse following surgery because she had observed that he did not follow the physician's directions or accurately report his own physical distress. Finally, one spouse told of her new ability to discuss issues that irritated her. She attributed this change to her involvement in classes conducted as part of an organized cardiac rehabilitation program.

As with recreational changes, there were changes reported but attributed to other events. Three families reported an increase in conflict, but attributed it to issues brought about by their children or other family members. Aging was the attributed cause of "letting some things go," becoming more difficult to get along with and discussing the couple's estate planning.

Affective changes were less frequently reported. Twenty-three couples (56%) reported no change. Among the reported changes, ten couples (24%) identified an increased protectiveness that had developed in their relationship. In addition, two couples specifically described increased protectiveness and concern regarding their sexual activities. Three couples believed they felt closer to each other now. Finally, two couples reported that they were now sleeping separately, so as not to disturb one another.

The absence of sex from their relationship was attributed to aging by one couple. A renewed closeness was described as resulting from the departure of family members who had been living with the couple.

Changes in problem-solving were completely denied in this sample except for one spouse who reported that she had become more responsible during her husband's illness and, despite his full recovery, had retained that sense of responsibility for making family decisions.

Personal value changes. Couples were also asked if the experience of surgery had brought about any changes in their personal value system. While patients offered more responses, spouses also reported their observations.

Among the patient subjects, 15 (37%) indicated that they had gained an appreciation of their limits and had reduced their activities. Six (15%) observed that they were no longer doing some things, but they more fully value each day. Eight subjects (19%) noted a change in their patience; five (12%) have more, and three (7%) have less. Feeling closer to God was reported by two patients (5%). One felt closer to his family (2%). Ten indicated no changes of values had been experienced (24%).

For spouses, the greatest number deny changes (35, 85%). Three believe that they now better appreciate their limits and human vulnerability. One each reports not putting things off, having more patience and feeling closer to her family.

Reorganization time. All couples were asked how long after surgery did the family organize its experience around the surgery. For further clarity, "Can you identify a point in time when the surgery was no longer the focus of your life? (For some people this is a point in time when they no longer kept track of time by counting the days since surgery.)" Every couple was able to answer this

question, though some discussion usually preceded the couple's agreement. Only in one family was there an unresolved disparity, and that family was characterized by extraordinary conflict.

Table 6

Length of Time Family Needed to "Reorganize" after CABG
(n = 41)

	No need to reorganize	1-4 weeks	5-8 weeks	9-12 weeks	3-6 months	more than 6 months
frequency	4	8	13	5	3	8
percentage	(10%)	(20%)	(32%)	(12%)	(7%)	(20%)
cumulative frequency	4	12	25	30	33	41
cumulative percentage	(10%)	(29%)	(61%)	(73%)	(80%)	(100%)

Four families denied that they ever focused on the surgery. These were action-oriented families who did not dwell on the event but rather on their power over the event. For instance, the patient explained he did not dwell on surgery, but on recovery. He counted the numbers of times he walked around the block, or he read Craig Claiborne's Cardiac Cookbook for advice on low salt menus. Eight couples agreed that within the first month, surgery had lost its importance. By two months, 13 more couples (32%) report that their lives were refocused on other events. This represents a cumulative percentage of 61% at the two-month interval. By three months, five additional families (total of 73%) reported that the surgery no longer

seemed central in their lives. By six months an additional three families were included for a total cumulative percentage of 80%. At the six month visit, eight families (20%) reported that the surgery still looms in a central organizing position in their lives.

Summary. To summarize the interview findings, most subjects reported some problems during the recovery phase. Despite this they indicated they were healthy and recovering well; they believed their physicians shared the appraisal of their health and progress. Of the health practices that the patient might employ to aid in recovery, most used medications, exercise, and diet, in that order of frequency. While return to work has been identified as a major motive for undergoing a CABG in other studies (Stanford, 1982) the work status of those sampled did not change significantly.

The changes that were described included worry, conflict, protectiveness and a change in the quantity and quality of involvement sought in life. The majority of families (80%) believe they were refocused on events other than surgery by the six-month follow-up; however, 20% still experienced the surgery as central to their lives. Some of these findings will be further developed in the discussion of emergent findings.

Instrument Findings

This study proposed to test three hypotheses. The findings related to each hypothesis will be discussed beginning with Hypothesis Three and followed Hypotheses One and Two, respectively. The order is

changed so as to begin with the descriptive data on each of the major study variables. This data emerged from the analysis of Hypothesis Three.

Hypothesis Three. There are no differences between patient reports of: stress associated with the surgical event, accumulation of stresses within the family, resources for family coping, strategies for family coping, and family functioning and spouse reports of same.

Stress associated with the surgical event was measured for patient and for spouse at the time of hospitalization by self reports on the Horowitz Impact of Event Scale. The results of this administration appear in Table 7.

Table 7

Analysis of Impact of Event Scale (Stress a)
(n = 39)

Patient	Spouse
mean = 1.55	mean = 2.15
standard deviation = 0.90	standard deviation = 0.954
Cronbach Alpha = .854	Cronbach Alpha = .869

Patient-Spouse t-Test/Correlation
correlation coefficient = .327 (p=.042)*
t statistic = -3.48 (p=.001)**

* Significant
** Highly Significant

Internal reliability, as measured by the Cronbach alpha, was calculated separately for the patient group and the spouse group on each study variable, based upon the conservative assumption that the two groups were non-independent. The figures reported are consistent, and high for patients (r=0.854) and spouses (r=0.869). While the standard deviations were similar, the spouse mean was higher. This difference was highly significant at the p=.001 level, demonstrating that spouses reported a higher level of stress at the time of hospitalization. Patient and spouse scores, correlated with the Pearson Product Moment, were significant at the p=.042 level.

The accumulation of stresses within the family was measured for patient and for spouse at the six-month interval by their self-reports on the adapted Family Inventory of Life Events and Changes (FILE). The results of this administration appear on Tables 8 and 9.

Internal reliability, calculated with the Cronbach alpha, was consistent and high for patients (r=0.767) and spouses (r=0.829). The overall scores for patient and spouse were significantly correlated, as were all the subscales except (IX) family legal violations, in which there was no variation. No differences between patient and spouse were observed on overall FILE scores in eight of the nine subscales. The one significant difference appeared in the spouses' higher reports on the "Illness and Family Care Strains" subscale (VI) (p=.006).

Resources for coping were measured for patient and for spouse at the six-month interval by their self-reports on the adapted Family Inventory of Resources for Management (FIRM). The results of this administration appear in Tables 10 and 11.

Table 8

File Analysis (Stress Pile-up aA)
(n=39)

Patients	Spouses
Mean Score = 6.18 Standard Deviation = 4.44	Mean Score = 7.18 Standard Deviation = 5.34
Mean Score (weighted) = 275.59 Standard Deviation = 196.76	Mean Score (weighted) = 328.21 Standard Deviation = 249.95
Cronbach Alpha = 0.767	Cronbach Alpha = 0.829

Items with Highest Means			Items with Highest Means		
Rank	Item#	Text & Mean	Rank	Item#	Text & Mean
1	32	Spouse/Parent became seriously ill or injured (.410)	1	32	Spouse/Parent became seriously ill or injured (.718)
2	14	Increased difficulty with sexual relationship between husband and wife (.385)	2	10	Increase in the numberof tasks or chores which don't get done (.436)
3	33	Close relative or friend of family became seriously ill (.359)	3	34	A member became physically ill or chronically disabled (.359)
4	10	Increase in the number of tasks or chores which don't get done (.333)	5	3	A member appears to have emotional problems (.308)
6	3	A member appears to have emotional problems (.308)	5	28	A member started or returned to work (.308)
6	22	Increased strain on the family "money" for medical/dental expenses (.308)			

Table 9

Comparisons Between Patient and Spouse Scores for FILE
(t-Test Results)
(n=39)

	Correlation Coefficient	t Statistic
1) total score	r=.641 (p .001)**	t=-1.48 (p=.148)
2) total weighted score	r=.602 (p .001)**	t=-1.60 (p=.117)
Subscales		
3) intrafamilial strains (Subscale I)	r=.662 (p .001)**	t= -.130(p=.203)
4) marital status (Subscale II)	r=.378 (p=.018)*	t= .67 (p=.509)
5) pregnancy/childbearing (Subscale III)	r=.572 (p .001)**	t= .51 (p=.611)
6) finance and business (Subscale IV)	r=.809 (p .001)**	t= -.07 (p=.947)
7) work-family strains/ transitions (Subscale V)	r=.693 (p .001)**	t=-1.16 (p=.253)
8) illness and family care strains (Subscale VI)	r=.377 (p=.018)*	t=-2.88(p=.006)**
9) losses (Subscale VII)	r=.621 (p .001)**	t= -.83 (p=.409)
10) transitions "in and out" (Subscale VIII)	r=.728 (p .001)**	t= .91 (p=.367)
11) family legal violations (Subscale IX)	(no variation)	t= 1.00 (p=.324)

* Significant
** Highly Significant

Table 10

FIRM Analysis (Resources bB)
(n = 39)

Patients	Spouses
Mean Score = 90.64	Mean Score = 88.17
Standard Deviation = 15.44	Standard Deviation = 15.16
Cronbach Alpha (total) = 0.894	Cronbach Alpha (total) = 0.883
Subscale scores:	Subscale scores:
I. Family Strengths I: Esteem & Communication (FS) = 0.790	I. Family StrengthsI: Esteem & Communic.(FS) = 0.667
II. Family Strengths II Mastery & Health (RS) = 0.889	II. Family StrengthsII: Mastery & Health (RS) = 0.843
III. Extended Social Support (SS) = 0.515	III. Extended Social Support (SS) = 0.321
IV. Sense of Financial Well-Being (FWB) = 0.881	IV. Sense of Financial Well-Being (FWB) = 0.910

Items with Highest Mean Scores

Rank	Item#	Text & Subscale	Rank	Item#	Text & Subscale
1	37	We feel we have enough money on hand to cover small unexpected expenses (under $100). (IV)	1	52	Members of our family are encouraged to have their own interests and abilities. (I)
2	50	We get great satisfaction when we can help one another in our family.(I)	2	15	It seems that we have more illness (colds,flu, etc.) in our family than other people do.(II)
4	36	We would have no problem getting a loan at a bank if we wanted one. (IV)	4	45	It is "OK" for family members to express sadness by crying, even in front of others. (I)
4	52	Members of our family are encouraged to have their own interests and abilities.(I)	4	51	The members of our family respect one another. (I)
5	51	The members of our family respect one another. (I)	6	35	Our relatives seem to take from us, but give little in return. (III)

(Continued on next page)

Table 10 (Cont'd)

Items with the Highest Means

Patient			Spouse		
Rank	Item#	Text & Subscale	Rank	Item#	Text & Subscale
6	15	It seems that we have more illness (colds, flu, etc.) in our family than other people do. (II)	6	50	We get great satisfaction when we can help one another in our family. (I)
7	24	We have the same problems over & over -- we don't seem to learn from past mistakes. (II)	7	37	We feel we have enough money on hand to cover small expenses (under $100). (IV)
8	41	We feel we are able to go out to eat occasionally without hurting our budget. (IV)	8	43	In our family it is "OK" for members to show our positive feelings about each other. (I)
10	34	We seem to have little or no problems paying our bills on time. (IV)	9	49	We worry about how we would cover a large unexpected bill (for home, auto repairs, etc. for about $100). (IV)
10	39	The member(s) who earn our family income seem to have good employee benefits (such as paid insurance, stocks, car, education, etc.) (IV)	10	24	We have the same problems over & over-we don't seem to learn from past mistakes. (II)

Table 11

Comparison Between Patient and Spouse Scores for FIRM
(t-Test Results)
(n=39)

	Correlation Coefficient	t Statistic
Total Score	r=.751 (p=.001)**	t=1.43 (p=.161)
Subscales		
I. Family Strengths I: Esteem & Communication	r=.398 (p=.012)*	t=.16 (p=.875)
II. Family Strengths II: Mastery & Health	r=.727 (p=.001)**	t=.83 (p=.414)
III. Extended Social Support	r=.409 (p=.01)*	t=-1.80 (p=.079)
IV. Sense of Financial Well-Being	r=.783 (p=.001)**	t=2.58 (p=.014)*

* Significant
** Highly Significant

Internal reliability, calculated with the Cronbach alpha, was consistent and high for patients (r=0.894) and spouses (r=0.883). Three of the four subscales appeared reliable for patients and spouses, with coefficients ranging from r=0.667 to 0.910. The subscale "Extended Social Support (III)" did not appear reliable; patient and spouse scores were r=0.515 and 0.321 respectively.

A comparison of patient and spouse scores revealed significant correlations for the overall scales and subscales. Only one difference appeared, as patients reported a significantly higher (p=.014) "Sense of Financial Well-being" than did spouses.

Family coping was measured for patient and for spouse at the six-month interval by their self-reports on the adapted Coping-Health Inventory for Parents (CHIS in the current study). The results of this administration appear in Tables 12 and 13.

Internal reliability, as measured with the Cronbach alpha, was consistent and high for patients (r=0.934) and spouses (r=0.913). Each of the three subscales appeared reliable for both patients and spouses, with coefficients ranging between r=0.745 and 0.876.

In reviewing the items with the highest means for patients and for spouses, one observed a heavy reliance on items from the Integration, Cooperation, and Optimism Subscale (I). For spouses only one item of those with the ten highest means was from other than the I Subscale. In comparing patient and spouse scores only the I Subscale, Integration, Cooperation, and Optimism correlated significantly (p=0.017). There were no significant differences between the pairs for the total score or the three subscale scores.

Family functioning was measured for patients and for spouses at the six-month interval by self-report on the Family Adaptability and Cohesion Evaluation Scales (FACES). The results of the administration appear in Tables 14, 15, 16 and 17.

