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Family Sense of Coherence and Perceived Social Support as Mediators of Adaptation to Coronary Artery Bypass Surgery

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Mary Anne McCoy

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Barbara D. Ann
Marsha T. Canalan

Major professor

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FAMILY SENSE OF COHERENCE AND PERCEPTIONS OF SOCIAL SUPPORT AS MEDIATORS OF ADAPTATION TO CORONARY ARTERY BYPASS SURGERY

By

Mary Anne McCoy

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ABSTRACT

FAMILY SENSE OF COHERENCE AND PERCEIVED SOCIAL SUPPORT AS MEDIATORS OF ADAPTATION TO CORONARY ARTERY BYPASS SURGERY.

By

Mary Anne McCoy

This study evaluated Antonovskys' (1987) Sense of Coherence and perceived social support before Coronary Artery Bypass surgery (CABG) as mediators of adaptation, within McCubbins' (et al 1998) Resiliency Model of Family Adjustment and Adaptation. Participants were 59 family dyads composed of a patient scheduled for first-time elective Coronary Artery Bypass surgery and their primary family care provider. Multiple regression analysis and Pearson r correlations were conducted with the variables Family Inventory of Life Events (life stress), the Social Support-Behaviors scale (perceived social support) and Quality of Life / Family Sense of Coherence (original 29 item), and outcome variables of early well-being (Family Member Well-Being scale) and adaptation (Family Adaptation Scale) four to six weeks after surgery.

Results support that FSOC is related to adaptation but not to early well-being. Early well-being scores were below national norms, with the primary care provider experiencing a lower well-being score than the patient. Results in addition, lend support to a salutogenic analysis of the FSOC. That is higher family SOC scores and consensus between members influences the groups' adaptation.

Patients and family members' perception of social support before surgery was higher than actual received support afterwards. Family members scoring the lowest on the FSOC did relay less perceived support. Recommendations for health care providers, as well as clinical considerations of caring for families experiencing this level of acute health crisis were discussed. Awareness that patient and family early well-being may lag behind while adaptation is occurring is an important consideration in the illness trajectory of this disease.

This dissertation is dedicated to Raymond C. Jobin who 23 years ago experienced coronary artery bypass surgery, and whose experience has motivated my professional life. To my mother Doris whose care nurtured him and all of us, I cannot possibly express the depth of my love you are unbelievable. To my brothers and sister who lived the experience with me, their strength and our resiliency motivated me to seek out what made our family strong. Back then I recognized a strength that set us apart; through this journey I have found the connection that allows one to understand the enormous power of resilient families.

ACKNOWLEDGEMENTS

This journey would not have been possible without the love and support of my husband Paul and my four children, Christopher, Melissa, Bryan and Robert, who over several years put up with an often absent or distracted wife and mother. Without our own family resiliency this dissertation would never have been completed. To Dr. Barbara Ames thank you for your perseverance in continuing to help me focus, as well, your editing skills were invaluable. To Dr. Marsha Carolan whom I was so impressed with seven years ago, that I felt I could ask you for that favor of co-chairing my committee. You always seemed to find the silver-lining when there were dark clouds. To Dr. Robert Boger whose social support seminar is to this very day one of the best times I ever had in school, definitely a "black box"experience. To Dr Thomas Conner who took on a FCE student blindly because she asked him to help her "find" help to complete her committee, thank you for sticking it out through the long haul. To my friend Dr. Judy Hovey who listened to countless hours of my struggle in defining what I was seeking, I'll always treasure our power talks on that long ride to and from MSU.

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CHAPTER I

INTRODUCTION

Scope of the Problem

Chronic conditions such as heart disease and acute events such as coronary graft surgery can trigger a response that influences the entire family. Physical illness has a significant influence on family functioning, but families can have reciprocal influence on the physical health of their members (Anderson, Kiecolt-Glaser & Glaser, 1994; Campbell & Patterson, 1995; Ransom, Fisher & Terry, 1992). A critical or disruptive event, such as an acute illness, can catalyze a major shift in a family belief system, with reverberations for both immediate reorganization and long-term adaptation (Walsh, 1998). The family's response to this disruption can pose risks for individual dysfunction, but also for relational conflict, family breakdown and social isolation (Freund & McGuire, 1995; Schott, Thomas & Bandura, 1988; Walsh).

However, it is crucial to explore the meanings a crisis holds for a family, and to be careful not to make assumptions (Walsh, 1998). Well-being in chronic disease as a multifactor condition should not be measured solely on physical indicators of disease. Often it is the psychosocial aspects of the family that influences well-being more than any other factor (Anderson, 1998). An acute health crisis has, through illness demands, the potential to be a catalyst of family breakdown. However, fostering resilience through supporting coherence could render the resultant family disruption into a learning experience that could strengthen a family's ability to manage, comprehend and find meaning with life's

ongoing strains. "Resilience is forged through adversity, not despite it" (Walsh, p. 6).

Unfortunately, healthcare systems generally treat problems on an individual basis. Services are narrowly categorized according to the individual's diagnosis or presenting symptoms. Insufficient attention is given to the person as a whole, or to the family in their social context. Rarely are resources spent on the family as they become more vulnerable to the unpredictability of health over time (Kaplan, Salonen & Cohen, 1988; Ornish, 1998). Healthcare systems do not consider how remission and exacerbation of chronic conditions affects the family. Chronic health problems often require repetitive hospitalizations, increasing costs for prescriptions, and home based care for daily functioning (Walsh, 1998b). If support resources are marginal or become exhausted, families often become victims of illness stress as caregiver burnout occurs (Ornish; Miller, Townsend, Carpenter & Montgomery, 2001). The responsibility families confront is not always managed well, as the burden of care, the demands of their jobs, their children, and other aspects of their lives can disrupt established family paradigms (McCubbin, Thompson & McCubbin, 1996).

One's appraisal of a stress event and of the resources to deal with the challanges strongly influences the response (Lazarus & Folkman, 1984). The current trend in stress-illness research is the examination of stress resistant variables, such as health practices, social support, coping strategies and personality characteristics (Hemingway & Marmot, 1999; Ornish, 1998). In an established condition, such as cardiovascular disease, the chronic and acute nature

of the condition causes great variability in resource needs (Ornish). Families have different levels of strengths and resources at their disposal in times of crisis. Often available resources are over extended as families cope with illness. How family members define and frame a problem will influence how they react to it and what resources they will use to deal with it.

Antonovsky (1979,1985) describes resources available to an individual, primary group, subculture, or society that are effective in avoiding or combating a wide variety of stressors as general resistance resources (GRR). Antonovsky believed that the successful use of resources leads to a greater sense of coherence, which in turn can move an individual or group toward health on the ease/dis-ease continuum. A strong sense of coherence activates the required family resources when families face a stress that exceeds normal paradigms.

Social support is an important GRR, and research links it to improved health outcomes for all age groups (Glass, Dym, Greenberg, Rintell, Roesch & Berkman, 2000; Hemingway & Marmot, 1999; Walsh, 1998). Although there is empirical support for the relationship between social support and health, the exact nature of that relationship is unclear (Hurdle, 2001; Ell, 1984; Sottle, 1992). The large number of caregiving support studies cannot be easily integrated because different sample selection procedures, measures of stressor support, and distress outcomes have been used (Miller, Townsend, Carpenter & Montgomery, 2001). Social support is still suggested to reduce the risk of physical disorders, by causing changes in the immune system that tend to make people more resistant to infections (Ornish, 1998). Social support is said to aid the recovery process by

modulating neuroendocrine pathways that regulate cardiac activity, blood pressure and heart rate, and promote a buffer against traumatic experiences (Ornish; Seeman & Syme, 1987). Social support does not seem to have cause-specific effects, but seems to have a broader large effect such as improvement in all-cause mortality or overall health (Berkman & Syme, 1979; Goleman, 1995). It is a primary resistant resource (Antonovsky, 1987) and a protective factor (McCubbin & McCubbin, 1991) in family adaptation to a crisis. Social support also is considered a major resource in assisting the family to adapt to needed changes during crisis situations. Social support would therefore be a strong resource during coronary artery bypass graft surgery recovery.

Coronary artery bypass graft surgery (CABG) can be considered a non-normative source of stress to the family which transcends normal family paradigms (McCubbin & Patterson, 1993). It has substantial physical and psychological effects on individuals and their families (McCoy, 1992; Rankin, 1989; Robinson, 1999). Additional resources are often needed to manage family tension. If the family does not have the resources or adaptative skills needed to negotiate the challenges a stressor requires, then a crisis can occur (McCubbin & Patterson). The family attributes that most clearly support movement toward health and adaptation in a health crisis needs validation.

Significance

Coronary Artery Bypass Graft surgery (CABG) is performed on approximately 500,000 patients yearly, and potentially millions of family members are affected by this acute event (American Heart Association, 2004).

This surgery can lead to an overall increase in family vulnerability at a time when family strength and health are vitally needed to cope with recovery. The family faces a multitude of decisions in coping with the need for surgery and the risk of the surgical event. They also must deal with the stress throughout the hospital stay and recovery period. A family will need to use its own resources, capabilities and recovery factors to successfully navigate these adversities (McCubbin, McCubbin, Thompson, Han & Allen, 1997).

Healthcare statistics reveal annual monetary costs of the surgery, but rarely is data collected regarding psychological costs to the family system in terms of psychological burden and future family health. Some families have the strength to overcome this stress and achieve a new level of health, and some do not. It is through family resources (characteristics or competencies of the family system that can be used to manage or meet family demands) that tension is reduced (McCubbin & McCubbin, 1991). Social support, with its known relationship to general well-being or health, could be a critical resource that improves health in crisis situations. Research needs to validate the protective nature of social support in mediating the level of stress and tension during an acute crisis.

Hill (1958) was one of the first theorists to propose that family resources heavily influence adaptation of the family to stressors. Any process that can mediate stress has the potential to help families adjust to crises. These processes would be adaptational by nature, and would be behaviors that foster resilience by buffering stress and promoting recovery (Walsh, 1998). To look at chronic

disease in a new light, one that better explains the powerful influence that chronic conditions have on individuals and their family's daily life, a family systems theory approach is needed. A family is an indispensable ally in treatment of the individual with a chronic condition and an inseparable component of successful adaptation to decrease biological vulnerability and buffer environmental stresses (Walsh). Resilient families are forged through adversity, not despite it. Resilient, coherent families will rise to the challenge of a health crisis and through their experience heighten our attention to what really matters to families. Their experience can help professionals understand the dynamic continuum of adaptation with its many variations. To improve the quality of life with a recognized chronic condition like heart disease, knowledge of what factors support attainment of health and adaptation is crucial for all providers (Antonovsky, 1987; Ornish, 1998).

Antonovsky (1984) conceptualized the sense of coherence as the commonality of all coping strategies. It is the orientation that influences one's responses to challenges from the environment. This response includes the appraisal of stimuli, the recognition of stress, and the ability to activate the appropriate resources to cope with stress. It has the ability not only to manage stress, but also to reorganize the family in response to challenges, leaving strengthened by the experience. Life is full of complexities, complications, failures and frustrations, yet a strong sense of coherence gives the family the sense that things will work out, challenges are worthwhile, and stress can be salutary (Antonovsky; McCubbin & Patterson, 1993). Accepting the challenge of

living with cardiovascular disease and the possibility that acute and chronic care needs may change rapidly, the family with a strong sense of coherence adapts and grows.

Purpose

The purpose of this study is twofold, (a) to investigate the Sense of Coherence as a pivotal family viewpoint that influences positive adaptation of the family to a health crisis and (b) to investigate the role of perceived social support as a family resource used by the family throughout the experience of coronary artery bypass surgery.

Research Objectives

1. To investigate the association between a sense of coherence, adaptation and early well-being after CABG surgery.
2. To investigate the association between perceived social support, actual social support, and adaptation and early well-being before and after CABG surgery.
3. To investigate the association between a sense of coherence, perceived social support, and actual social support after CABG surgery

Research Questions

1. Is a Family Sense of Coherence associated with adaptation after CABG surgery?

2. Is a Family Sense of Coherence associated with early well-being after CABG surgery?

3. Is perceived social support associated with adaptation after CABG surgery?

4. Is perceived social support associated with early well-being after CABG surgery?

5. Is a Family Sense of Coherence associated with perceived social support and / or actual social support after CABG surgery?

THEORETICAL FRAMEWORK

Humans are both biological organisms and social beings who are in constant interaction with their environment. Most individuals live within the microsystem of the family, but are influenced by other larger systems. Families are energy transformation systems that are interdependent with natural, human built and social cultural environments (Bubolz & Sontag, 1996). Family systems with diverse characteristics and access to a variety of resources and skills can achieve more successful adaptation than those without (Walsh, 1998). It is this ability to adapt, and access resources, that will ultimately determine a families' vulnerability or resiliency to stress (McCubbin, Thompson, & McCubbin, 1996).

A stressor produces tension, and the resulting strain is lost energy for the normal functions of the system (McCubbin, et al. 1996). This calls for a response in the system to manage the tension and conserve energy (Antonovsky, 1979). Distress emerges when this tension is not eliminated, reduced, or brought within manageable limits. The perceived imbalance and disharmony in the family system can create a tremendous physical and psychological problem for both the individual and the family. This burden requires adaptation not only by the individual, but also the family as they attempt to dissipate the tension and ease the stress.

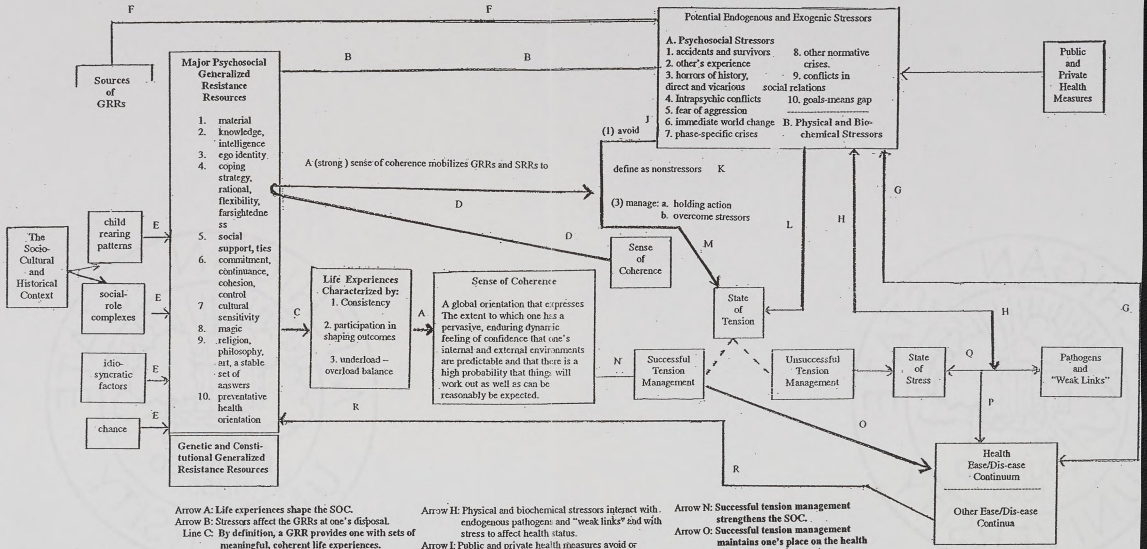
Humans have varying degrees of freedom to control and modify their environments. Families use resources from various systems to cope with stress, which potentially leads to energy saved for other needs within the system (Bubolz & Sontag, 1993). They may use religion, the healthcare system, or government agencies to cope with a variety of stress. They also can use inner family strengths such as a sense of coherence and social support to transform their family group and relieve the tension.

The Resiliency Model of Family Adjustment and Adaptation is a model illustrating the dynamic process of stress appraisal that spans time and involves the family unit and includes its unique identity and values (McCubbin, Thompson, Thompson, Elver & McCubbin, 1998). This family theory model focuses on how families endure, survive and even thrive in spite of adversities or crises. The theoretical framework describes the natural capabilities and strengths of families. It considers that the family is the main microsystem for development

and growth of its members. The model acknowledges that the family microsystem is interdependent with other systems. That interdependency allows the family to use what resources it needs to grow and adapt to life. The family is influenced by, and influences other systems in the course of adaptation (McCubbin, et al.).

One component that McCubbin and his colleagues used in their model was a sense of coherence. Antonovsky originated the construct as a central component to his Salutogenic theory. Salutogenic theory focused on the perspective that one should seek out the resources that help one stay healthy and not dwell on pathogenesis, which is an inevitable process of entropy which all life experiences. A sense of coherence was the construct that he believed managed tension caused by stress. This tension is the response to stress when humans are unable to cope. The consequences of the inability to cope can be negative, neutral, or salutary (Antonovsky, 1979, p 94). This tension, if not readily dissipated, is believed to be the root of dis-ease. Antonovsky believed effective tension management determines a family's ability to maintain or improve its health. A sense of coherence has the most potential to provide the needed tools to adapt to a health crisis and improve the quality of life for the family.