Internal reliability was calculated with the Cronbach alpha for each of the two major subscales, adaptability and cohesion, and the sixteen subscales. Adaptability scores were lower (r=.448 and r=.408 for patients and spouses respectively) than the cohesion alphas (patients, r=.610; spouses, r=.688). Neither score gave strong evidence for internal reliability. The subscale scores were lower than the major scales, ranging from r=-0.642 to 0.678.

Table 12

CHIS Analysis (Coping)
(n=39)

Patients	Spouses
Mean Score = 89.28 Standard Deviation = 23.86	Mean Score = 87.49 Standard Deviation = 21.83
Cronbach Alpha (total) = 0.934 Subscale scores:	Cronbach Alpha (total) = 0.913 Subscale scores:
I. Integration, Cooperation and Optimism (FAM) = 0.876	I. Integration, Cooperation and Optimism (FAM) = 0.802
II. Support, Esteem and Stability (SUP) = 0.844	II. Support, Esteem, and Stability (SUP) = 0.853
III. Medical Communication & Consultation (MED)= 0.821	III. Medical Communication & Consult. (MED) = 0.745

Items with Highest Means

Rank	Item#	Text & Subscale	Rank	Item#	Text & Subscale
1	36	Building a closer relationship with my spouse. (I)	1	6	Believing that I/my spouse will get better. (II)
2	23	Believing that I am/my spouse is getting the best medical care possible. (I)	2	23	Believing that I am/my spouse is getting the best medical care possible. (I)
3	28	Telling myself that I have many things to be thankful for. (I)	3	3	Trusting my spouse to help suppport me. (I)
4	35	Being sure prescribed medical treatments for me/my spouse are carried our at home on a daily basis. (III)	5	1	Trying to maintain family stability. (I)
6	6	Believing that I/my spouse will get better. (I)	5	16	Believing that the medical center/hosp. has my family's best interest in mind. (I)
6	17	Building close relationships with people. (II)	6	28	Telling myself that I have many things to be thankful for. (I)

(Cont'd on next page)

Table 12 (Cont'd)

Items with Highest Means					
Patients			Spouses		
Rank	Item#	Text & Subscale	Rank	Item#	Text & Subscale
6	32	Keeping myself in shape and well groomed. (II)	7	20	Talking with other individuals in the same situation and learning about their experiences. (III)
8	44	Believing that things will always work out. (I)	9	18	Believing in God. (I)
10	1	Trying to maintain family stability.(I)	9	36	Building a better relationship with my spouse. (I)
10	3	Trusting my spouse to help support me. (I)	10	41	Talking over personal feelings and concerns with my spouse. (I)
11	15	Talking with the doctor about my/my spouse's medical condition. (III)			

Table 13

Comparisons Between Patient and Spouse Scores for CHIS

(t-Test Results)

	Correlation Coefficient	t Statistic
Total Score	r=.162 (p=.324)	t=.38 (p=.707)
Subscales		
I. Integration, Cooperation and Optimism	r=.379 (p=.017)*	t=.85 (p=.402)
II. Support, Esteem, and Stability	r=-.046 (p=.779)	t=.42 (p=.677)
III. Medical Communication and Consultation	r=.188 (p=.252)	t=-.73(p=.467)

* Significant

Table 14

Analysis for FACES (Adaptation xX)
(n = 39)

Patients	Spouses
Mean for linear computation= 1.71 Standard Deviation = 0.829	Mean (linear) = 1.54 Standard Deviation = 0.876
Mean Adaptability Score = 189.46 Standard Deviation = 13.71 Cronbach Alpha = r=.448	Mean Adapt. Score = 185.50 Standard Deviation = 14.37 Cronbach Alpha = r=.408
Mean Cohesion Score = 274.00 Standard Deviation = 20.40 Cronbach Alpha = r=.610	Mean Cohesion Score = 265.67 Standard Deviation = 24.43 Cronbach Alpha = r=.688

Reliability

Adaptability Subscales		Adaptability Subscales
Overall subscale	r= .448	r= .408
Assertiveness	r=-.041	r= .104
Control	r= .531	r= .678
Discipline	r=-.341	r=-.563
Negotiation	r= .171	r=-.642
Roles	r=-.193	r= .097
Rules	r=-.242	r=-.259
System Feedback	r= .095	r= .115
Cohesion Subscales		**Cohesion Subscales**
Overall subscale	r= .610	r= .688
Emotional bonding	r= .241	r= .496
Family boundaries	r=-.014	r= .245
Time	r=-.117	r=-.379
Friends	r=-.207	r= .075
Interests & recr.	r=-.724	r=-.073
Independence	r= .286	r= .270
Coalitions	r= .105	r=-.030
Space	r=-.259	r= .277
Decision making	r= .362	r= .356

Table 15

FACES

Items with the Highest Means (Adaptability)

Patients

Rank	Item#	Text	Mean
1	23	We usually check with each other before making important decisions.	(3.59)
3	42	We make all of the important decisions in our relationship together.	(3.49)
3	69	In our relationship, we both share responsibilities.	(3.49)
4	79	Each partner has at least some say in major family decisions.	(3.41)
5	2	We feel free to say what's on our mind.	(3.38)
6	59	In our relationship, it's important for each of us to express our opinion.	(3.36)
7	55	We encourage each other's efforts to find new ways of doing things.	(3.24)
8	12	We have some say in what is required of each other.	(3.17)
9	46	We feel good about our ability to sole problems.	(3.15)

Spouses

Rank	Item#	Text	Mean
2	69	In our relationship, we both share responsibilities.	(3.51)
2	79	Each partner has at least some say in major family decisions	(3.51)
3	23	We usually check with each other before making important decisions	(3.49)
5	2	We feel free to say what's on our mind.	(3.33)
5	42	We make all of the important decisions in our relationship together.	(3.33)
6	59	In our relationship, it's important for each of us to express our opinion.	(3.31)
7	27	We discuss problems and usually feel good about the solutions.	(3.14)
8	55	We encourage each other's efforts to find new ways of doing things.	(3.09)
9	53	When the rules are broken, we treat each other fairly.	(3.06)

Continued on next page

Table 15 (Cont'd)

Items with the Highest Means (Cohesion)

Patients

Rank	Item#	Text	Mean
1	1	We are concerned with each other's welfare.	(3.87)
2	41	We make visitors feel at home.	(3.59)
3	35	We respect each other's privacy.	(3.57)
4	13	My partner and I usually stick together.	(3.46)
5	20	Our relationship is more important to us than any friendship could be.	(3.44)
7	11	My partner and I know where we both are at all times.	(3.40)
7	24	We like to spend some of our free time with each other.	(3.40)
7	76	We are totally involved in each other's lives.	(3.40)
9	64	We know each other's close friends.	(3.36)

Spouses

Rank	Item#	Text	Mean
2	1	We are concerned with each other's welfare.	(3.67)
2	41	We make visitors feel at home.	(3.67)
3	20	Our relationship is more important to us than any friendship could possibly be.	(3.55)
4	35	We respect each other's privacy.	(3.46)
5	24	We like to spend some of our free time with each other.	(3.37)
6	13	My partner and I usually stick together.	(3.29)
7	64	We know each other's close friends.	(3.28)
9	47	Although we have individual interests, we still participate in activities together.	(3.13)
9	76	We are totally involved in each other's lives.	(3.13)

Table 16

FACES

Items with the Lowest Means (Adaptability)

Patients

Rank	Item#	Text	(Mean)
1	83	When trying to solve problems, we jump from one attempted solution to another without giving any of them time to work.	(1.15)
2	17	It is difficult to keep track of what my partner is doing.	(1.17)
3	101	I feel I have no say in how problems are solved.	(1.21)
5	65	My partner and I do not discuss our problems.	(1.31)
5	108	It is hard to know what the rules are in our relationship because they always change.	(1.31)
6	92	For no apparent reason, my partner seems to change his/her mind.	(1.36)
7	95	We rarely say what we want.	(1.38)
8	8	We talk a lot but nothing ever gets done.	(1.49)
9	81	We can get away with almost anything.	(1.53)
10	31	Neither my partner not I seem to keep track of what our duties are.	(1.59)

Spouses

Rank	Item#	Text	(Mean)
1	83	When trying to solve problems, we jump from one attempted solution to another without giving any of them time to work.	(1.23)
2	17	It is difficult to keep track of what my partner is doing.	(1.26)
3	65	My partner and I do not discuss our problems.	(1.31)
5	50	Once a task is assigned to either partner, there is no change of changing it.	(1.32)
5	101	I feel I have no say in how problems are solved.	(1.32)
6	105	I never know how my partner is going to act.	(1.38)
7	92	For no apparent reason, my partner seems to change his/her mind.	(1.40)
8	108	It is hard to know what the rules are in our relationship because they always change.	(1.41)
9	97	My partner tries to control my behavior.	(1.44)
10	95	We rarely say what we want.	(1.45)

Continued on next page

Table 16 (Cont'd)

Items with Lowest Means (Cohesion)

Patients

Rank	Item#	Text (Mean)
1	58	Home is one of the loneliest places to be. (1.18)
3	32	We feel it's "each one for his/her self." (1.21)
3	91	We seem to avoid contact with each other when at home. (1.21)
4	98	It seems as if we can never find time to be together. (1.23)
5	84	We have difficulty thinking of things to do as a couple. (1.28)
6	18	We do not check with each other when making decisions. (1.31)
7	39	We do not turn to each other when we need help. (1.42)
9	16	It seems like there is never any place to be alone in our house. (1.44)
9	60	I find it easier to discuss things with friends than with my partner. (1.44)

Spouses

Rank	Item#	Text (Mean)
1	58	Home is one of the loneliest places to be. (1.14)
2	100	We know very little about each other's friends. (1.23)
3	91	We seem to avoid contact with each other when at home. (1.32)
4	32	We feel it's "each one for his/her self." (1.34)
5	16	It seems like there is never any place to be alone in our house. (1.36)
6	98	It seems as if we can never find time to be together. (1.38)
7	18	We do not check with each other when making decisions. (1.40)
8	39	We do not turn to each other when we need help. (1.41)
9	80	We feel pressured to spend most of our free time together. (1.46)
10	84	We have difficulty thinking of things to do as a couple. (1.51)

Table 17

Comparison of Patient-Spouse Scores - FACES
(Results of t-Test)

	Correlation Coefficient		t Statistic	
Linear Total	r= .119	(p=.469)	t= .91	(p=.367)
Adaptability Raw Score	r= .331	(p=.039)*	t= 1.52	(p=.136)
Adaptability Z Score	r= .331	(p=.039)*	t= 1.52	(p=.136)
Cohesion Raw Score	r=-.089	(p=.59)	t= 1.57	(p=.125)
Cohesion Z Score	r=-.089	(p=.59)	t= 1.57	(p=.125)
Adaptibility Subscales				
Assertiveness	r= .312	(p=.053)	t= -.04	(p=.972)
Control	r= .632	(p=.001)**	t= 1.30	(p=.20)
Discipline	r= .166	(p=.312)	t= 1.52	(p=.136)
Negotiation	r= .308	(p=.057)	t=-1.30	(p=.20)
Roles	r= .415	(p=.009)**	t= 1.21	(p=.233)
Rules	r= .222	(p=.174)	t= 1.12	(p=.269)
System Feedback	r= .257	(p=.115)	t= .31	(p=.757)
Cohesion Subscales				
Emotional Bonding	r= .120	(p=.467)	t= .76	(p=.452)
Family Bonding	r=-.022	(p=.893)	t= .32	(p=.750)
Time	r= .286	(p=.078)	t= .80	(p=.429)
Friends	r= .096	(p=.560)	t= 1.33	(p=.192)
Interests & Recreation	r= .257	(p=.115)	t= .99	(p=.331)
Independence	r= .451	(p=.004)**	t= 1.47	(p=.148)
Coalitions	r= .340	(p=.034)*	t= 1.56	(p=.128)
Space	r= .185	(p=.259)	t= .30	(p=.767)
Decision Making	r= .004	(p=.981)	t= 1.12	(p=.272)

* Significant
** Highly Significant

The curvilinear nature of FACES required eventual adjustment to a linear form for its intended uses as a dependent measure. This was accomplished by measuring the distance from the center of the theoretical model for each of the scales, adaptability and cohesion, with their z score. The z score for each was then squared and summed and the square root was used as the dependent measure. That is, if X_A = the adaptability score and X_C = the cohesion score, then

$$\sqrt{\left[\frac{\bar{X}_A - \bar{X}_A}{SD_A}\right]^2 + \left[\frac{\bar{X}_C - \bar{X}_C}{SD_C}\right]^2} =$$

linear total for FACES. This linear score was incorporated into the analysis of patient-spouse comparisons.

Comparison between patient and spouse score was undertaken for the linear FACES score, the two scale scores and the sixteen subscales (see Table 18). Significant correlations were demonstrated on the Adaptability Scale, and its control and roles subscales ($p=.039$, $p=.009$ respectively). On the Cohesion scale the independence and coalitions subscales were significantly correlated ($p=.004$ and $p=.034$ respectively). There were no significant differences between patient and spouse on this instrument.

In summary, the significant differences between patients and spouses are limited to: the totals for the Impact of Event Scale, in which spouse stress exceeds patient stress ($p=.001$); the FILE subscale "Illness and Family Care Strains," in which spouse-reported stress exceeds patient stress ($p=.006$); and the FIRM subscale "Sense of Financial Well-Being," in which the patient reports more resources than

spouse (p=.014). The third hypothesis of no difference is not supported. There may be significance to the strength of the difference observed at hospitalization, in contrast to the few differences noted
at six months.

Hypothesis One. There are no significant relationships among subjective stress associated with the surgical event, accumulation of stresses within the family, resources for family coping and strategies for family coping.