Antonovsky's model (Figure 1, p.11) is a complex visualization of the interdependence of general resistant resources, life experiences and a sense of coherence in managing tension caused by stress. Antonovsky's theory looks at



KEY

Arrow A: Life experiences shape the SOC.
Arrow B: Stressors affect the GRRs at one's disposal.
Line C: By definition, a GRR provides one with sets of meaningful, coherent life experiences.
Arrow D: A strong SOC mobilizes the GRRs and SRRs at one's disposal.
Arrows E: Childrearing patterns, social role complexes, Idiosyncratic factors and chance build up GRRs.
Arrow F: The sources of GRRs also create stressors.
Arrow G: Traumatic physical and biochemical stressors affect health status differently; health status effects the extent of exposure to psychosocial stressors
Arrow H: Physical and biochemical stressors interact with endogenous pathogens and "weak links" and with stress to affect health status.
Arrow I: Public and private health measures avoid or neutralize stressors.
Line J: A strong SOC, mobilizing GRRs and SRRs, avoids stressors.
Line K: A strong SOC, mobilizing GRRs and SRRs, defines Stimuli as nonstressors.
Arrow L: Ubiquitous stressors create a state of tension.
Arrow M: The mobilized GRRs and SRRs interact with the state of tension and manage a holding action and the overcoming of stressors.
Arrow N: Successful tension management strengthens the SOC.
Arrow O: Successful tension management maintains one's place on the health ease/dis-ease continuum.
Arrow P: Interaction between the state of stress and pathogens and "weak links", negatively effects health status.
Arrow Q: Stress is a general precursor that interacts with the existing potential endogenous and exogenic pathogens and "weak links."
Arrow R: Good health status facilitates the acquisition of other GRRs.

Note: The statements in bold type represent the core of the model

Figure 1: The Salutogenic Model of Health
(Antonovsky, 1979)

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factors promoting movement toward health. He described six postulates regarding a salutogenic orientation (1) people are on a multi-dimensional ease/dis-ease continuum instead of a dichotomous classification of healthy or sick. (2) By searching for the total story of a human being, instead of just the etiology of a disease, a clearer picture of the person will emerge. (3) Instead of focusing on stressors, one should focus on coping strengths. (4) Stressors are omnipresent, but they can be salutary depending on the character of the stressor and the success in managing the tension associated with them. (5) Instead of a quick solution to problems, all sources of coping should be considered. (6) We should look at the deviant cases in pathogenic inquiry, and ask why they remained healthy, as this may be the key to unlocking the mystery of health (Antonovsky, 1979).

Historically, most stress researchers agreed that stress is a contributing factor in pathogenesis (Holmes & Rahe, 1967; Lazarus & Cohen, 1977; Selye, 1956). In the course of living, stress is present, but identifying which stressors are healthful and which are pathogenic is the challenge. General resistant resources are characteristics of the person, the group or the environment, which facilitates effective tension management, to relieve stress (Antonovsky, 1979).

General resistant resources facilitate successful coping with the innumerable, complex stressors confronting people in the course of living. The extent to which one's life provides one with general resistant resources is a major determinant of the extent to which a strong sense of coherence is developed (Antonovsky, 1987).

The sense of coherence is defined as:

> A global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that one's internal and external environments in the course of living are structured, predictable, and explicable. The resources are available to one to meet the demands posed by life and these demands are challenges, worthy of investment and engagement (p. 19).

There are three components to the sense of coherence. Comprehensibility refers to the extent to which the world is perceived as making cognitive sense. Is information on which decisions are based structured in an orderly manner, which allows the future to be predictable, or is information noisy, chaotic, disordered, random or unpredictable? When people see the world as comprehensible, it implies that they see it as understandable. When they enter a situation, they have confidence that sense and order can be made from the experience (Antonovsky, 1987).

The manageability component refers to the extent to which people perceive resources at their disposal as adequate to meet the demands posed by the stimuli. These are not just their own personal resources such as hardiness and internal control, but include the implied legitimate resources of others.

The last component is meaningfulness, which is the emotional counterpart of comprehensibility. The emotional term of something "making sense" is that they care. They feel life makes sense emotionally, that at least some of the

problems and demands posed by living are worth investing energy, and are worthy of commitment and engagement (Antonovsky, 1987). This does not imply that all of life is easily defined and managed. There are boundaries that can be defined by the family, and are within the arena of the family's experiences.

Life experiences are crucial in shaping the sense of coherence. From the time of birth through early adulthood, a strong or weak sense of coherence is developed. Relationships and experiences of childhood through early adulthood that provide consistent and predictable responses cause movement toward the strong end of the continuum. Antonovsky (1991) suggested that three types of life experiences were relevant to development of a strong sense of coherence. He defined these concepts as (a) *Consistency*: the extent to which during the course of growing up messages were clear and there was order and structure rather than chaos in one's environment; (b) *Load balance*: the extent to which one suffered overload (or under load), in terms of the appropriateness of the demands made upon one and one's resources; (c) *Participation in shaping outcomes*: the extent to which one felt he/she had an appropriately significant part in deciding his/her fate and was not the object of the power and whims of others. An additional component, (d) *Emotional closeness* was added by Sagy & Antonovsky (2000) to better define the emotional component of meaningfulness. It was expressed as the extent to which one felt consistent emotional bonds and a sense of belonging in social groups of which one was a member.

Many other theorists believe similar, consistent relationships within the family or with a significant mentor also establish life long patterns. Theories such

as attachment (Bowlby, 1977), proximal processes (Bronfenbrenner, 1972), resiliency (Hawley & DeHaan, 1996; McCubbin et al. 1997; Pipher, 1996) and development of social competency (Kahn, 1979; Sontag & Bubolz, 1996) speak to the need for consistent relationships and involvement in social systems.

Most individuals experience stressors and engage in coping within the social system of the family. Antonovsky (1987) explained that a sense of coherence might not include all areas of life. Boundaries surround four spheres of influence (a) one's inner feelings, (b) one's immediate interpersonal relations, (c) one's major activity, and (d) existential issues. The focus of this study is the sphere of one's immediate interpersonal relations, one's family. Antonovsky's original theory alluded to the construct of the family sense of coherence, but this aspect of the theory was not explored in depth. However, the concept of a collective, family sense of coherence has been applied successfully in later research (Anderson, 1998; Antonovsky & Sourani, 1988; Lavee, McCubbin, & Olson, 1987; McCubbin, et al. 1997; Ransom, Fischer & Terry, 1992).

Family system theory views events or situations from the perspective of the family (Patterson & Garwick, 1994). McCubbin's et al. (1998) resiliency model looks at the family adaptation as a dynamic process that has strengths, characteristics, and potential resources within its environment that are transformed into actual resources to meet demands and foster adaptation. The resiliency model also incorporates a salutogenic orientation. A key component to the model is the sense of coherence. However, the resiliency model uses a narrower version of the family sense of coherence (FSOC) and operationalized it

as the family's view of the coherency of family life. This research will use Antonovsky' s original version of the construct. The FSOC in this study looks at how the family views the world as coherent in relationship to family life. Antonovsky's definition of FSOC fits the family ecosystems construct, which looks at the world and other systems in it, as part of the macrosystem that is interdependent with the family.

The Family Adaptation Model

The earliest family stress model, the ABCX model, was developed by Reuben Hill (1949, 1958). In this model *a* was the stressor, *b* was the family's crisis meeting resources, *c* was the family's definition of the stressor event, and *x* the interaction of *a, b, & c,* or the explanation of the outcome or crisis. Building on Hill's model, McCubbin and Patterson (1982, 1983a, 1983b) introduced the Double ABCX model, which expanded the family's perception of the original stressor adding the dimensions of family stress pile up and coping to the model. In expanding the model further with additional emphasis on coping, a generalized concept influenced by Antonovsky (1979), the sense of coherence was added. However, coherence referred to the family's ability to balance control and trust within the family. The model was renamed the Family Adjustment and Adaptation Response (Patterson, 1988).

The current model entitled, "The Resiliency Model of Family Adjustment and Adaptation" (Figure 2) is a stress and coping framework based on the family system approach that provides a theoretical basis for understanding a family's

adjustment to demands placed upon it (McCubbin, et al.1998). The model is based upon five fundamental assumptions about family life: (1) families face hardships and changes as predictable aspects of family life; (2) families develop competencies, patterns of functioning, and capabilities designed to foster the growth and development of family members, and to protect the family from major disruptions in the face of transitions and change; (3) those competencies also are developed in the face of unexpected or non-normative strains following a family crisis or major transition; (4) families draw from, and contribute to the network of relationships and resources in the community, including its ethnic, and cultural heritage; and lastly, (5) families faced with crisis situations whose demands require changes in the family's functioning, will work toward restoring harmony and balance to the family even in the midst of change.

The relationship between the process of appraisal and adaptation is delineated through five levels in McCubbin's model (Figure 2, p. 18, McCubbin, et al.1998). The family's definition of the stressor is the initial level of family assessment (stress appraisal). The second level explains the family's shared assessment of the stressor, the hardships and demands it creates in its relationship to the family's capabilities for managing it (situational appraisal). Level three, family paradigms, is shared beliefs and expectations adopted by the family unit to guide the family's development around specific domains or dimensions of family life. In a crisis situation, specific paradigms usually are not adequate to manage the situation.

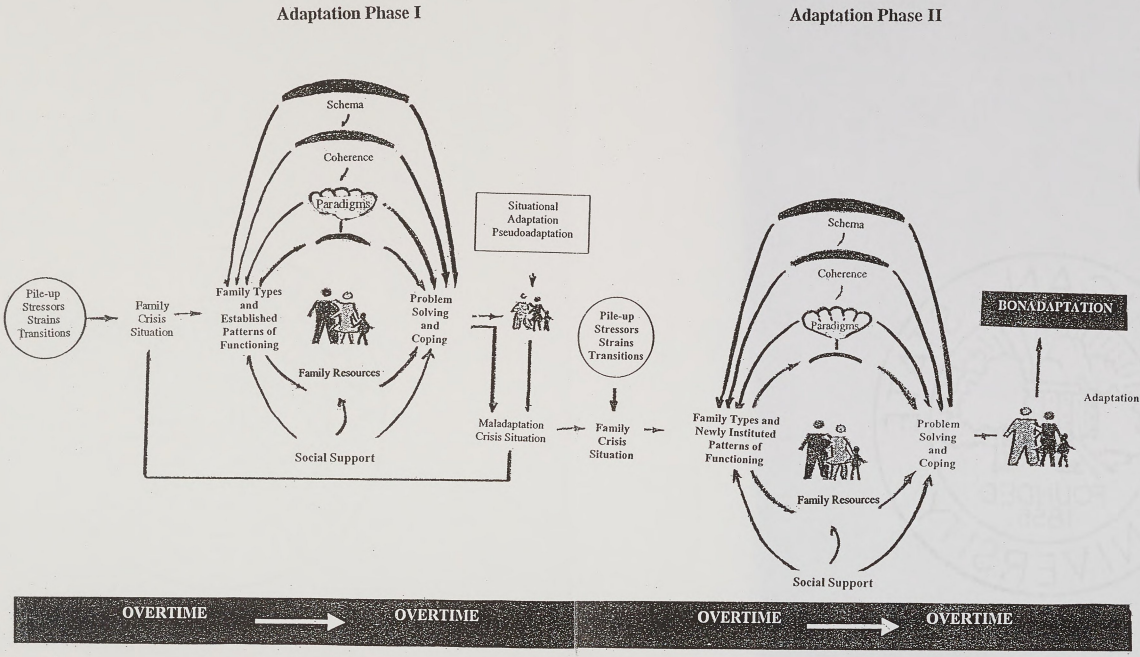

Figure 2
Adaptation Phase I and Phase II
of the Resiliency Model of Family Adjustment and Adaptation
(McCubbin et al, 1998)

Level four is family coherence, which explains the motivational and cognitive basis for transforming the family's potential resources into actual resources to facilitate coping and promote the health of family members. Family sense of coherence in this model looks at the family's appraisal of family fit within the community in which it lives. In other words, how coherent is family life compared to world coherence? The last level is called family schema is a generalized structure of shared values, beliefs, goals, expectations, and priorities, shaped and adopted by the family unit. Through this structure information is compared, sifted and processed to evaluate crisis situations and legitimize adherence to, and change in the family's established patterns of functioning. It transcends the immediate stressor and places the crisis in a larger context of experiences to give it meaning (McCubbin, et al.1998). This level is more analogous to the original sense of coherence construct.

The family schema involves four processes (1) *classification,* framing the situation in terms of shared values and expectations, (2) *spiritualization,* what the stressor means to the family's beliefs, (3) *temporalization,* framing the situation in terms of the long-term consequences, (4) *contextualization,* looking at the situation in terms of its nature and the order of things to the community, personal relationships and interpersonal order (McCubbin & McCubbin, 1993; McCubbin, Thompson, Thompson, McCubbin, & Kasten, 1993).

Chronic conditions such as cardiovascular disease often require numerous changes within family life similar to other stress endured by families. The human response to illness is to give it meaning, to interpret it, to reorder the disordering

experience (Freund and McGuire, 1995). The biophysical manifestations of illness, the meanings attached to the disease are analogous to the situational appraisal of stress in the framework of adaptation as described above. In disease/crisis situations, as in illness, hardships are often numerous and severe, and the demands require more substantial changes in the family system.

Central to crisis management, as described in this framework, is the study of protective and recovery factors. Within the family resiliency framework two distinct but related processes are highlighted, (1) *adjustment*, which involves the influence of factors that *protect* and facilitate the family's ability and efforts to maintain its integrity and functioning in the face of risk factors, and (2) *adaptation*, which involves the function of factors that promote *recovery*, the ability of the family to bounce back and adapt in the face of a specific crisis. McCubbin and colleagues (1998) have developed a workable model that explains the cyclical and often complex manner in which appraisal and adaptation to a stressor occur in a family system. With this in mind, examining the family sense of coherence with its strong link to health outcomes within a framework that shows family adaptation allows for a better understanding of family adaptation and movement toward health.

The very nature of cardiovascular disease is that it is a prolonged stress to the family, which requires both short and long-term adjustments to manage the variability of the biophysical components of the disease. In the treatment of cardiovascular disease, neither medical nor surgical interventions look at strengths of patients and their family systems. The healthcare system orientation is on

pathology, in an attempt to find out what is wrong and cure it. A better focus would be on family strengths, and not their multiple and variable weaknesses or risk factors. Healthcare providers need to seek out family strengths to achieve a functional fit between the challenges of disease and family resources.

Comparison of Theories

Just as salutogenesis is a broad construct, seeking to understand health rather than any specific disease, the family sense of coherence is broader than any one coping style or resource. Families confront such wide varieties of stressors that no particular coping style is consistently appropriate. The sense of coherence distills the core of specific resistant resources and expresses what they all have in common; they enhance one's sense of comprehensibility, manageability and meaningfulness (McCubbin, et al.1998). A strong family sense of coherence lowers the probability that stress will cause tension and tension will cause disease.

Two theoretical models have been merged for this study, Antonovsky's (1979,1987) Salutogenic model and McCubbin et al. (1998) Resiliency Model of Family Adjustment and Adaptation. The components of the salutogenic model specifically highlighted are the sense of coherence as a worldview, the general resistance resource of social support and the general focus on health versus pathology. The overall resiliency model was used, including the five levels of stress appraisal and adaptation phases along the continuum towards adaptation. The model (Figure 3, p. 22) places the stress of CABG surgery and disruption of