In addition to the originally identified variables, three others were added to this list for testing. At the six-month follow-up, patients and spouses were each asked to rate, on a 1-4 Likert Scale, the bypass experience in comparison to other difficult experiences in their lives (4 = the most difficult; 1 = the least difficult). This item was believed to represent the perception (cC) variable in the Double ABCX Model. Descriptive analysis revealed the following: patient mean = 2.85, standard deviation = 0.84; spouse mean = 3.09, standard deviation 0.72.

As an alternative to FACES, the Beavers-Timberlawn Family Evaluation Scale (Alternative Adaptation Measure xX) was completed by the investigator after visiting with each of the 41 families. This observational checklist provided a single score for each family, which was also employed in the correlation matrix. Basic descriptive information from this variable included: mean = 45.05; standard deviation = 15.96; and range = 20-65 (healthiest).

The correlation matrices for patient variables and spouse variables appear in Table 18. For patients three correlations achieved significance. FILE and FIRM were negatively correlated at the p .001 level. This supports the theoretical belief that the two are inversely related (that is, increased stress is associated with decreased resources and increased resources is associated with decreased stress).

FIRM was also significantly correlated with FACES at the p=.017 level. This finding does not support the theoretical belief in their inverse relationship (that is, the greater the resources, the healthier the family, and conversely, the fewer the resources the less healthy the family). Keep in mind that with the linear conversion of the FACES score, the lower scores are "healthy" scores and the larger scores represent "unhealthy" families.

The final correlation achieving significance was the patient's subjective appraisal at follow-up (cC) with FACES (p=.026). This negative correlation would support the observation that the "healthier" the family the greater the reported stress, and conversely, the "unhealthier" family is associated with low reports of stress.

For spouses only one correlation achieved significance. The FILE was negatively correlated with the FIRM at the p<.001 level. As with patients, this supports the theoretical belief in the inverse relationship between family stress and family resources.

Table 18

Correlation Matrix Showing Relationships Between
Major Study Variables (Pearson Product Moment Analysis)

(n=39)

For Patient							
Subjective Stress Appraisal #1 (cC)	1.00						
Stress pile up (FILE) (aA)	-0.059	1.00					
Resources (FIRM) (bB)	- 0.193	-0.537***	1.00				
Subjective Appraisal #2 (cC)	0.180	-0.049	0.054	1.00			
Coping (CHIS)	-0.279	0.275	0.262	0.027	1.00		
Family adjustment (FACES) (xX)	-0.067	-0.168	0.380**	-0.357*	0.116	1.00	
Family Adjustment (Beavers) (xX)	0.197	-0.045	0.05	0.012	-0.006	--	1.00

*** p < .001
** p = 0.017
* p = 0.026

(Continued on next page)

Table 18 (Cont'd)

For Spouse

Subjective Stress Appraisal #1 (cC)	1.00						
Stress pile up (FILE) (aA)	0.206	1.00					
Resources (FIRM) (bB)	- 0.076	-0.546***	1.00				
Subjective Appraisal #2 (cC)	-0.094	0.031	-0.168	1.00			
Coping (CHIS)	0.-68	-0.022	0.109	0.036	1.00		
Family adjustment (FACES) (xX)	0.105	0.129	-0.052	0.128	-0.064	1.00	
Family Adjustment (Beavers) (xX)	-0.063	-0.056	0.036	0.196	0.202	--	1.00

*** p <.001

Finally, the third additional variable, patient anginal class, was employed in this analysis (see Table 19). This single value was employed per family as another variable to correlate with the set of patient's variables and spouse's variables. The anginal classification did not correlate significantly with any of the major study variables.

Table 19

Correlation of Major Study Variables for Patient and Spouse to Anginal Classification of Patient

Study Variables	Correlation of Anginal Class. to Patient Score	Correlation of Anginal Class. to Spouse Score
Subjective Appraisal of Stress #1 (C)	r = 0.175 (n.s.)	r =-0.019 (n.s.)
Stress Pile Up (FILE) (aA)	r = 0.146 (n.s.)	r = 0.154 (n.s.)
Resources (FIRM) (bB)	r =-0.179 (n.s.)	r =-0.299 (n.s.)
Subjective Appraisal #2 (cC)	r = 0.057 (n.s.)	r = 0.0 (n.s.)
Coping (CHIS)	r = 0.067 (n.s.)	r = 0.197 (n.s.)
Family Adjustment (FACES) (xX)	r =-0.064 (n.s.)	r = 0.137 (n.s.)
Family Adjustment (Beavers) (xX)	r =-0.041 (n.s.)	r =-0.041 (n.s.)

The first hypothesis was of no relationship and is not supported. Four correlations achieved significance among those tested: the patients' FILE with FIRM; the patients' FIRM with FACES; the patients'

FACES with the subjective appraisal of the situation at six months; and the spouses' FILE with FIRM.

Hypothesis Two. Family functioning at six months is not significantly contributed to by subjective stress associated with the surgical event, accumulation of stresses within the family, resources for family coping, or strategies for family coping.

A stepwise multiple regression of the major study variables was undertaken to address Hypothesis Two. The results appear in Table 20.

For patients the major significant contributor to a level of family functioning was the FIRM, accounting for 14% of the variance. The variance was increased by an additional 14% with the introduction of the cC variable, subjective appraisal at follow-up. Adjusted for each other, each variable contributes significantly at the p .01 level. None of the three remaining variables added to the model. Together they total an additional 1% variance.

The same analysis was undertaken with the spouse variables; none were significant contributors to the dependent variable.

The regression was undertaken with several other dependent measures. Each of the FACES scales, Adaptability and Cohesion, were employed as was Beavers, as a dependent measure. None of the variables, for patient or spouse, contributed significantly to any of these additional measures.

Table 20

Multiple Regression of Study Variables onto Dependent Variable (FACES)
(Stepwise Procedure)

Patients

Variable	R Square	df	Sum of Squares	Mean Square	F Value
Step 1: FIRM (bB)	0.1447	1	3.7751	3.7751	6.258
		37	22.3198	0.6032	p < .05
Step 2: Subject. Appraisal #2 (cC)	0.2878	2	7.510	3.755	7.273
		36	18.585	0.5163	p < .01

The remaining study variables were insignificant, adding a total of 1% to the variance.

Significant Variables adjusted for each other at Step 2

FIRM (bB)	F = 8.099	p < .01
Subjective App.#2 (cC)	F = 7.234	p < .01

Spouses

Variable	R square	df	Sum of Squares	Mean Square	F Value
Subjective Appraisal#2 (cC)	0.027	1	0.7875	0.7875	1.027
		37	28.356	0.7663	(n.s.)
FILE (aA)	0.037	2	1.083	0.5416	0.6949
		36	28.0605	0.7795	(n.s.)

Neither is significant when adjusted for the other.

In summary, the greatest contributor to a level of family functioning, as described by the patient, appeared to be be the patient's assessment of resources, as described by the FIRM. The patient's subjective appraisal of the bypass experience at follow-up was also a significant contributor to a level of family functioning; however, 71% of the variance is unaccounted for. None of these predictors appeared to be significant for the spouse.

Summary

Among the quantitative findings of significance were the apparent shift in patient-spouse differences between hospitalization and follow-up at six months. Significant differences were seen on the stress variable at hospitalization (Spouse Patient, p=.001). At follow-up, differences were apparent on only two instrument subscales, the FILE "Illness and Family Care Strains" (Spouse Patient, p=.006) and FIRM, "Sense of Financial Well-Being" (Patient Spouse, p=.014).

The multiple correlations among the major study variables were limited. For the patient, significant correlations were seen between the FILE and FIRM; FIRM and FACES, and the patients' subjective appraisal at follow-up and FACES. For the spouses the only correlation achieving significance was the FILE with the FIRM. The patient's anginal classification did not correlate significantly with any study variables.

Finally, two variables accounted for a significant amount of variation as contributors to family functioning. The patients' FIRM

and subjective appraisal at follow-up each contribute 14% of the variance at a level of significance p=.01. No spouse variables were significant.

Emergent Findings. Through the months of discussion with couples about their experiences during and following bypass surgery the investigator became aware of themes and patterns associated with the experience. While no single family spoke of every theme and all families did not acknowledge or observe these phenomena, these findings are shared as an approximate representation of recovery. Through this generalization it may be possible to identify other fertile areas for study.

The peri-operative period has been discussed as a period of high stress for the family, particularly the spouse (Gortner et al., 1982). This observation has been presented and supported with qualitative and quantitative evidence. It is further supported by the interview data of the current investigation, vis-a-vis the retrospective analysis of the couple. In response to the first prompt the couple, often the spouse, began to tell a story about the hospitalization which was unusually rich with details about the Intensive Care area, the Waiting Room, the volunteer personnel, persons in the next bed, and nurses and physicians who provided care. After several families had been interviewed, and the length of the meeting exceeded the investigator's expectations, it was noted that families were taking up to one hour of the interview to "relive" the hospitalization. Among the

hospital-based problems cited through this review were: smoke-filled waiting rooms; limited access to physicians; nurses who forgot to remove thermometers; longer than expected waits for patients to return from surgery because personnel forgot to notify family that the patient had returned; incorrect medication being administered by nurses who appeared reluctant to concede their error; and inappropriately extensive discussion of surgical risks by young physicians in training.

For many the discharge to home was a mixed blessing. While patients were happy to be in their own beds, spouses were often frightened of the responsibility to care for them. Patients had a great deal of pain and difficulty moving. Spouses helped them into and out of beds. For those who did not take the urinal from the hospital for home use, the trips to the bathroom, alone, represented a great effort. It was necessary to be clever and learn how to limit pain and anticipate needs. New diets and menus needed to be invented. New medications were initiated, each with difference results and side effects.

Concurrently, the spouse was beginning to "let down" in the privacy of the home following the days, sometimes weeks, of a public presentation of self which was alert, concerned, rational, nurturing, and omnipresent. One spouse who shared a diary she kept during these days wrote:

> Home Wednesday: sheer mental and physical exhaustion. Sleep. Wish food were (sic) already planned. Home quiet. Phone off the hook. Where's J. (spouse) to sleep? Near but not with D. (patient). Soft music. Noises still bother us. Nervous systems still need rest.

The entry for the following day reflects increasing energy, but describes the recovery from exhaustion:

> Thursday. First (semi-) restful sleep. Up at 9, shower and eat. 2½ hour nap. Early to bed. Sleep on floor. Can watch T.V. Nerves better. Phone still jangles nerves -- took off hook. Had called all that needed to hear.

Only after two days does the spouse's entry reflect any beginning normalization:

> Friday. Started to get into a routine for self, D. (patient) and heart program.

Noteworthy is the fact that this family had a young teenage daughter living at home who was with them during these days. The entry for the following day acknowledges this teen and the spouse's ability to listen to her again after three days at home. From hospital contact with this couple all judged them to be a delightful, warm, intelligent, and responsible pair.

While not all families provided the same elegant detail about their first few days at home, many spouses identified these early days as the most difficult and frightening. They experienced their feelings of responsibility for the patient and his condition. They were worried that the patient might develop problems, or overextend themselves and they would not know how to remedy the situation.

For the most part, patients stayed quiet in their first week at home. Their fatigue and physical pain sufficiently limited them so as to reduce the need for limits imposed by the spouse. After that week, however, patients began to physically "test" themselves. Some began to exercise. Others cut down trees in their backyards. This appears to have been where the trouble began for some families.

Patients who found it difficult or painful to accomplish the activity chosen as their "test" became discouraged or depressed. Some reported their fear that they would never be "normal" again, that this was the beginning of their physical deterioration. Others, who did succeed in their self-imposed "test" continued to extend themselves, as if to find their actual physical limitation. The latter group caused, through their activity, much concern in their spouses who believed it was their responsibility to protect the patient from himself.

Within the first month, then, the couple often found themselves estranged from one another. In isolation, each was carrying out a responsibility he or she believed to be his major responsibility at the time. Yet, the mate provided the major obstacle to success. Conflict followed.

Patients and spouses would argue over what the patient could or should do. The conflict was generally described to grow from the early acts of protecting, which the investigator coined "hovering." The spouse often would not let the patient out of sight. For most couples this was a radical departure from their routine day in the past when he would work and return home in the early evening. Wives checked in on husbands frequently; husbands resented the lack of privacy and their growing complaint was "Don't treat me like a child!" Sometimes in response to being treated like a "child" the patient extended further his range of activities.

Spouses were not sure how to respond. Some pushed harder to control the patient by enlisting the physician or family members to set limits. Some relinquished the responsibility which they believed

they could never realize. "He's a big boy. If he wants to kill himself I can't stop him." However, many were angry and reported thinking, "Doesn't he realize this affects me? Doesn't he see how selfish he's being?" This anger and disagreement tended to further alienate the struggling couple from one another.

Not all couples experienced this series of happenings. However, neither had all resolved the experience before the follow-up interview. Clearly, several families hoped to bring about or begin resolution through their meeting with the investigator. One family assembled all members of the immediate (nuclear) family for the interview and made it clear at the outset that they hoped we could "talk some sense into him." Their belief that his physical activity was dangerously extensive seemed unfounded; however, their self-reported interactional pattern of "ganging up" on family members was recognized during the four hour meeting. A daughter who had previously been estranged in a similar manner was able to reach out and provide support to the father. Further, the investigator recommended a cardiac rehabilitation exercise program for expert advice on the patient's physical abilities.

In another family, the spouse had already been evaluated for and was beginning psychotherapy. She used the interview to tell her husband of this and share her observation that "I'm not blaming you, but I need this because of all the stress I experienced from your surgery." In still another interview, the patient began by explaining that there had been no problems, "Surgery was easy and I am fine." His wife began to speak of her memories and within moments she was

screaming and crying, "He doesn't see what this has done to me. He thinks it's all a joke."

For the couples who had resolved these conflicts, there seemed to be a pattern to the process of resolution. Just as the patient attempted to test himself, the spouse, too, tested. Spouses worked to accumulate proof that the patient was no longer fragile. The successful completion of activities constituted proof. For some this evidence came from watching silently at the edge of the kitchen curtains as the patient cut the grass. If he took no nitroglycerine, he was "safe" to do it again. Another major undertaking was the return to work. Many spouses indicated that once the patient had gone back and worked a full day or two without problems they ceased to worry.

A second major source of "proof" was provided by the appraisal of another, primarily the physician. For this reason the couple often saw the six-week follow-up with the cardiac surgeon as a milestone. "When the doctor says you're fine, you're fine." Because so much emphasis was placed on this appraisal and it was often the first contact with the health care system since discharge, couples approached the visit with high hopes and many questions. Most reported great dissatisfaction with this contact. Often they did not see their surgeon, but a resident whom they did not know. Their hours of travel resulted in 15 minutes of physician contact, in which the patients reported they were unable to ask their questions and their complaints were minimized as "normal." One patient asked, "Why did I have to travel six hours and pay $175.00 for that? It was a waste of

my time and money." Many others expressed agreement. The visit did serve, however, to issue the needed appraisal of the patient condition. This visit at six weeks coincides with the interval in which 61% of the sample indicate that the surgery became less central to their lives.

Chapter Summary

In this chapter the study findings have been presented. The sample was described and found to be comparable to the reports of Gortner et al., 1982 and Kennedy et al., 1981.

Interview findings were presented and summarized as were the findings from the study instrumentation. Finally, the emergent findings were presented as a generalization of family experience from hospital through the six week follow-up visit to the cardiac surgeon.

CHAPTER V

DISCUSSION

A discussion of the significant findings of this study is the focus of this chapter. As with the preceding presentation of the findings, the Discussion will review: (1) Sample; (2) Interview Findings; and (3) Instrument Findings. The conclusions of the study serve to close the chapter.

The Sample

Attrition

While the rate of attrition for this study is quite respectable, given the circumstances of sample selection and consent process previously discussed, and the need for two consenting persons to represent the unit of analysis, there appears to be valuable data in reviewing the characteristics of those families who refused to participate in the follow-up. The comparison to Gortner's sample suggest they are those subjects with less severe disease or those with Left Main Vessel Disease. It appears that the male patient attrition was in the older patients.

The qualitative data collected around access suggests that these families did not wish to talk about surgery. They often responded to the investigator's request for a visit with, "What's there to talk about? It's over. I'm fine." The notion that the interview was a provocative experience was expressed by several couples who indicated that they had, in preparation for the visit, talked about surgery

again for the first time in months. The emergent findings presented support that the interview was seen by some as provocative but potentially therapeutic. Thus, it is possible that those who chose not to participate in the follow-up were those couples who could not face talking about the surgery and recovery process. Presumably, by the organizing framework employed in this study, those families would be judged as less healthy than those able to discuss their experiences.

Despite the sample attrition, the profile of subjects remain similar to those randomly selected for the CASS study. This lends support to the generalizability of this study's findings to the larger population of families with adult members undergoing bypass surgery, despite the smaller size and convenience sampling techniques employed.

Interview Findings

The interview data allowed the investigator to observe that most people had postoperative problems, yet most described themselves to be healthy and recovering well. Some with problems did not describe themselves as healthy. What accounts for this difference?

The "Meaning" of CABG. Extended beyond the immediate peri-operative and post-operative period, the investigator has been curious as to why patients decide to have bypass surgery and what are their expectations out-of-conscious awareness. It would appear that subjects attach a "meaning" to the bypass. That meaning is highly personal and elusive, growing out of the life history of the patient and family. This meaning has much to do with the process of recovery.

For instance, one subject suffered from two M.I.'s before his bypass. After the second M.I. he lost his job, which was actually eliminated from the company. He expressed great shock and felt betrayed that the company would do this to him. He had always worked, and worked hard. Following surgery he did well. He received disability which supported him and his wife comfortably. They were spending a great deal of time together and enjoying it. At three months he was told he could return to work when he felt like it. Within the week he developed debilitating angina. Though he has continued to travel extensively with his wife, the doctor now says he should not return to work. (Another patient casually observed during an interview that the reason most "guys" don't recover is "They don't like their jobs.")

For some patients and families the surgery represents renewal; for others it seems to be a signal to outsiders that the life of the family is beyond their control. Two families with male patients in their early forties reported similar preludes to surgery. In one family an old marriage ended in a difficult divorce. Within one year the patient remarried, but was denied access to his children. The new wife's son, 17 years old, refused to attend high school, and moved himself and his girlfriend in to live with the patient. Much conflict followed, between patient and spouse, mother and child, and step-father and son. Finally, the patient sat down to tell the teens they would need to move out of the house. It was a difficult discussion for him and he was unsure of his wife's support. The next day he had an M.I. This occurred within the first three months of the new marriage.

In the second family, the ten months preceding surgery had included a job change, a fire destroying the home, a burglary of the home, and vandalism to the family automobile. Those events occurred within six months of the new marriage (her fourth, his third) and culminated in his M.I.

The context in which the behaviors of seeking, undergoing and recovering from bypass surgery occur needs to be understood to predict recovery. Unfortunately, this meaning, as derived from context, appears to be extremely elusive.

Change and Conflict. With respect to the changes in family life reported by patient and spouse, few appear to be of enduring quality. Rather, they are responses to the requirements of a situation which is changing. For example, the worry and conflict reported by spouses is problematic for them during the recovery period; but for most it has dramatically decreased by the follow-up. These behaviors are signs, rather, that the family unit is struggling to balance itself. For some couples the conflict provided an opportunity to learn new ways of living together, and thus were productive. Perhaps the essential question arising from this observation is: What is a healthy amount of conflict? Just as an increase in blood supply is necessary to heal a wound, an increase in conflict is sometimes necessary to solve a problem. But extending the parallel, do we distinguish healthy and unhealthy conflict with families as well as we note the differences between rubor and hemorrhage?

The family paradigm as developed by Reiss and Oliveri (1980) and Reiss (1981) discusses conflict as a method undertaken by families to

resolve differences. The resolution of such differences is necessary for the growth and development of the family. While the couples sampled in this study have experienced a stressful event, challenging their shared view of the world, and have also reorganized themselves following the event, most were unable to report those more enduring adjustments. The investigator observes that a major, under-reported change was the appreciation of one's own mortality, and for the spouse, the virtual inevitability of widowhood. This fear of being alone was a major anxiety in female spouses.

Instrument Findings

The study instrumentation, while extensive, appeared to have been useful. Patients and spouses were cooperative in completing the forms, and all instruments, except FACES, demonstrated high levels of internal reliability. In view of the results two areas seem to require comment: (1) the use of FACES; and (2) the significance of the shift in patient-spouse differences between hospitalization and follow-up.

FACES. The circumplex model which serves as the theoretical basis for FACES presents complications to the use of FACES as a dependent measure in studies with relatively small samples. Though a larger sample might be compatible with discriminant techniques, the smaller study requires the conversion of the FACES scores to a single linear value, as described in Chapter 4. In doing so the elegant model proposed by Olson et al. (1979) is collapsed from its 16-fold typology to numbers which approximately divide healthy, from

mid-range, from the unhealthy. And in doing so these three groups have lost the ability to further discriminate the chaotically disengaged family, for instance, from the rigidly enmeshed family. The characteristic behaviors of these types differ, and thus, it is reasonable to assume that the variables which significantly contribute to each style might also differ from one another. It was not possible to discern that in this study.

This grouping together raises other theoretical questions about health and non-health in families. Are the extremes in the unhealthy grouping equal to one another in their "unhealthiness?" Does chaotic disengagement have advantages over rigid enmeshment? Further, how is health defined for families? One of the highest scoring families by clinical observation on the Beavers contained members whose individual health practices were destructive. What is the relationship between family members and the family unit with respect to health?

Though highly recommended by family researchers, FACES proved unreliable in this administration. It is conceivable that as the final instrument in a series of four, the subjects became fatigued and did not concentrate during the administration of FACES; however, no trend toward this is evident in reviewing other instruments, and the patient and spouse reliability alphas are nearly identical. FACES had not previously been used with the other study instrumentation. Rather, all previous validation studies of the FILE, FIRM, and CHIS (nee CHIP) were conducted with Moos' Family Environment Scale (FES) (1976). While it is possible that FACES is an inappropriate dependent measure it is unlikely. It is a theoretically consistent model,

though not linear. Both the FES and FACES evaluate cohesion. In early testing of the model, the FES Cohesion Subscale correlated positively with FIRM and the CHIP (I) Subscale, "Integration, Cooperation, and Optimism" and negatively with the FILE at highly significant levels ($p < .01$) (McCubbin and Patterson, 1981).

Those variables which did significantly correlate with FACES were the patients' FIRM (positively) and the patients' appraisal at follow-up (negatively). The interpretation of this correlation is as follows:

FIRM/FACES: Those reporting high resources were from unhealthy families.

Appraisal/FACES: Those who acknowledge the stressful nature of the CABG were from healthy families.

In view of the questionably reliable administration of FACES, interpretations must be made with great caution. These variables account for 28% of the variation in FACES scores; therefore, some interpretation is warranted.

In the early validity studies of FIRM conducted by its developers, it was hypothesized that the FIRM would correlate moderately with selected scales from the FES. Support for this hypothesized relationship appears in McCubbin's initial presentation of the instrument (McCubbin, et al, 1981). The FIRM correlated positively with the scales of cohesion, expression and organization and negatively with conflict (all $p < .001$).

As this evidence serves as the major support for the theoretical model, three points are of interest. First, McCubbin's sample

included families who were experiencing the stress of a chronically ill child rather than a chronically ill adult. It is possible that while the model explains the behavior of those families is is not adequate for the older adult family. It is likely that those families with a longer history together are subject to different variables. In addition, the individual developmental levels of the involved persons provide resources that differ from those of the younger family. Thus, the age of the family and its members (and perhaps other characteristics of the family) may be important variables not accounted for in this model. Second, with respect to the statistical techniques employed by McCubbin, the correlation matrix which presents the evidence for the FIRM's correlation with the scales of the FES does not appear to separate the scores of sampled mothers and fathers. The scores of family members are not considered to be independent and therefore, should not be grouped together. By doing so the published correlations reflect the family correlatedness are falsely inflated. Finally, McCubbin's report on the FIRM shows the mean for the FIRM subscales to be higher among those families with low conflict (i.e., the healthier families) and lower among those with high conflict. The observation of the current investigation supports that conflict is a necessary phenomenon undertaken to bring about a resolution of differing ways of seeing. Conflict, itself, is not an indicator of an "unhealthy" family. Rather, as an instrument of coping, conflict should be expected to vary in level over the life span of a family.

With respect to other correlations, the FILE/FIRM negative correlation is significant for both patient and spouse at the p=.001

level. This is of interest for several reasons. First, because the investigator came to appreciate that FILE was not validly identifying the stressors that were being described in the interview and, therefore, had approached the analysis with little belief in its possible usefulness. For example, couples would indicate that a son had been killed in a car accident, or had been arrested, or had committed suicide and not reflect this event on their FILE report. It appeared that subjects often "decided" that they had not experienced stress before taking the FILE and then somewhat indiscriminantly selected their answers. Continuing with this line of thought, the high alpha coefficients were achieved for this instrument because both patient and spouse behaved similarly in making their selections. While the report suggests it is a reliable measure, the investigator questions its validity as a measure of stressful accumulation of events. Second, of the relationships suggested by the theoretical model, this is the only one which was demonstrated.

Difference. The difference in scores between patient and spouse disappeared between hospital data collection and follow-up. This investigator believes this to be further support for the process described and discussed earlier. The emergent findings and the quantitative view of differences support that patient and spouse resolve the differences over the six-month interval. Rather than support the primary theoretical model, this finding seems to support Reiss and Oliveri's (1980) description of the resolution of differences in their work on the family paradigm.

Conclusions

In view of the study discussion the following conclusions seem warranted:

1. This study has not supported the theoretical model proposed by McCubbin and Patterson (1981), the Double ABCX Model. This may indicate that adult families do not respond to the stress of chronic illness as do younger families with child members who have a chronic illness.

2. This study has identified significant differences between patient and spouse variables measured at time of hospitalization which are not seen again for variables measured at the six month follow up. This may indicate that some process of renegotiation or reconciliation is ongoing during that six month interval. Such negotiation supports Reiss and Oliveri's description of the family paradigm (1980).

3. This study has identified the positive role played by conflict and has questioned the assumption that high levels of conflict indicate unhealthiness in a family. Rather, the study suggests that a level of conflict may indicate that change is ongoing. The range of conflict which contributes to health or illness is not known.

4. The definition of health for a family is elusive. The family's description of itself and its ability to accomplish its own goals may serve as the best guide to predicting family health.

CHAPTER VI

SUMMARY

This final chapter summarizes the study aims, framework, background, design, methods, findings, and discussion. Study limitations, implications for nursing science and recommendations for further study are developed.

This study proposed to extend our understanding of the qualities of the family unit which enable it to remain well-functioning in the face of the stresses of chronic disease. Families of patients suffering from coronary artery disease who had undergone coronary artery bypass grafting procedures were sampled during the period of hospitalization and again during the recovery period in an attempt to identify the stressful impact of the surgical event, accumulation of recent stresses, coping strategies employed, resources employed, and the level of family functioning. In addition to refining the methodological approaches to investigation of the family, the purpose of this inquiry was to determine the best predictor of family functioning in the recovery period.

Specific aims of the study were:

1. to examine the relationship of patient reports of stress, resources, coping and adjustment to that of spousal reports;

2. to describe the relationships among the subjective stress associated with the surgical event, the accumulation of stresses within the family, the resources for family coping, and the strategies employed in family coping;

3. to identify the variables, among those listed, that were significant contributors to family functioning in the post-hospitalization period; and

4. to describe some elements of the nature of the social processes of recovery as related to the marital pair.