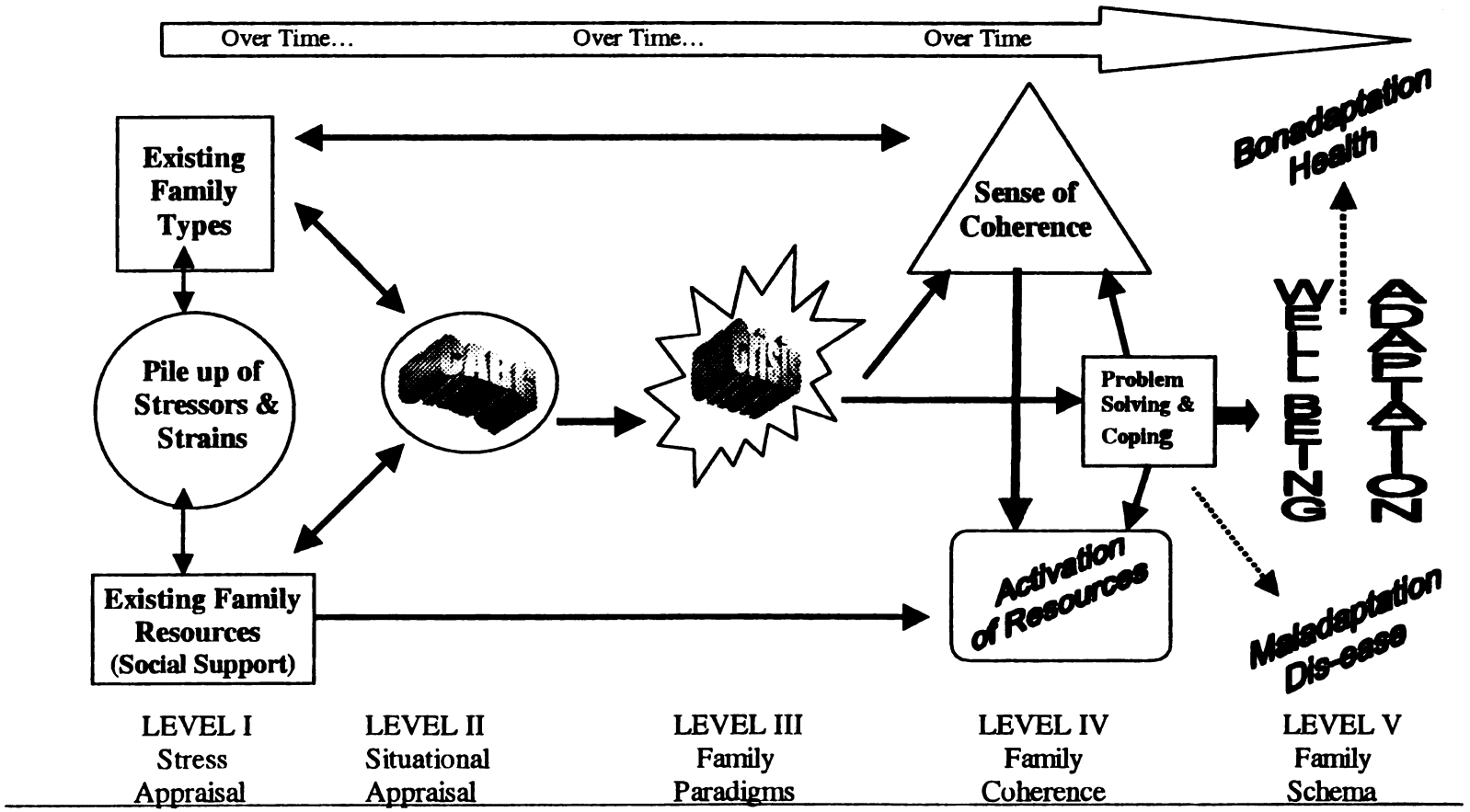

Figure 3: Sense of Coherence and Perceived Social Support as Mediators of Adaptation to CABG Surgery
(Adapted from McCubbin et al 1998)

family life beyond the normal paradigms of family coping.

For this study the crisis of CABG surgery requires that the family's sense of coherence activate needed internal or possible external resources (social support) that propel the family toward adaptation if successful, or maladaptation if unsuccessful. This study will use the term "early well-being" to refer to Antonovsky's early model called "health". Early well-being as defined is synonymous with health, happiness, comfort, and security, all definitions that fit within his framework

The main difference in this research study from the Resiliency Model of Family Adjustment and Adaptation is the definition of FSOC and how it is operationalized. As originally defined by Antonovsky (1979), a sense of coherence has a more encompassing effect on all levels of the family resiliency model, and its influence will exert a different level of stress appraisal in the McCubbin model. In Antonovsky's theory, a stressor is defined as a particular relationship between the person/family and the environment that is appraised by the person/family as taxing or exceeding their resources and endangering their health. A family sense of coherence should be influential in each step of adaptation.

The first area of FSOC influence would be in the assessment of the stressor. A strong FSOC would help to ameliorate the effects of the stressor (stressor appraisal), either deeming the associated tension as manageable, or the stimulus as a non-stressor. A strong FSOC helps the family understand the variability of chronic cardiovascular disease. The family would have already

acknowledged the chronic effects on the family system and be ready to accept whatever changes would be needed. The comprehensibility component of the FSOC allows the family to make cognitive sense of the impending surgery, its risks and benefits. A sense of comprehensibility allows information to be ordered, consistent, structured and clear (Antonovsky, 1987). Although tension would be expected with the knowledge of the impending surgery, the family would have "a solid capacity to judge reality" (Antonovsky, 1979, p 127).

Level II situational appraisal assumes the family has perceived the stimulus as potentially positive, negative, benign or irrelevant along with its ability to cause tension. A strong FSOC would give the family the conviction that they can successfully execute behaviors required to reduce the tension and produce the desired outcome. Therefore, they would accept the inevitability of surgery knowing that the associated strain can be negotiated.

In Antonovsky's theory, stress appraisal is a process that also involves the perception of the emotion-regulation and instrumental problems posed by the stressor. The family must not only perceive the problem as a stressor, but also give an emotional meaning to the situation. A strong FSOC would enhance understanding of the problems and demands imposed by the coming surgery. The family would feel that those demands are worthy of commitment.

Family paradigms, level III of the resiliency model, are specific beliefs and expectations that guide the family through established levels of functioning around well established areas of family life such as work, child-rearing, and marriage (McCubbin, et al. 1998). A strong FSOC is more likely to produce

order and meaning to a situation, thus categorizing it into a specific paradigm based on prior expectations of needs. This similar categorization around normal patterns of function assists in continuance of order in every day life.

Crisis situations do not often fall into established family paradigms in which everyday routines are sufficient to maintain order. The major differences in the two models, beyond what has already been explained, are pivotal at this point. The resiliency model interjects the family sense of coherence as level four in the adaptation process. The FSOC definition, in the McCubbin model, is operationalized as the interaction among family members and between non-family units as to how family life is perceived by the family as coherent. The sense of coherence is viewed as one of the mediating factors between family stress and family adaptation. The McCubbin model does not view a sense of coherence as always interacting in the earlier levels of stress appraisal and adaptation. This narrower view, focusing on the perception of family life as being coherent, does not look at how family life is interdependent on the interactions of other systems.

The sense of coherence questionnaire as originally developed by Antonovsky held inherent linkages to a larger social worldview that influenced family life behavior (Antonovsky & Sourani, 1998). The boundaries that define which stimuli are perceived coherent had more spheres of influence than just family. A sense of coherence is also thought to be influential in one's inner feelings, one's major activity and existential issues. If a FSOC is defined as how the family maintains their confidence that the world is comprehensible, manageable and meaningful, then many of the concepts that are attributed to the

fifth level of adaptation, family schema, are inherently already a part of the FSOC. A FSOC cannot be developed without the influence of culture, ethnicity and spirituality in deriving meaning of how the family views the world (McCubbin, et al. 1998). A family with a strong sense of coherence would activate what general resistant resources they needed to allow them to be dynamic participants in adapting to the demands of the tension caused by this unfamiliar stress. Their repertoire of available general resistant resources would be appropriately utilized as the family appraises each phase of adaptation to the current crisis. The key to successful family coping requires that the family understand the nature and source of the tension (*comprehension*), and that they effectively use their resources (*management*) to deal with significant problems (*meaningfulness*). A family with a strong FSOC will find meaning and order with newly required changes in their life. Because strain/tension enhances a FSOC, (by reinforcing that the family can overcome odds) which in turn has a positive effect upon perceived well-being, the FSOC plays a stress-buffering role as it reduces the total effect of strain/tension on the family well-being (Lavee, McCubbin, & Olson, 1987).

This study combines the strengths of the original sense of coherence construct, developed in the context of life events and coping theory, with a model of family adaptation. Chronic cardiovascular disease presents a context, superimposed with an acute health crisis that challenges the family's established patterns of functioning. The family will, in all likelihood, experience a state of maladjustment and a resulting condition of family crisis (McCubbin & Patterson,

1983). The Resiliency framework, like salutogenesis by definition, does not carry a stigmatizing value judgment that the family has failed. It proposes that some families can successfully negotiate family crisis on their own, without the aid of professional intervention. Families that are successful in negotiating this stress have powerful traits and characteristics. Healthcare professionals need to enhance these qualities, learn to recognize them, and discover ways to help other families who are not as strong. Validation of the mediating effects of the family sense of coherence and family's perception of social support in this particular health context has not been explored. Hopefully it will enhance our understanding of the family sense of coherence, the process of family adaptation, and how social support mediates health outcomes.