It was hypothesized that low levels of stress related to the surgical event, low accumulation of stresses, multiple resources for coping and high levels of coping would be associated with high levels of family functioning, based upon family stress theory.

Design

This descriptive study was longitudinal in design. Subjects were interviewed during the time of hospitalization and again at home between the fifth and seventh month following surgery.

Sampling

Sampling was made possible through a parent project in which persons between the ages of 40-75, married to a consenting spouse, and who were undergoing a first CABG procedure, not associated with other cardiac repair or immediate post-operative complications, were approached at two large academic medical centers on the West Coast, University of California, San Francisco's Herbert C. Moffitt Hospital and Stanford University Medical Center. Seventy-one couples comprised the original surgical bypass sample in both these settings; of this number forty-six consented to participate in the present, follow-up study.

Procedures

At the time of hospitalization each patient was interviewed between the third and eighth postoperative day, using a semi-structured interview schedule focusing on the illness experiences of the patient and the family prior to hospitalization. The length of this interview was expected to be approximately one hour. Family members were encouraged to participate in this interview as they were available. Following the interview, an Impact of Event Scale (Horowitz, 1979) was completed by the patient and spouse. In most cases the Scale was not be completed with the investigator present, but at the convenience of the subjects.

The follow-up was to occur in the home five to seven months following hospitalization. Contact was re-established by a letter which reintroduced the investigator and the purpose of the follow-up visit.

Prior to the visit, a packet consisting of two instrumentation booklets (containing the FILE, FIRM, modified CHIP, and FACES) and a cover letter was sent to the subjects by mail. The cover letter confirmed the appointment time, thanked the couple for their participation, reiterateed the purpose of the visit, and instructed them in the completion of the booklets. Each person was advised that there were no correct or incorrect answers, and that spouses often disagree. They were asked to work independently and to try to complete the booklets before the visit. It was suggested to them that most people complete the booklets in one hour. The follow-up visit was scheduled at the convenience of the couple, in their home. It was expected to take one to two hours to complete. A semi-structured

interview guide was employed, focusing on the patient's return to health, changes in lifestyle and health behavior, and the impact of the experience upon the couple's life together.

Following each visit, brief field notes of the visit were recorded and the Beavers-Timberlawn Family Evaluation Scale was completed by the investigator.

Analysis

The plan for the overall analysis of the data included strategies from both quantitative and qualitative approaches. The hypotheses and study aims served to organize the plan for analysis.

Hypothesis One and Hypothesis Two. These were addressed through a multiple correlation and regression procedure, employing a simultaneous approach. This was accomplished by analyzing the spouses separately from the patients and reported the results of each analysis. This was a necessary treatment of the data as the patient-spouse scores were recognized to be non-independent samples and there was no provision for treatment of their score as a single unit. While the scores for the couple could be meaned to present a single score for the couple, this approach was not chosen as it was believed to obliterate potentially valuable insights into the data.

Hypothesis Three. Each of the separate variables was analyzed for the level of internal reliability, again separating the patient from the spouse scores. For each variable a score was reported for patient and a separate score for spouse. The differences between scores for each patient-spouse pair was calculated with a matched pair t-test. The correlations of the scores was be reported with a Pearson Product Moment.

Aim 4. The social process of recovery was described from the data source of the in-home interview and observations. A grounded theory approach was used to generate these findings.

The Sample

The sample for this investigation included 43 families. This represented a 39% rate of attrition during the six month interval between hospitalization and follow-up. Male patients exceeded female patients at a 6:1 ratio and were several years younger than the study females (55.7 years versus 62.3 years). Upper middle class Caucasians dominated the sample. The physiological characteristics of the sample are comparable to Gortner et al. (1982) and CASS (Kennedy, 1981) with respect to the higher proportion of elective surgery, the frequency distribution of anginal classifications, and numbers of infarcts. The current study sample has a significantly higher percentage of 3-4 vessel disease than either the Gortner or CASS reports.

Interview findings

Most subjects report some problems during the recovery phase. Despite this they indicated they were healthy and recovering well; they believed their physicians shared the appraisal of their health and progress. Of the health practices that the patient might employ to aid in his recovery, most use medications, exercise, and diet, in that order of frequency. While return to work has been identified as a major motive for undergoing a CABG in other studies the work status of those sampled did not change significantly.

The changes that were described included worry, conflict, protectiveness and a change in the quantity and quality of involvement sought in life. The majority of families (80%) believe they were refocused on events other than surgery by the six-month follow-up; however, 20% still experienced the surgery as central to their lives.

Instrument Findings

Among the quantitative findings of significance were the apparent shift in patient-spouse differences between hospitalization and follow-up at six months. Significant differences were seen on the stress variable at hospitalization (Spouse > Patient, p=.001). At follow-up , differences were apparent on only two instrument subscales, the FILE "Illness and Family Care Strains" (Spouse > Patient, p=.006) and FIRM, "Sense of Financial Well-Being" (Patient < Spouse, p=.014).

The multiple correlations among the major study variables were limited. For the patient, significant correlations were seen between the FILE and FIRM; FIRM and FACES, and the patients' subjective appraisal and FACES.

Conclusions

In view of the study discussion the following conclusions seem warranted:

1. This study has not supported the theoretical model proposed by McCubbin and Patterson (1981), the Double ABCX Model. This may indicate that adult families do not respond to the stress of chronic illness as do younger families with child members who have a chronic illness.

2. This study has identified significant differences between patient and spouse variables measured at time of hospitalization which are not seen again for variables measured at the six month follow up. This may indicate that some process of renegotiation or reconciliation is ongoing during that six month interval. Such negotiation supports Reiss and Oliveri's description of the family paradigm (1980).

3. This study has identified the positive role played by conflict and has questioned the assumption that high levels of conflict indicate unhealthiness in a family. Rather, the study suggests that a level of conflict may indicate that change is ongoing. The range of conflict which contributes to health or illness is not known.

4. The definition of health for a family is elusive. The family's description of itself and its ability to accomplish its own goals may serve as the best guide to predicting family health.

Study Limitations

The limits of this study must be noted, particularly as they affect the interpretation of the study findings.

To begin, the study employed a small convenience sample that included patients who had undergone a single surgical procedure, that of coronary bypass surgery. While the sample was consistent with those reported by Gortner et al. (1982) and CASS (Kennedy et al., 1981), a conservative approach would suggest limited generalizability beyond the study sample. That is, the findings of the current investigation describe the study sample and may not be representative of any larger group. The study attrition further limits what this

study is able to say about the larger group of families undergoing bypass procedures. Therefore, the first limitation of this study is its generalizability.

The theoretical model prescribed the time intervals for sampling in this study, and in doing so a major piece of information was overlooked. It is likely that the level of family functioning before surgery has an impact on the level of functioning in the follow-up period. The second limitation, then, is that by following the recommendation of the theoretical model, important observations were not made. The model itself is limited. While this was acknowledged early in the work and addressed as an issue which paralleled clinical reality, the scientific understanding of the phenomenon of family response is compromised. Therefore, this study does not address whether the illness and surgical event changed family functioning.

Inherent in a study which involves self-report and observation is the threat of collecting unreliable data. It is possible that the biases of the investigator, the data collectors, and the subjects themselves interfered with the report of actual happenings. The social desirability of a particular appearance may have influenced the respondents to report events in a non-representative manner.

With respect to data statistically analyzed, there are two major limitations. First, the low reliability of the dependent measure, FACES, calls into question all interpretations of the study findings may be spurious. The fact that the Beavers Timberlawn Family Evaluation Scale proved no better as a dependent measure strengthens the interpretations. However, the biases related to observation have already been noted. Second, this investigation has employed multiple

tests for significance in the analysis. In doing so the danger of making a Type I (Alpha) Error is increased. That is, there is an increased threat of concluding that a finding is significant when it is not. As a result, the reader must be cautious in interpreting significance, and it is suggested that a more stringent alpha be employed for significance.

Implications for the Science of Nursing

The significance of this work, as expressed in the opening chapters, was intended to be twofold. First, the study proposed to extend our understanding of the family unit coping with stress. Second, it was hoped that a predictor of outcome could be identified so as to assist the clinical nurse during hospitalization or follow-up in his or her care of the patient. In doing these, the science of nursing and particularly, the organization of our knowledge would be enhanced. Some of these objectives have been accomplished through this investigation.

Nursing science proposes to understand the client in his/her effort to adapt and achieve his/her relative maximum level of health throughout the life span. Thus study has added to our understanding of how this happens in family (couple) groups following the experience of coronary bypass surgery. Couples have described a painful process of change and healing and indicated their need for assistance in this process. The study has described, however, the inherent adaptive capacities of the family group; these should not be overlooked as applications are made to the clinical science of nursing.

This investigation has helped to identify that the Double ABCX model does not account for the variability seen in the study families as they adapt to a stressful experience. It suggests that as a theoretical basis for nursing practice other variables must be included. This is especially significant to nursing at its present stage of development. Theory building and the identification and clarification of the science of nursing are a professional priority; we hope to build nursing theories of practice on sound knowledge from the other sciences.

Emanating from the observations made regarding the phenomenon of family response to stress of surgery and recovery, it must be noted that the family is a resilient, adaptive unit. Care of that unit must consider its abilities. While families expressed need for information, assurance, and guidance during recovery, no family said they did not believe themselves able to negotiate recovery. They asked for support. This support might be offered in any number of ways to ease the adaptation made by these families. Rehabilitation groups are widely available and patients and families need to know of them and their offerings. Discharge planners, clinical nurse specialists, and others need to make the referrals of these patients to the nurses in the rehabilitation programs. Socially and politically there are obstacles which now prevent this.

Support groups consisting of healthy families who have experienced the stress of bypass surgery, and an informed resource person (nurse) can add much to the recovery period. Such groups would permit ventilation, reduce isolation, and offer much information to the recovering family. Interventions of such an assistive nature

would permit the family to continue to maintain its privacy and negotiate its intimate issues but with additional support and information.

Finally, additional opportunities for continuing the nursing care of these families must be made available. Telephone or home visits prior to the six-week clinic check-in with the surgeon appear indicated.

Recommendations for Further Study

In view of the findings of the current study several areas for further study are suggested.

In an effort to further clarify the usefulness of the McCubbin model with adult families a replication of this study might be conducted in which the sampling plan would be modified. This modification would be toward establishing some contrast groups of varying ages. Perhaps there is a difference between the cohort of persons in their forties and those in their seventies. Separation of the contrast groups by length of marriage or developmental level of the family could be illuminating.

Replication with a larger sample of families would allow the use of discriminant techniques. A modification of the design in this manner would provide insight into the use of the FACES with the ABCX theoretical model. However, a larger replication of this study would require extensive financial and time resources.

More relevant to the original question and the clinical concerns raised in this investigation is the further analysis of the existing

sample data. This would be undertaken in an attempt to create a set of descriptors would distinguish between healthy and unhealthy families at six months. Extensive data have been collected and might be reorganized to provide additional insights into the family process of recovery. It is suspected that by reorganizing the data set to profile each family, the significant characteristics would become more evident than they are in the present study.

Also of interest is the closer study of the family during the first six weeks of the recovery. It is clear that this is the time of greatest adjustment and therefore, greatest vulnerability. A study of the effects of nursing intervention at this time would provide insights into the ways in which nursing might be able to influence the trajectory of recovery.

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APPENDIX A

CLINICAL RATING SCALES FOR THE CIRCUMPLEX MODEL OF MARITAL AND FAMILY SYSTEMS

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FAMILY COHESION

	SCORE	DISENGAGED 1 2	SEPARATED 3 4	CONNECTED 5 6	ENMESHED 7 8
EMOTIONAL BONDING (Feelings of Closeness)		Extreme separateness. Lack of closeness or loyalty.	Emotional separateness encouraged and preferred. Need for support respected.	Emotional closeness encouraged and preferred. Need for separateness respected.	Extreme closeness. Loyalty demanded. Separateness restricted.
INDEPENDENCE (Versus Dependence)		High independence. Family members depend on themselves.	Independence encouraged and preferred. Dependence acceptable at times. Many needs met outside family.	Dependence is encouraged and preferred. Independence acceptable at times. Many needs met within family.	High dependence of family members on each other.
FAMILY BOUNDARIES (External Relationship)		Influence of outside people and ideas unrestricted.	Open to outside people and ideas.	Some control of outside people and ideas.	Influence of outside people and ideas restricted.
COALITIONS (Marital) (Sibling) (Generational)		Weak marital coalition. Poor sibling relationship. Blurred generational lines.	Stable marital coalitions. Stable sibling relationship. Fluid generational lines.	Strong marital coalitions. Stable sibling relations. Stable generational lines.	Weak marital coalitions. Parent-child coalitions. Blurred generational lines.
TIME (Physical and/or Emotional		Time apart from family maximized. Rarely time together.	Time alone important. Some time together.	Time together important and scheduled. Time alone permitted.	Time together maximized. Little time alone permitted.
SPACE (Physical and/or Emotional		Separate space needed and preferred.	Separate space preferred; Sharing of family space.	Sharing family space preferred. Private space respected.	Little or no private space permitted.
FRIENDS		Mainly individual friends seen alone. Few family friends.	Individual friends shared with family. Some family friends.	Some individual friends. Some scheduled activities with couple/family friends.	Limited individual friends. Couple/family friends strongly encouraged.
DECISION MAKING		Primarily individual decisions. No checking with other family members.	Most decisions individually made. Able to make joint decisions on family issues.	Most decisions made with family in mind. Individual decisions are shared.	All decisions, both personal and relationship, must be approved.
INTERESTS AND RECREATION		Primarily individual activities done without family. Family not involved.	Some spontaneous family activities. Individual activities supported.	Some scheduled family activities. Family involved in individual interests.	Most activities and interests must be shared with family.
TOTAL COHESION					

FAMILY ADAPTABILITY

	SCORE	RIGID 1 2	STRUCTURED 3 4	FLEXIBLE 5 6	CHAOTIC 7 8
[illegible]		Passive-aggressive styles of interaction.	Generally assertive with some aggression.	Mutually assertive with more aggression.	Passive and aggressive styles. Unpredictable patterns.
CONTROL (Leadership)		Authoritarian. Traditional leadership.	Leadership is stable and kindly imposed.	Equalitarian leadership with fluid changes.	Limited and/or erratic leadership.
DISCIPLINE		Autocratic. Strict, rigid conseq. Rigidly enforced.	Generally democratic. Predictable consequences Firmly imposed and enforced.	Usually democratic. Negotiated conseq. Fairly maintained.	Laissez-faire: Inconsistent consequences. Erratically enforced.
NEGOTIATION		Poor problem solving. Limited negotiations. Solution imposed.	Good problem solving. Structured negotiations. Reasonable solutions.	Good problem solving. Flexible negotiations. Agreed upon solutions.	Poor problem solving. Endless negotiations. Impulsive solutions.
ROLES		Role rigidity. Stereotyped roles.	Roles stable, but may be shared.	Role sharing and making. Fluid changes of roles.	Dramatic role shifts. Sporadic role reversals.
RULES		Rigid rules. Many explicit rules. Many implicit rules. Rules strictly enforced.	Few rule changes. Many explicit rules. Some implicit rules. Rules firmly enforced.	Some rule changes. Some explicit rules. Few implicit rules. Rules fairly enforced.	Dramatic rule changes. Many explicit rules. Few implicit rules. Rules arbitrarily enforced.
TOTAL ADAPTABILITY					

APPENDIX B

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Consent to be a Research Subject

Study No. 939101-02

Study of Family Decisions About Medical and Surgical Treatment of Coronary Artery Disease.

1) I/we agree to have Dr. Susan Gortner, or Mrs. Patricia Sparacino, or Mrs. Catherine Gilliss, or Mrs. Hester Kenneth, or _____ ask me a series of questions about the events and reactions leading up to medical or surgical treatment (for coronary artery disease) and beliefs about the treatment.

2) These questions will be asked in my hospital room, at my physician's office, or at a mutually convenient place, including my/our home, and will take about 45 minutes.

3) After my surgery, I/we also will be asked whether I/we would be willing to respond again to the same questions about values and beliefs one month after the first interview.

4) I/we also may be asked whether I/we would be willing to respond to some questions about how I/we and my/our family are managing four to five months following the surgery.

5) The purpose of these questions is to learn what factors are associated with family values, family stress and decision making, and family management of medical and surgical treatment for a life-threatening illness.

6) Some of the questions may be personally unsuited for my/our situation, but I/we have been told my/our name(s) will not be recorded on the questionnaire and my/our answers will be used only in the analysis of data.

7) The research conducted by Dr. Gortner, et al may result in improved understanding of patient and family reasons for choosing treatment and managing without; that may be helpful to other families and to clinicians.

8) This information has been explained to me/us by Mrs. Patricia Sparacino (or Dr. Susan Gortner), and she may be reached at 666-2391 or 666-2626 if I/we have questions.

9) I/we am not receiving compensation for participating in this study.

10) I/we understand that I can refuse to answer any questions and can withdraw from the study without jeopardy to my (his/her) further care.

_____ Date

_____ Signature

_____

(revised 12/81)

Form 1 APPENDIX C Code 145

PLEASE HAVE THE PATIENT FILL IN THIS FORM. Date _____

Instructions:

Below are listed comments made by people after stressful life events. Please check the box which corresponds to how often each of these items were true for you - during the last seven days.

About _____ (days) ago, I had coronary artery bypass surgery.

	NOT AT ALL	RARELY	SOME-TIMES	OFTEN
1. I thought about it when I didn't mean to.	☐	☐	☐	☐
2. I had trouble doing other things because the event kept coming into my mind.	☐	☐	☐	☐
3. I avoided letting myself get upset when I thought about it or was reminded of it.	☐	☐	☐	☐
4. I tried to remove it from my memory.	☐	☐	☐	☐
5. I had trouble falling asleep or staying asleep, because of pictures or thoughts about it that came into my mind.	☐	☐	☐	☐
6. I had waves of strong feelings about it.	☐	☐	☐	☐
7. I had dreams about it.	☐	☐	☐	☐
8. I stayed away from reminders of it.	☐	☐	☐	☐
9. I felt as if it hadn't happened or it wasn't real.	☐	☐	☐	☐
10. I tried to talk about it.	☐	☐	☐	☐
11. Pictures about it popped into my mind.	☐	☐	☐	☐
12. Other things kept making me think about it.	☐	☐	☐	☐
13. I was aware that I still had a lot of feelings about it, but I didn't deal with them. . .	☐	☐	☐	☐
14. I tried not to think about it.	☐	☐	☐	☐
15. Any reminder brought back feelings about it.	☐	☐	☐	☐
16. My feelings about it were kind of numb.	☐	☐	☐	☐

Comments:

Impact of Event Scale: Horowitz et al, 1980

Form 2 Code 146

Date _____

PLEASE HAVE THE SPOUSE FILL IN THIS FORM.

Instructions:

Below are listed comments made by people after stressful life events. Please check the box which corresponds to how often each of these items were true for you -- during the last seven days.

About _____ ago, my husband/wife had coronary artery bypass surgery.
(days) (circle)

		NOT AT ALL	RARELY	SOME-TIMES	OFTEN
1.	I thought about it when I didn't mean to.	☐	☐	☐	☐
2.	I had trouble doing other things because the event kept coming into my mind.	☐	☐	☐	☐
3.	I avoided letting myself get upset when I thought about it or was reminded of it.	☐	☐	☐	☐
4.	I tried to remove it from my memory.	☐	☐	☐	☐
5.	I had trouble falling asleep or staying asleep, because of pictures or thoughts about it that came into my mind.	☐	☐	☐	☐
6.	I had waves of strong feelings about it.	☐	☐	☐	☐
7.	I had dreams about it.	☐	☐	☐	☐
8.	I stayed away from reminders of it.	☐	☐	☐	☐
9.	I felt as if it hadn't happened or it wasn't real.	☐	☐	☐	☐
10.	I tried not to talk about it.	☐	☐	☐	☐
11.	Pictures about it popped into my mind.	☐	☐	☐	☐
12.	Other things kept making me think about it.	☐	☐	☐	☐
13.	I was aware that I still had a lot of feelings about it, but I didn't deal with them. . .	☐	☐	☐	☐
14.	I tried not to think about it.	☐	☐	☐	☐
15.	Any reminder brought back feelings about it.	☐	☐	☐	☐
16.	My feelings about it were kind of numb.	☐	☐	☐	☐

Comments:

Impact of Event Scale: Horowitz et al, 1980

APPENDIX D

School of Nursing
University of California
3rd & Parnassus Aves.
San Francisco, Calif. 94143
(Date)

Dear Mr. or Mrs._____:

During your recent hospitalization for coronary bypass surgery at Stanford University Medical Center, you began participation a study examining the decision to have surgery and the impact of that surgery upon you and your family. My associate, Dr. Judith Ann Moran, RN, whom you met at Stanford, and I hope that you have experienced a good recovery from your surgery and that you are again in good health. The information you provided us during your hospitalization has been very useful. We are now in the final stages of analyzing that data, which we hope will be available to share with you by September.

I write to you at this time for the purpose of arranging the home interview to which you consented at the time of hospitalization. We have been able to visit nearly all the families we met while interviewing at Moffitt Hospital, University of California. Interviews with those of you whom we met at Stanford are due to be completed in August and September.

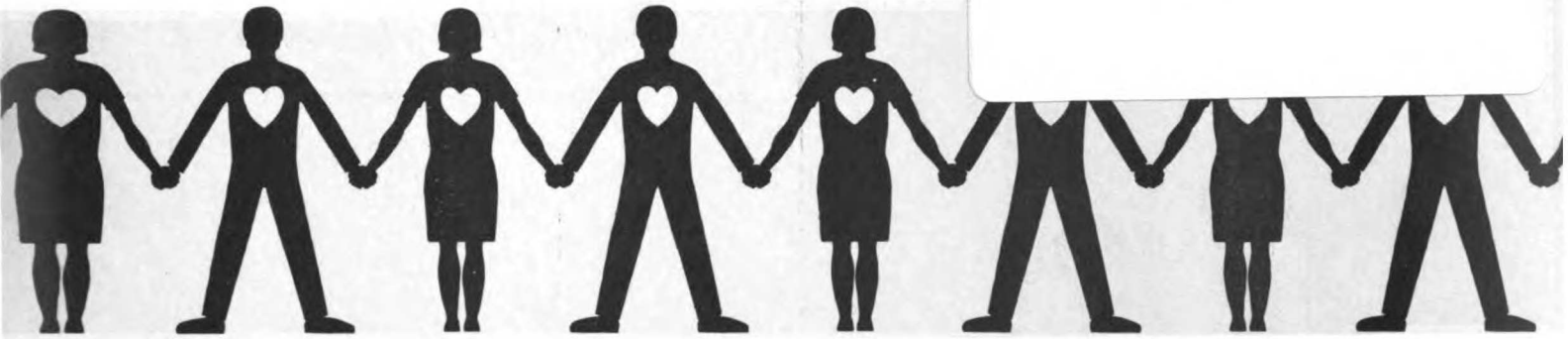
The purpose of talking to you in your home is to find out what has happened to you since we first met, and to ask some questions regarding the impact of surgery on your life. This visit is arranged at your convenience and generally takes about one to two hours to complete. In addition to the visit there are some written questions which we mail to you before the visit and then carry back with us. Most people find that it takes about one hour to complete the written questions. Because we are interested in the opinions of your spouse we hope to meet with and talk with both of you at the time of the visit.

I will be calling you within the next few weeks to set up a time for the visit. In anticipation of that call you might give some thought to times you believe you would both be available. I am looking forward to meeting you. These visits have been informative and enjoyable. In many cases we have been able to answer questions for patients about information that is still unclear to them; we are happy to do so.

Sincerely,

Catherine L. Gilliss, RNC, MSN, NP
DNSc Candidate
Project Co-investigator

APPENDIX E

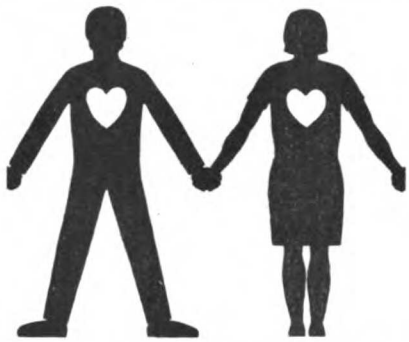


Values, Decision Factors and Stress in the Choice of Medical and Surgical Treatment for Coronary Artery Disease:

Phase II, Post-Surgical Follow-Up

(CHR No. 939101-02a)

Catherine L. Gilliss, RN, DNSc Candidate
Investigator
(415) 666-2626



ITEM BOOKLET

University of California, San Francisco
School of Nursing
Department of Family Health
Third and Parnassus Avenues
San Francisco, California 94143

Subject Code _____

Date _____

SECTION I

DIRECTIONS Please answer the following questions before going on to the next page:

1. Age: _____
2. Sex: _____
3. Were you the bypass patient: YES _____

   NO _____
4. Have you had a coronary bypass procedure: YES _____

   NO _____
5. Are you employed? YES _____

   NO _____

   If YES, what is the nature of your work? _____

   _____

   How long have you worked at this job? _____
6. Do you have problems with your health? YES _____

   NO _____

   If YES, describe: _____

   _____
7. Considering the difficult experiences you have had in your life how would you rate the bypass surgery experience? *(Check one)*

_____	_____	_____	_____
The least difficult	Among the least difficult	Among the most difficult	The most difficult

What is your highest level of education?

Please go on to the next page . . .

SECTION II

FILE-A

Family Inventory of Life Events and Changes (Adapted)

by Hamilton I. McCubbin, Joan M. Patterson, Lance R. Wilson

PURPOSE Over their life cycle, all families experience many changes as a result of normal growth and development of members and due to external circumstances. The following list of family life changes can happen in a family at any time. 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.

"FAMILY" means a group of two or more persons living together who are related by blood, marriage or adoption. This includes persons who live with you *and* to whom you have a long term commitment.

DIRECTIONS "DID THE CHANGE HAPPEN IN YOUR FAMILY?"

Please read each family life change and decide whether it happened to any member of your family – **including you.**

- DURING THE LAST YEAR
  First, decide if it happened any time **during** the last 12 months and check YES or NO.

During Last 12 months	
Yes	No

- BEFORE LAST YEAR
  Second, for *some family changes* decide if it happened any time **before** the last 12 months and check YES or NO. It is okay to check YES twice if it happened both times – before last year and during the past year.

Before Last 12 months	
Yes	No

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	During Last 12 Months		**Before** Last 12 Months	
	Yes	No	Yes	No
1. Increase of husband/father's time away from family.				
2. Increase of wife/mother's time away from family.				
3. A member appears to have emotional problems.				
4. A member appears to depend on alcohol or drugs.				
5. Increase in 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 teenage child(ren).				
9. Increase in the number of problems or issues which don't get resolved.				
10. Increase in the number of tasks or chores which don't get done.				
11. Spouse/parent was separated or divorced.				
12. Spouse/parent has an "affair."				