Social Support and Health

The family sense of coherence allows the family to activate the most appropriate coping mechanism in a given situation to dispel the tension associated with stress. Those same general resistance resources are inherent in both the development and the maintenance of the FSOC. Antonovsky listed several important general resistant resource categories, such as material goods, cognitive functions, knowledge and information, as important. One of the more crucial general resistant resources is commitment and involvement in social support networks (Antonovsky, 1987). Antonovsky believes that a high level of stress leads to tension. A strong FSOC (activating psychological assets of social support) acts to ameliorate the tension, prevent disease, and enhance health.

Over the last two decades social support has become an increasingly important area of research. The basis of social support originated in attachment theory, which described early social relationships. Early social support theorists like Bowlby (1969), and Ainsworth, Blehar, Waters & Wall (1978) indicated that a secure attachment with a primary caretaker is of great importance for the developing child. A relationship that is responsive to the child's needs influences later adult behaviors, such as emotional regulation and problem-solving interactions. Hazen & Shaver (1987) found that the best predictor of adult attachment was the perception of childhood relationships.

Sarason, Pierce & Sarason (1990) list three conditions that are necessary to derive social support under stressful conditions. First, the environment and subsystems within must offer the type of support needed in the situation. Second, the individual or family system must have the necessary skills to engage in social relationships that recruit the types of support needed. Lastly, the group must have the disposition and willingness to use those skills. This competency is a transactional process developed over time as an outlook on social relationships and the perception of environment help shape the manner in which social support affects health.

The transactional and developmental process of social support reinforces Antonovsky's view of the development of the sense of coherence. Environmental and family resistance resources, which offer consistent positive feedback, help the family develop a strong sense of coherence. The family must be able to activate the appropriate resources in times of need, and this requires the skills to interact

with their social environments. The family must willingly engage in the challenges presented by the stressor. A sense of coherence and social support development offer very similar developmental concepts.

Social support also mediates the relationship between life stress and health outcomes. Three scholars, Cassel, Caplan and Cobb, laid much of the groundwork for the theoretical development of social support and its relationship with health. Cassel (1976) believed that disruption of significant social ties leaves individuals susceptible to disease, and that social feedback served as a protective "buffering" from the somatic or psychological consequences of stress. Cassel (1974) advocated the recruitment of support, as the most feasible direction for intervention since reducing exposure to the stress, as a primary intervention, is an unrealistic expectation. Each individual and family perception of stress is often unique to the social system. Cassel (1974) also recognized that stressful events often disrupt social ties, thus diminishing support in times when support is needed and demands increased.

Caplan (1974) used the term support system, although he did not elaborate on how it is developed or maintained. A social system provides three main activities: (1) mobilizing psychological resources to manage emotional problems; (2) sharing demanding tasks; and (3), providing materials, money, skills, and guidance aid when dealing with specific stressors. To provide protection, these tasks should be available for everyday demands, situational crises, and life transitions.

Cobb's (1976) major emphasis was on social support as having a stress buffering effect. He was more precise then Caplan in his efforts to explain social support. He believed that social support was information that leads to the perception of being cared for and loved. Social support provides the perception of being valued and esteemed among a network that provided communication and mutual obligation.

The beneficial effects of social relationships have been proposed to act as a buffer and more directly, as a main effect against life stress (Sarason, Sarason & Pierce, 1991). These are two additional theory components that are linked to the sense of coherence. The situational specific view of social support ties social support with a specific stressful event. This would be similar to viewing social support as a general resistant resource. The second component sees social support as a contributor to personality and social development, discussed earlier with attachment theory, and similar to protective resources inherent in the individual or family group.

It is believed that the family of origin lays the groundwork for how a support network is developed and maintained (Vaux, 1988). Families provide secure bases from which individuals explore relationships, where modeling of supportive interactions occurs and authorization of specific network relationships happen. The support process involves active transaction between the person or group and the network. A social support network must be maintained and mobilized at times, and support incidents managed, in order to receive appropriate assistance in the form of specific supportive behaviors.

Social support literature supports the notion that social support can increase the effectiveness of recovery and may be key in disease limitation or progression. Looking at social support in a salutogenic orientation leads one to say that it is a strong general resistant resource and potential protective factor that plays a significant role in recovery after a crisis (Antonovsky, 1987). Social support literature also reemphasizes Antonovsky's belief that general resistant resources (including social support) assist in the development of a strong FSOC and are activated appropriately to diminish the tension associated with unmet stress. Most social support literature, however, still fails to answer the question of how and why social support affects health (Glass, Dym, Greenberg, Rintell, Roesch & Berkman, 2000; Hemingway & Marmot, 1999; Reis, 1984). Where and when the transaction between social support and health begins is still in doubt.

CONCEPTUAL AND OPERATIONAL DEFINITIONS

1. **Family:**

   Theoretical definition: Families can have diverse forms, but are composed of individuals with either emotional, physical, or kinship closeness (McCubbin, Patterson & Wilson, 1983).

   Operational Definition: A family dyad composed of the patient and one individual who has an emotional, and or physical closeness to the patient, whom the patient identifies as the family member who will be his/her support person during his/her recovery.

Family structure has changed so dramatically, it is important to explore whom family members include in defining their own family: who is significant and what meanings of various roles and relationships are. (Walsh, 1998)

2. **Sense of Coherence:**

Theoretical Definition: A global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that, (1) the stimulus deriving from internal and external environments in the course of living is structured, predictable and explicable. (2) The resources are available to one to meet the demands posed by these stimuli and (3) these demands are challenges worthy of investment and engagement (Antonovsky, 1979, 1987).

Operational Definition: *The Orientation to Life Questionnaire* (OLQ/SOC, Antonovsky, Antonovsky & Sourani). This tool explains the motivational and cognitive basis for transforming one's potential resources into actuality, thereby facilitating coping with stressors and promoting health (Anderson, 1998). Possible scores range from the low of 29 to the high of 203. A normative mean score of 129.74 (S.D. 17.4) was reported by Antonovsky (1998). Anderson dichotomized sample mean scores to label scores above the mean as strong SOC, and scores below the mean, as weak SOC. For this study the group mean of 150 defines a *strong* FSOC as scores >150, and scores < 150 as *weak* FSOC.

A sense of coherence does not imply that one is in ultimate control. It does involve one as a participant in the process shaping one's destiny as well as one's daily experiences (Antonovsky, 1979).

3. **Perceived Social Support:**

Theoretical Definition: Perceived social support is the specific individuals' subjective belief that the different types of support are available in times of need. It is a complex construct that is primarily placed in the domain of discernment and by its very nature is difficult to operationalized and measure. However, it is within that subjective belief where the intangible strength of social support occurs. The types of social support under evaluation is composed of: 1) emotional support, validating that the person is valued for his or her own worth; 2) informational support, helps a person define and understand problems; 3) instrumental support, specific activities or actions; and 4) social integration, a network of people who share concerns, including kinship ties, social acquaintances and community. (Vaux, 1988; Sarason, Sarason & Pierce, 1990).

Operational Definition: *The Social Support Behaviors Scale* (SSB) (Vaux, 1988). A scale used to measure *perceived social support* from relatives and friends over the last year. It consists of 45 items designed to tap into five modes of support: emotional support, socialization, practical assistance, financial assistance and advice/guidance. Each question asked the subject to rate on a scale of 1-5 for both family and friends separately,

each type of behavior. The lowest possible score on the scale is 45 the highest 225.

***Perceived** available support may lower the need for enacted support because it potentiates an individual's coping ability (Sarason, Pierce & Sarason, 1990)*

4. Actual Social Support:

Theoretical Definition: Social support that is tangibly given or specifically used and defined as, (1) emotional support, (2) informational support, (3) instrumental support, or (4) social integration, which is support from a network of people who share concerns, including kinship ties, social acquaintances and community.

Operational Definition: *The Social Support Behaviors Scale* (SSB, Vaux, 1988). The same scale used to measure perceived social support from relatives and friends over the last year, was modified to request the subject to rate *if* they experienced a particular support behavior *after* CABG surgery. It still is designed to tap into five modes of support: emotional support, socialization, practical assistance, financial assistance and advice/guidance. *Actual* support is identified as support judged by the patient and designated family member as experienced after CABG surgery.