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	During Last 12 Months		**Before** Last 12 Months	
	Yes	No	Yes	No
13. Increased difficulty in resolving issues with a "former" or separated spouse.				
14. Increased difficulty with sexual relationship between husband and wife.				
15. An unmarried member became pregnant.				
16. A member had an abortion.				
17. A member gave birth to or adopted a child.				
18. Change in conditions (economic, political, weather) which hurts the family business.				
19. Change in Agriculture Market, Stock Market, or Land Values which hurts family investments and/or income.				
20. A member started a new business.				
21. Purchased or built a home.				
22. Increased strain on family "money" for medical/dental expenses.				
23. Increased strain on family "money" for food, clothing, energy, home care.				
24. Increased strain on family "money" for child(ren)'s education.				
25. A member changed to a new job/career.				
26. A member lost or quit a job.				
27. A member retired from work.				
28. A member started or returned to work.				
29. A member stopped working for extended period (e.g., laid off, leave of absence, strike).				
30. Decrease in satisfaction with job/career.				
31. Family moved to a new home/apartment.				
32. Parent/spouse became seriously ill or injured.				
33. Close relative or friend of the family became seriously ill.				
34. A member became physically disabled or chronically ill.				
35. Increased difficulty in managing a chronically ill or disabled member.				
36. Member or close relative was committed to an institution or nursing home.				
37. Increased responsibility to provide direct care or financial help to husband's and/or wife's parent(s).				
38. A parent/spouse died.				
39. A child member died.				
40. Death of husband's or wife's parent or close relative.				

II

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	During Last 12 Months		**Before** Last 12 Months	
	Yes	No	Yes	No
41. Close friend of the family died.				
42. Married son or daughter was separated or divorced.				
43. A member was married.				
44. Young adult member left home.				
45. A young adult member began college (or post high school training).				
46. A member moved back home or a new person moved into the household.				
47. A parent/spouse started school (or training program) after being away from school for a long time.				
48. A member was picked up by police or arrested.				
49. Have any other events been stressful or required changes?				

Please name these:

_____

_____

III

SECTION III

FIRM-A
Family Inventory of Resources for Management (Adapted)
by Hamilton I. McCubbin, Joan K. Comeau, Jo A. Harkins

PURPOSE **FIRM–Family Inventory of Resources for Management** was developed to record what social, psychological, community and financial resources families believe they have available to them in the management of family life.

DIRECTIONS To complete this inventory you are asked to read the list of **"Family Statements"** one at a time. In each statement, "family" means your immediate family (mother and/or father and children).

Then ask yourself: "HOW WELL DOES THE STATEMENT DESCRIBE OUR FAMILY SITUATION?"

Then make your decision by *circling* one of the following:

0 = *Not At All* – This statement does not describe our family situation. This does not happen in our family.

1 = *Minimally* – This statement describes our family situation only slightly. Our family may be like this once in a while.

2 = *Moderately* – This statement describes our family situation fairly well. Our family is like this some of the time.

3 = *Very Well* – This statement describes our family very accurately. Our family is like this most of the time.

PLEASE BEGIN – Please read and record your decision for EACH and EVERY statement below.

Please go on to the next page →

	FAMILY STATEMENTS	Describes our Family: Not at all	Minimally	Moderately	Very Well
1.	We have money coming in from our investments (such as rental property, stocks, bonds, etc.).	0	1	2	3
2.	Being physically tired much of the time is a problem in our family.	0	1	2	3
3.	We have to nag each other to get things done.	0	1	2	3
4.	We do not plan too far ahead because many things turn out to be a matter of good or bad luck anyway.	0	1	2	3
5.	Our family is as well adjusted as any family in this world can be.	0	1	2	3
6.	It seems that members of our family take each other for granted.	0	1	2	3
7.	Sometimes we feel we don't have enough control over the direction our lives are taking.	0	1	2	3
8.	Certain members of our family do all the giving, while others do all the taking.	0	1	2	3
9.	We depend almost entirely upon financial support from welfare or other public assistance programs.	0	1	2	3
10.	We seem to put off making decisions.	0	1	2	3
11.	Family members understand each other completely.	0	1	2	3
12.	Our family is under a lot of emotional stress.	0	1	2	3
13.	Many things seem to interfere with family members being able to share concerns.	0	1	2	3
14.	There are times when family members do things that make other members unhappy.	0	1	2	3
15.	It seems that we have more illness (colds, flu, etc.) in our family than other people do.	0	1	2	3
16.	In our family some members have many responsibilities while others don't have enough.	0	1	2	3
17.	No one could be happier than our family when we are together.	0	1	2	3
18.	It is upsetting to our family when things don't work out as planned.	0	1	2	3
19.	Being sad or "down" is a problem in our family.	0	1	2	3
20.	It is hard to get any family members to cooperate with each other.	0	1	2	3
21.	If our family has any faults, we are not aware of them.	0	1	2	3
22.	We depend almost entirely on social security retirement income.	0	1	2	3
23.	Many times we feel we have little influence over the things that happen to us.	0	1	2	3
24.	We have the same problems over and over – we don't seem to learn from past mistakes.	0	1	2	3
25.	One or more working members of our family are presently unemployed.	0	1	2	3
26.	There are things at home we need to do that we don't seem to get done.	0	1	2	3
27.	We feel our family is a perfect success.	0	1	2	3
28.	We own land or property besides our place of residence.	0	1	2	3

	FAMILY STATEMENTS	Describes our Family: Not at all	Minimally	Moderately	Very Well
29.	We own (are buying) a home (single family, condominium, townhouse, etc.).	0	1	2	3
30.	There are times when we do not feel a great deal of love and affection for each other.	0	1	2	3
31.	If a close relative were having financial problems we feel we could afford to help them out.	0	1	2	3
32.	We feel we have a good retirement income program.	0	1	2	3
33.	When we make plans we are almost certain we can make them work.	0	1	2	3
34.	We seem to have little or no problems paying our bills on time.	0	1	2	3
35.	Our relatives seem to take from us, but give little in return.	0	1	2	3
36.	We would have no problem getting a loan at a bank if we wanted one.	0	1	2	3
37.	We feel we have enough money on hand to cover small unexpected expenses (under $100).	0	1	2	3
38.	When we face a problem, we look at the good and bad of each possible solution.	0	1	2	3
39.	The member(s) who earn our family income seem to have good employee benefits (such as paid insurance, stocks, car, education, etc.)	0	1	2	3
40.	No matter what happens to us, we try to look at the bright side of things.	0	1	2	3
41.	We feel we are able to go out to eat occasionally without hurting our budget.	0	1	2	3
42.	We try to keep in touch with our relatives as much as possible.	0	1	2	3
43.	In our family it is "okay" for members to show our positive feelings about each other.	0	1	2	3
44.	We feel we are able to make financial contributions to a good cause (needy people, church, etc.).	0	1	2	3
45.	It is "okay" for family members to express sadness by crying, even in front of others.	0	1	2	3
46.	When we need something that can't be postponed, we have money in savings to cover it.	0	1	2	3
47.	We discuss our decisions with other family members before carrying them out.	0	1	2	3
48.	Our relative(s) are willing to listen to our problems.	0	1	2	3
49.	We worry about how we would cover a large unexpected bill (for home, auto repairs, etc., for about $100).	0	1	2	3
50.	We get great satisfaction when we can help one another in our family.	0	1	2	3
51.	The members of our family repsect one another.	0	1	2	3
52.	Members of our family are encouraged to have their own interests and abilities.	0	1	2	3
53.	Our relatives do and say things to make us feel appreciated.	0	1	2	3
54.	We feel we are financially better off now than we were 5 years ago.	0	1	2	3

IV

SECTION IV

CHIS

adapted from Coping-Health Inventory for Parents

by Hamilton I. McCubbin, Marilyn A. McCubbin, Robert S. Nevin, Elizabeth Cauble

PURPOSE CHIS–The Coping-Health Inventory for Spouses was developed to record what spouses find helpful or not helpful to them in the management of family life when one or more of its members is ill for a brief period *or* has a medical condition which calls for continued medical care. Coping is defined as personal or collective (with other individuals, programs) efforts to manage the hardships associated with health problems in the family.

DIRECTIONS

- To complete this inventory you are asked to read the list of "Coping Behaviors" below, one at a time.
- For each coping behavior you used, please record how helpful it was.

  HOW HELPFUL was this COPING BEHAVIOR to you and/or your family: *Circle* ONE number
  3 = *Extremely* Helpful
  2 = *Moderately* Helpful
  1 = *Minimally* Helpful
  0 = *Not* Helpful

- For each Coping Behavior you did *Not* use please record your "Reason."
  Please RECORD this by *Checking ✓ one* of the reasons:
  Chose not to use it ☐ or Not Possible ☐

PLEASE BEGIN: Please read and record your decision for EACH and EVERY Coping Behavior listed below.

	COPING BEHAVIOR	Extremely Helpful	Moderately Helpful	Minimally Helpful	Not Helpful	I do not cope this way because: Chose Not To	I do not cope this way because: Not Possible
1.	Trying to maintain family stability.	3	2	1	0		
2.	Engaging in relationships and friendships which help me to feel important and appreciated.	3	2	1	0		
3.	Trusting my spouse to help support me.	3	2	1	0		
4.	Sleeping.	3	2	1	0		
5.	Talking with the medical staff (nurses, social worker, etc.) when we visit the medical center.	3	2	1	0		
6.	Believing that I/my spouse will get better.	3	2	1	0		
7.	Working, outside employment.	3	2	1	0		
8.	Showing that I am strong.	3	2	1	0		
9.	Purchasing gifts for myself and/or other family members.	3	2	1	0		
10.	Talking with other individuals in my same situation.	3	2	1	0		
11.	Taking good care of all the medical equipment at home.	3	2	1	0		
12.	Eating.	3	2	1	0		

IV

	COPING BEHAVIOR	Extremely Helpful	Moderately Helpful	Minimally Helpful	Not Helpful	I do not cope this way because: Chose Not To	I do not cope this way because: Not Possible
13.	Getting other members of the family to help with chores and tasks at home.	3	2	1	0		
14.	Getting away by myself.	3	2	1	0		
15.	Talking with the Doctor about my/my spouse's medical condition.	3	2	1	0		
16.	Believing that the medical center/hospital has my family's best interest in mind.	3	2	1	0		
17.	Building close relationships with people.	3	2	1	0		
18.	Believing in God.	3	2	1	0		
19.	Develop myself as a person.	3	2	1	0		
20.	Talking with other individuals in the same type of situation and learning about their experiences.	3	2	1	0		
21.	Doing things together as a family (involving all members of the family).	3	2	1	0		
22.	Investing time and energy in my job.	3	2	1	0		
23.	Believing that I am/my spouse is getting the best medical care possible.	3	2	1	0		
24.	Entertaining friends in our home.	3	2	1	0		
25.	Reading about how other persons in my situation handle things.	3	2	1	0		
26.	Doing things with family relatives.	3	2	1	0		
27.	Becoming more self reliant and independent.	3	2	1	0		
28.	Telling myself that I have many things I should be thankful for.	3	2	1	0		
29.	Concentrating on hobbies (art, music, jogging, etc.).	3	2	1	0		
30.	Explaining our family situation to friends and neighbors so they will understand us.	3	2	1	0		
31.	Encouraging my spouse to be more independent.	3	2	1	0		
32.	Keeping myself in shape and well groomed.	3	2	1	0		
33.	Involvement in social activities (parties, etc.) with friends.	3	2	1	0		
34.	Going out with my spouse on a regular basis.	3	2	1	0		
35.	Being sure prescribed medical treatments for me/my spouse are carried out at home on a daily basis.	3	2	1	0		
36.	Building a closer relationship with my spouse.	3	2	1	0		
37.	Allowing myself to get angry.	3	2	1	0		
38.	Investing myself in my spouse.	3	2	1	0		

V

	COPING BEHAVIOR	Extremely Helpful	Moderately Helpful	Minimally Helpful	Not Helpful	I do not cope this way because: Chose Not To	I do not cope this way because: Not Possible
39.	Talking to someone (not professional counselor/doctor) about how I feel.	3	2	1	0		
40.	Reading more about the medical problem which concerns me.	3	2	1	0		
41.	Talking over personal feelings and concerns with spouse.	3	2	1	0		
42.	Being able to get away from the home care tasks and responsibilities for some relief.	3	2	1	0		
43.	Arranging that I/my spouse be seen at the clinic/hospital on a regular basis.	3	2	1	0		
44.	Believing that things will always work out.	3	2	1	0		
45.	Doing things with my children.	3	2	1	0		

V

SECTION V

FACES (Adapted for Couples)

by David Olson, Richard Bell, Joyce Portner

DIRECTIONS Please read each of the following statements and decide whether they are *true* for you and your family:

4 = Always
3 = Usually
2 = Sometimes
1 = Rarely

Circle the one number that is *truest* for you and your family. Please read carefully and try to answer each question.