5. Adaptation:

Theoretical Definition: Descriptive criterion of the outcome of family efforts to bring a new level of balance, harmony and functioning to a

family post-crisis. Adaptation is the process of changing to fit new conditions (Lavee, McCubbin & Olson, 1987).

Operational Definition: *Family Adaptation Scale* (FAS) (Antonovsky & Sourani, 1988). A measure designed to ask the family their *satisfaction* with fit between family members, the family unit and the community (Antonovsky & Sourani, 1988). It is a seven point eleven item questionnaire. The ranges of scores are from a low of 11 to a high of 77. Individual item scores of greater than five would be considered very high adaptation scores (Newby, 1996).

6. Early Well-Being:

Theoretical Definition: The condition of being well in mind and body. Analogous to health as defined by Antonovsky, the opposite of dis-ease on his continuum.

Operational Definition: *The Family Member Well-Being Index* (FMWB) (McCubbin & Patterson, 1983c). This index will be used at four to six weeks in the early recovery stage of CABG surgery. The index was developed to measure the degree to which a family member is adjusted in terms of concern about health, tension, energy, cheerfulness, fear, anger, sadness, and general concern. The lowest score is zero with the highest 80. Normative scores of approximately 45 are average well-being scores.

7. Resiliency

Theoretical Definition: The positive behavioral patterns and functional competence individuals and family units demonstrate under stressful or adverse circumstances. This determines the family's ability to recover by maintaining its integrity as a unit while insuring, and where necessary, restoring the well-being of family members and the family unit as a whole (McCubbin, et al. 1998).

Operational Definition: The *outcome* of the process of adaptation over time in which the family moves through the stressful situation. Restoration of harmony and balance within the family system by adjustment to the changes brought on by a stressor and perception of improved well-being and fit within the community and between the family units.

ASSUMPTIONS

Assumption #1: Examining health versus pathology is the appropriate orientation for family research, especially in times of crisis.

Thinking salutogenically opens the way for studying the consequences of demands made on the organism to which no readily available or automatically adaptive responses (a generally accepted definition of a stressor), when there is good theoretical reason to predict positive health consequences. (Antonovsky, 1987, p. 8).

Assumption # 2: Families face hardships and changes as a natural aspect of family life over the life course.

> *The onset of a serious illness in the family adds a set of demands, strains and hardships that interact with the normative changes experienced by families (McCubbin & McCubbin, 1993).*

Assumption # 3: Resilient families develop basic competencies, patterns of functioning to foster growth, to protect family members in the face of major disruptions.

> *In the usual course of action, a family attempts to make adjustments in its pattern of interaction, with minimal change or disruption of the family's established patterns of behavior and structure (McCubbin & Patterson, 1993).*

Assumption # 4: Resilient families also will develop basic and unique competencies to protect themselves from non-normative events, stressors and strains to foster the family's recovery following a family crisis or change.

> *In the face of adversity the established patterns of family functioning are not adequate to manage the situation. This requires changes in the function of the family unit (McCubbin et al. 1998).*

Assumption # 5: Resilient families draw from and contribute to networks of relationships and resources in the community, during periods of crisis.

> *Family resources become part of the family's capabilities for resisting a crisis and promoting family resiliency, and ultimately family*

adaptation. One of the critical family resources is social support (McCubbin, Thompson, Pirner & McCubbin, 1988).

Assumption # 6: Resilient families faced with crisis situations will make changes in the family functioning, to restore harmony, balance and order, even in the midst of change.

Crises often require changes in the family's environment, the community, and the family's relationships and boundaries to restore harmony, balance and well-being to the family group (McCubbin, Thompson & McCubbin, 1996).

Assumption # 7: The family perceives that social phenomena are complex and most adequately understood when they are distinguished as multidimensional as the Sense of Coherence (SOC) has been developed.

The SOC was developed using the facet theory that enjoins one to formulate at the conceptual level a definition that will subsequently be operationalized, that will specify the dimensions of the phenomenon one is trying to define. Facet theory bases the assumption that social phenomenon are by and large multidimensional (Antonovsky, 1979, p. 57).

Assumption # 8: Most individuals would define a life-threatening experience as noxious or a stressor.

A stressor is a demand placed on the family or social system that produces or has the potential to produce changes in the family system (McCubbin, et al. 1996).

Assumption # 9: Resilient families faced with the unpredictable stress of CABG surgery will turn to their external social support network for support.

> *Family is not enough. When the family compromises the only source of social contacts, stress produces greater conflicts and it can be augmented by social relationships beyond kin (Garbarino, 1983).*

CHAPTER II

REVIEW OF THE LITERATURE

Three general topics will be covered (1) Antonovsky's Sense of Coherence, (2) The Resiliency Model and resiliency resources, and (3) Social Support as a general resistance resource in heart disease.

Sense of Coherence

In theory, the SOC is hypothesized to be a salutogenic resource influencing the etiology of and recovery from disease through effective coping. In addition, the SOC is thought to decrease the likelihood of a person perceiving the social environment as stressful. Therefore, a SOC reduces the susceptibility of health damaging effects of chronic stress by lowering the probability of repeated adverse neuropsychological reactions and negative emotions related to the stress perception (Antonovsky, 1987). In the following empirical studies, SOC has been found to be inversely associated with disease, disabilities and symptoms including health complaints, dysfunction and distress. Many of today's health disorders are due less to bacteria and viruses than to innate personal traits. Chronic disorders, which include hypertension, heart disease, various forms of cancer, and similar problems, are influenced by attributes of the individual (Depue & Monroe, 1996).

SOC and Psychosocial Adaptation

SOC has been studied in a variety of contexts. Studies looking at personal, social and job-related resources as mediators of illness found the SOC inversely related to the number of reported sickness absences (Vahetera, Ututela & Pentti, 1996; Kivimacki, Feldt, Vahtera & Nurmi, 2000). In another study of liver transplant recipients who returned to work, a model composed of the SOC and hardiness correctly predicted 90% of patients who would return to the labor force (Newton, 1999). Returning to work was considered a strong indicator of transplant success. The sense of coherence accounted for most of the explained variance, including any provided by hardiness (Newton). Social workers with a stronger SOC experience less job burnout (Baker, North & Smith, 1997; Gilbar, 1998). Nuclear operators who have a stronger SOC experience less shift work stress (Dalbokova, Tzenova & Ognjanova, 1995). Employee adjustment to assignment in a foreign country was predicted by a stronger SOC (Andersen, & Arnetz, 1999), and student adjustment to a Masters of Business Administration program was related positively to the level of their SOC (Ryland, Tegarden & King, 1998).

Some studies report positive psychological adaptation with strong SOC scores. They have looked at happiness and quality of life (QOL) (Klang, Bjorvell & Clyne, 1996), and self-rated health perceptions (Anson, Paran, Neuman & Chernichovsky, 1993; Limber, 2004). A strong SOC also was found to be the most powerful predictor of self-esteem, well-being and a negative predictor of anxiety in Human Immunivirus (HIV) positive American adults (Linn, Lewis,

Cain & Kimbrough, 1993). Mullen, Smith and Hill (1993) found the SOC was a significant negative predictor of psychological distress in cancer patients and their spouses.

Other studies not following the salutogenic approach of looking for health indices, examined several non-salutogenic independent variables that showed a strong relationship with SOC and adaptation. Depression was noted to be more prevalent in lower SOC individuals following natural disaster (Kaiser, Sattler, Bellack & Dersin, 1996), and more health complaints were reported in women with lower SOC (Kivimaki, et al. 2000). Low SOC scores predicted a higher prevalence of post-traumatic stress disorder symptoms in ambulance personnel (Jonsson, Segesten & Mattsson, 2003).

Stronger SOC scores in women with chronic health problems predicted a more positive health appraisal and quality of life (QOL) indices (Nesbitt & Hendrich, 2000). Women with irritable bowel syndrome (IBS) have a lower SOC when compared to women without IBS (Motzer, Hertig, Jarrett, & Heitkemper, 2003). Looking at state-trait anxiety scores, a strong negative relationship was found between the SOC and anxiety-trait scores in teens and young adults (Antonovsky & Sagy, 1986; Bernstain & Carmel, 1987). A substantial excess risk for symptoms of ill health was reported for those with a low SOC (Lundberg, 1997), and psychological distress was higher in Southeast Asian refugees with the lowest SOC (Ying, Akutsu, Zhang & Huang, 1991).