Go ahead to number one:

		Always True	Usually True	Sometimes True	Rarely True
1.	We are concerned with each other's welfare.	4	3	2	1
2.	We feel free to say what's on our mind.	4	3	2	1
3.	We don't have spur of the moment guests at mealtime.	4	3	2	1
4.	It is hard to know who the leader is in our relationship.	4	3	2	1
5.	It's difficult for us to take time away from each other.	4	3	2	1
6.	We are afraid to tell the truth because of how harsh the reaction will be.	4	3	2	1

		Always True	Usually True	Sometimes True	Rarely True
7.	Most personal friends are not family friends.	4	3	2	1
8.	We talk a lot but nothing ever gets done.	4	3	2	1
9.	I feel guilty if I want to spend some time alone.	4	3	2	1
10.	There are times when my partner does things that make me unhappy.	4	3	2	1
11.	My partner and I know where we both are at all times.	4	3	2	1
12.	We have some say in what is required of each other.	4	3	2	1
13.	My partner and I usually stick together.	4	3	2	1
14.	I have some needs that are not being met by my partner.	4	3	2	1
15.	We make the rules together.	4	3	2	1
16.	It seems like there is never any place to be alone in our house.	4	3	2	1
17.	It is difficult to keep track of what my partner is doing.	4	3	2	1
18.	We do not check with each other when making decisions.	4	3	2	1
19.	My partner completely understands and sympathizes with my every mood.	4	3	2	1
20.	Our relationship is more important to us than any friendship could possibly be.	4	3	2	1
21.	When we have an argument, my partner and I just keep it to ourselves.	4	3	2	1
22.	We often answer questions that are addressed to each other.	4	3	2	1
23.	We usually check with each other before making important decisions.	4	3	2	1
24.	We like to spend some of our free time with each other.	4	3	2	1
25.	Punishment is usually pretty fair in our relationship.	4	3	2	1
26.	We are encouraged to have friends of our own.	4	3	2	1
27.	We discuss problems and usually feel good about the solutions.	4	3	2	1
28.	We share almost all interests and hobbies with each other.	4	3	2	1
29.	Our relationship is not a perfect success.	4	3	2	1
30.	We are extremely independent.	4	3	2	1
31.	Neither my partner nor I seem to keep track of what our duties are.	4	3	2	1
32.	We feel it's "each one for his/her self."	4	3	2	1
33.	Every new thing I've learned about my partner has pleased me.	4	3	2	1
34.	My partner and I have a rule for almost every possible situation.	4	3	2	1
35.	We respect each other's privacy.	4	3	2	1
36.	Once my partner and I have planned to do something, it's difficult to change it.	4	3	2	1

		Always True	Usually True	Sometimes True	Rarely True
37.	In our relationship we are on our own when there is a problem to solve.	4	3	2	1
38.	I have never regretted being with my partner, not even for a moment.	4	3	2	1
39.	We do not turn to each other when we need help.	4	3	2	1
40.	It is hard to know what my partner is thinking.	4	3	2	1
41.	We make visitors feel at home.	4	3	2	1
42.	We make all of the important decisions in our relationship together.	4	3	2	1
43.	Even when we are both at home, we spend our time separately.	4	3	2	1
44.	We discuss together the negative consequences of certain behavior.	4	3	2	1
45.	We have little need for friends because we are so close.	4	3	2	1
46.	We feel good about our ability to solve problems.	4	3	2	1
47.	Although we have individual interests, we still participate in activities together.	4	3	2	1
48.	My partner has all the qualities I've always wanted in a companion.	4	3	2	1
49.	We are totally on our own in developing our ideas.	4	3	2	1
50.	Once a task is assigned to either partner, there is no chance of changing it.	4	3	2	1
51.	We seldom fight with each other.	4	3	2	1
52.	There are times when I don't feel a great deal of love and affection for my partner.	4	3	2	1
53.	When the rules are broken, we treat each other fairly.	4	3	2	1
54.	We don't interfere with each other's areas or activities.	4	3	2	1
55.	We encourage each other's efforts to find new ways of doing things.	4	3	2	1
56.	We discuss important decisions with each other, but usually let the other person make his/her own choices.	4	3	2	1
57.	If I could be a part of any relationship in the world, I could not have a better match.	4	3	2	1
58.	Home is one of the loneliest places to be.	4	3	2	1
59.	In our relationship, it's important for each of us to express our opinion.	4	3	2	1
60.	I find it easier to discuss things with friends than with my partner.	4	3	2	1
61.	There is no leadership in our relationship.	4	3	2	1
62.	We try to plan some things during the week so we can be together.	4	3	2	1
63.	We do not reprimand each other when we do something wrong.	4	3	2	1
64.	We know each other's close friends.	4	3	2	1
65.	My partner and I do not discuss our problems.	4	3	2	1

V

		Always True	Usually True	Sometimes True	Rarely True
66.	My partner and I don't do things together.	4	3	2	1
67.	If my partner has any faults, I am not aware of them.	4	3	2	1
68.	We enjoy doing things alone as well as together.	4	3	2	1
69.	In our relationship, we both share responsibilities.	4	3	2	1
70.	We agree on how to handle problems.	4	3	2	1
71.	I don't think anyone could possibly be happier than my partner and I when we are together.	4	3	2	1
72.	It is unclear what would happen when the rules are broken in our relationship.	4	3	2	1
73.	When a room door is shut, my partner will knock before entering.	4	3	2	1
74.	If one way doesn't work in our relationship, we try another.	4	3	2	1
75.	We are expected to have the approval of each other before making decisions.	4	3	2	1
76.	We are totally involved in each other's lives.	4	3	2	1
77.	We speak our minds without considering how it will affect our partner.	4	3	2	1
78.	We feel comfortable inviting friends along on our activities.	4	3	2	1
79.	Each partner has at least some say in major family decisions.	4	3	2	1
80.	We feel pressured to spend most of our free time together.	4	3	2	1
81.	We can get away with almost anything.	4	3	2	1
82.	We share the same friends.	4	3	2	1
83.	When trying to solve problems, we jump from one attempted solution to another without giving any of them time to work.	4	3	2	1
84.	We have difficulty thinking of things to do as a couple.	4	3	2	1
85.	We understand each other completely.	4	3	2	1
86.	It seems as if we agree on everything.	4	3	2	1
87.	It seems as if we must do the same chores around the house.	4	3	2	1
88.	We usually know how the other person will react to situations.	4	3	2	1
89.	My relationship could be happier than it is.	4	3	2	1
90.	There are strong reactions for breaking rules in our relationship.	4	3	2	1
91.	We seem to avoid contact with each other when at home.	4	3	2	1
92.	For no apparent reason, my partner seems to change his/her mind.	4	3	2	1
93.	We decide together on relationship matters and separately on personal matters.	4	3	2	1
94.	Our relationship is a balance of closeness and separateness.	4	3	2	1

V

	Always True	Usually True	Sometimes True	Rarely True
95. We rarely say what we want.	4	3	2	1
96. It seems there are always friends around our home.	4	3	2	1
97. My partner tries to control my behavior.	4	3	2	1
98. It seems as if we can never find time to be together.	4	3	2	1
99. My partner becomes very upset with me.	4	3	2	1
100. We know very little about each other's friends.	4	3	2	1
101. I feel I have no say in how problems are solved.	4	3	2	1
102. We share many interests.	4	3	2	1
103. We are as well adjusted as any couple in this world can be.	4	3	2	1
104. We encourage each other to do things alone.	4	3	2	1
105. I never know how my partner is going to act.	4	3	2	1
106. Certain individuals seem to cause most of our relationship problems.	4	3	2	1
107. I don't think any couple could live together with greater harmony than us.	4	3	2	1
108. It is hard to know what the rules are in our relationship because they always change.	4	3	2	1
109. We find it hard to get away from each other.	4	3	2	1
110. I feel that the relationship will never change.	4	3	2	1
111. I feel that I have to go along with what my partner decides.	4	3	2	1

Please go on to the next page →

APPENDIX F

School of Nursing
University of California
3rd & Parnassus Aves.
San Francisco, California
94143

(DATE)

Mr. & Mrs. _____
ADDRESS

Dear Mr. & Mrs. _____;

I look forward to meeting with you on (Date) at (Time) and I appreciate your willingness to continue participation in our study on coronary bypass surgery. The information you have provided us thus far has been helpful.

The purpose of this interview is to find out what has happened to you since your bypass surgery, and explore with you the ways in which it may have affected your family. It is important to us to hear the ideas of both patient and spouse and we would appreciate your willingness to do so.

An important part of the second phase of our study includes your response to some written questions. I have enclosed for each of you a booklet of questions. Please select your answers independently. There are no correct or incorrect answers; husbands and wives often disagree on their choices. Most people find it takes one hour to complete these booklets. I have enclosed a stamped envelope for your return of the booklets.

Again, thank you for your participation and I look forward to meeting with you. If you wish to contact me prior to our scheduled visit my office phone number is (415) 666-2626.

Sincerely,

Catherine L. Gilliss, RN, MSN
DNSc Candidate
Project Co-investigator

APPENDIX G

Post-Operative Interview
FINAL

Code No._____

CHR Approval # 939101-02a

Date

1. How have you been doing since we saw you in the hospital?

2. How would you describe your health? Your heart?

3. What treatments, medications, foods, or exercises are you now using to improve your health?

4. Have you realized the benefits you expected from surgery? Would you have surgery again? A redo?

   If not, describe ...

5. Have you seen your surgeon? Cardiologist? How often?

   What is their impression of your health?

6. Has your work/professional life changed since surgery?

7. How does life at home now compare to home after surgery? (For instance, are you able to spend recreational time differently?)
Recreation:

Communication:
(For instance, do you think about eachother differently now; or speak to eachother any differently?)

Affection:
(Do you demonstrate your affection for eachother any differently?)

Problem Solving:
(Do you approach your problems differently? or solve them differently?)

8. How long have you been married? Is it the first marriage for each of you? (Draw a genogram if possible.) How did you meet?

9. Are there changes in your personal values system that have been brought about since surgery?

10. For how long after surgery did this family organize its experience around the event of surgery? Can you identify a point in time when the surgery was no longer the focus of your life? (For some people, this is a point in time when they no longer kept track of time by counting the days since surgery.)

Other Comments:

APPENDIX H

BEAVERS-TIMBERLAWN FAMILY EVALUATION SCALE

Family Name ..... Rater .....

Segment ..... Date .....

Instructions: The following scales were designed to assess the family functioning on continua representing interactional aspects of being a family. Therefore, it is important that you consider the entire range of each scale when you make your ratings. Please try to *respond on the basis of the videotape data alone*, scoring according to what you see and hear, rather than what you imagine might occur elsewhere.

I *Structure of the Family*

A. Overt Power: Based on the entire tape, check the term that best describes your general impression of the overt power relationships of this family.

1	1.5	2	2.5	3	3.5	4	4.5	5
Chaos		Marked dominance		Moderate dominance		Led		Egalitarian
Leaderless; no has enough power to structure the interaction.		Control is close to absolute. No negotiation, dominance and submission are the rule		Control is close to absolute. Some negotiation but dominance and submission are the rule		Tendency toward dominance and submission, but most of the interaction is through respectful negotiation		Leadership is shared between parents changing with the nature of the interaction

B. Parental Coalitions: Check the terms that best describe the relationship structure in this family.

1	1.5	2	2.5	3	3.5	4	4.5	5
Parent-child coalition				Weak parental coalition				Strong parental coalition

C. Closeness

1	1.5	2	2.5	3	3.5	4	4.5	5
Amorphous, vague and indistinct boundaries among members				Isolation, distancing				Closeness, with distinct boundaries among members

II *Mythology*: Every family has a mythology, that is, a concept of how it functions as a group. Rate the degree to which this family's mythology seems congruent with reality.

1	1.5	2	2.5	3	3.5	4	4.5	5
Very congruent		Mostly congruent				Somewhat incongruent		Very incongruent

III. *Goal-Directed Negotiation:* Rate this family's overall efficiency in negotiating problem solutions.

1	1.5	2	2.5	3	3.5	4	4.5	5
Extremely efficient		Good				Poor		Extremely inefficient

IV. *Autonomy*

A. Clarity of Expression. Rate this family as to the clarity of disclosure of feelings and thoughts. This is not a rating of the intensity or variety of feelings, but rather of clarity of individual thoughts and feelings.

1	1.5	2	2.5	3	3.5	4	4.5	5
Very clear				Somewhat vague and hidden				Hardly anyone is ever clear

B. Responsibility. Rate the degree to which the family members take responsibility for their own past, present, and future actions.

1	1.5	2	2.5	3	3.5	4	4.5	5
Members regularly are able to voice responsibility for individual actions				Members sometimes voice responsibility for individual actions, but tactics also include sometimes blaming others, speaking in 3rd person or plural				Members rarely, if ever, voice responsibility for individual actions

C. Invasiveness. Rate the degree to which the members speak for one another, or make "mind reading" statements.

1	1.5	2	2.5	3	3.5	4	4.5	5
Many invasions				Occasional invasions				No evidence of invasions

D. Permeability. Rate the degree to which members are open, receptive and permeable to the statements of other family members.

1	1.5	2	2.5	3	3.5	4	4.5	5
Very open		Moderately open				Members frequently unreceptive		Members unreceptive

V. *Family Affect*

A. Range of Feelings: Rate the degree to which this family system is characterized by a wide range expression of feelings

1	1.5	2	2.5	3	3.5	4	4.5	5
Direct expression of a wide range of feelings		Direct expression of many feelings despite some difficulty		Obvious restriction in the expressions of some feelings		Although some feelings are expressed, there is masking of most feelings		Little or no expression of feelings

B. Mood and Tone: Rate the feeling tone of this family's interaction

1	1.5	2	2.5	3	3.5	4	4.5	5
Usually warm, affectionate, humorous and optimistic		Polite, without impressive warmth or affection; or frequently hostile with times of pleasure		Overtly hostile		Depressed		Cynical, hopeless and pessimistic

C. Unresolvable Conflict: Rate the degree of seemingly unresolvable conflict

1	1.5	2	2.5	3	3.5	4	4.5	5
Severe conflict, with severe impairment of group functioning		Definite conflict, with moderate impairment of group functioning		Definite conflict with slight impairment of group functioning		Some evidence of unresolvable conflict, without impairment of group functioning		Little or no unresolvable conflict

D. Empathy: Rate the degree of sensitivity to, and understanding of, each other's feelings within this family

1	1.5	2	2.5	3	3.5	4	4.5	5
Consistent empathic responsiveness		For the most part, an empathic responsiveness with one another, despite obvious resistance		Attempted empathic involvement, but failed to maintain it		Absence of any empathic responsiveness		Grossly inappropriate responses to feelings

VI. *Global Health-Pathology Scale*: Circle the number of the point on the following scale that best describes this family's health or pathology

10	9	8	7	6	5	4	3	2	1
Most Pathological									Healthiest

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