Several clinical indicators and their relationship with the SOC have been studied. There is less disability and pain associated with chronic conditions such

as rheumatoid arthritis (Chamberlain & Zika 1992). SOC was found to be the most significant mediator between disabilities and handicap variables in both young severe, acute, multiple trauma victims and chronic older arthritis patients. (Handicap was defined as a role limitation due to health problems, which can occur at any time in the course of an illness or rehabilitation process.) The results lend support to the idea that the SOC might exert itself independently of a given disability (either disease or injury) somewhere on the pathway between disability and handicap (Schnyder, Buchi, Morgeli & Sensky, 1999). The stressor effects of anticipation of moving showed older adults with higher SOC modulated the stress of moving by increased natural killer cell activity, which is important in activation of the immune system. (The low SOC scores are associated with increased likelihood of poorer immune function.) (Lutgendorf, Vitaliano, Tripp-Reimer, Harvey & Lubaroff, 1999) Similar results were seen in patients with solid tumor cancer. It showed that a stronger sense of coherence scores correlated with an increase in natural killer cell function and subsequent activation of an enzyme important for controlling malignant tumor cells (Post-White, 1994).

SOC and Coronary Heart Disease

The SOC has been studied with specific populations with chronic and acute health crises. Populations with diagnoses such as cancer, liver transplantation, rheumatoid arthritis, HIV, and accident victims, and suicide attempt survivors (Petrie & Brook, 1992) as well as children with cystic fibrosis (Baker, 1998) have been positively correlated with the SOC. Although the number of individuals and families affected by the chronic condition of coronary

heart disease (CHD) is increasing, there are limited studies available that look at SOC and heart disease.

In one study of individuals with CHD who survived cardiac arrest, SOC was measured to predict quality of life (Motzer & Stewart, 1996). Researchers looking at physical and emotional consequences of a chronic illness, such as coronary heart disease, added an acute event, like surviving cardiac arrest, and assumed that the negative influence of this acute event would lower a patient's quality of life (QOL). However, there was a high correlation between QOL and SOC, indicating that individuals with higher SOC had higher QOL than persons with lower SOC. Another study (Kravetz, Drory & Florian, 1993) looked at the SOC and using Kobas's (1979) hardiness construct in 164 males in rehabilitation due to coronary heart disease. The aim of the study was to compare the two constructs, but unfortunately no clinical or QOL data were provided. However, both constructs had similar positive responses to QOL questions. The Swedish Level of Living Survey done in 1991 showed a correlation between low SOC and an almost two-fold increase in circulatory illness, represented by questions such as chest pain, weak heart, high blood pressure and heart attack.

One longitudinal study associated with the large Helsinki Heart Study (Popius, Tenkanen, Kalimo & Heinssalmi, 1999) studied 4405 Finnish middle-aged working-men in different occupations over a period of eight years. Clinical indicators of coronary heart disease such as total cholesterol, systolic blood pressure, body mass index; smoking and leisure activity were compared in blue collar and white-collar occupations. The results supported Antonovsky's

salutogenic theory since the lowest incidence of CHD was in the highest SOC group. It was 25% lower than the incidence in the lowest SOC group. However, this salutogenic effect was seen only for white-collar workers. White-collar workers with higher SOC had a 63% lower risk of CHD then those with lower SOC even when age, smoking, leisure and physical activity, total cholesterol and systolic blood pressure were controlled. It was speculated that the lack of salutogenic effect with blue-collar workers was related to a job situation where lack of flexible thinking, independent judgment and responsibility were detrimental. High SOC blue-collar workers may actually have more frustration in their job and additional stress due to the incongruence in their competence and ability to impact their work environment. In a recent study, (Dantas, Motzer & Ciol, 2002) looked at quality of life 1-2 years after CABG surgery. After controlling for poor health vulnerability and chronic illness trajectory instability, which accounted for 49% of the variance, the addition of perceived social support, self-esteem and SOC increased explained variance to 64%, 69%, and 75% respectively.

Family Sense of Coherence

The SOC construct is at the core of a complex theoretical model that has been consistently supported in the literature as a global predisposition to respond to life stress. Although Antonovsky's earlier work pointed to the importance of a collective sense of coherence and introduced the importance of the family sense of coherence in shaping and modifying the individual's sense of coherence, he did

not seriously elaborate upon this area. The collective viewpoint of the family existence is important but difficult to operationalize and measure (Walker, 1985). There is no clear answer to the question of whether the family consensus or mean scores of the sense of coherence is a perception of the reality of family life, or the reality of each individual in the family. Too often the clinician working with an individual collects data on the perception of reality on the basis of the individual's report. Based on qualitative research with families who have a chronically ill member, preliminary evidence points to the existence of a collective family worldview (Patterson & Garwick, 1998). However, if the reality of family life differs dramatically from that of the individual, questions arise as to how this collective view is operationalized.

Antonovsky and Sourani (1988) attempted to deal with this complex theoretical issue by addressing the construct of the FSOC. They looked at the degree of spousal consensus about the family's perception of the coherence of family life. Additionally, they measured adaptation as the satisfaction with fit for internal and external environments. The first issue, coherence with family life, is similar to McCubbin's et al. (1998) version of family sense of coherence (level four) in their model of adaptation, and in essence a narrower focus than that of the original concept. The second deviates from McCubbin's measures of adaptation. Antonovsky and Sourani operationalized adaptation as general well-being, satisfaction and family distress. The study looked at 60 couples in which the husband had been diagnosed with some disability from two to ten years prior to the study period. The results showed a strong relationship between the FSOC and

family adaptation, (correlation coefficients initially of 0.89 and 0.87 for men and women respectively). Looking further into the data they concluded that *consensus* of scores between spouses, which theoretically should mean a *strong* sense of coherence, is related to coherence and adaptation, but less powerful than the *average* level of coherence when looking at scores among spouses. This study determined that the FSOC was central to successful coping with family stressors and was associated with perceived satisfaction with interfamily and family-community fit.

Anderson questioned whether the FSOC was defined as the family *collective* or as the family *consensus* scores, which would best predicted family adjustment to stressful events. The study population expanded the configuration of family by including married, remarried, cohabitating, single parent, and two-generation families residing in the same household. The family group consisted of two members, including one who had a recent diagnosis of a serious illness. Variables measured included illness stress, ongoing family demands, family system variables and family quality of life. Multiple regression analysis indicated that FSOC, illness stress, family system balance, and length of family relationship, patient full time job status, and family income accounted for 57.6% of the predicted family quality of life. The FSOC was the largest predictor of family quality of life, accounting for 30% of the variance. A particularly interesting issue addressed in this article was the difference in collective versus consensus scores. Families who were in disagreement by definition should have a weak FSOC, and those in agreement a strong FSOC (Antonovsky & Sourani,

1988). However, in the setting of an acute illness, family agreement on the FSOC and family QOL were more likely to be consistent with the patient ratings, rather than with the family members rating. Patient ratings correlated higher then family member scores. This was consistent with the previous study (Antonovsky & Sourani) that showed spousal mean scores were statistically stronger than consensus scores.

Sagy and Antonovsky (1998) looked at the FSOC as a collective cognitive map of the family, but believed that individual reports should not be ignored. Their methodological solution to the problem of studying the FSOC was to obtain individual reports of SOC and then to build a collective measure on the basis of the interrelations of individual perceptions. Their study population was recent retirees and their spouses. They looked at four models of operationalizing the FSOC. They were (1) the aggregation model, which sees the collective as an *average sum* of its individuals, (2) the pathogenic model, which sees the coping of the whole family as characterized by its *weakest* member, (3) the salutogenic model, which looks at the score of the *strongest* member to measure coping, and (4) the consensus model based on the assumption that *agreement* among family members improves its coping and resistance ability. Results indicated that the salutogenic model might be a better predictor of family adaptation of the retirees one year and two years from retirement. This took into account the incongruent family's scores, which were best predicted by the higher score between the two spouses. The theoretical inference to be drawn is that an individual member of

the family with a strong SOC provides the support or applies the orchestration resources needed to cope successfully with stressors.

An important issue discussed here is that "the family SOC is not a direct representation of a concrete reality but an abstraction of it, which may be heuristic to the researcher" (Sagy & Antonovsky, 1998, p. 222). The researchers felt that within the limitations of the study there lies a hint that a combination of a reductionist approach, similar to McCubbin's FSOC and the holistic approach seen here, and replicated in this study, may give a concrete answer to the appropriate approach to this question. They felt that continued mapping of relationships among individual scores might provide the answer.

Resiliency, Adaptation and Resources

Family stress theory addresses the concepts of family sources of stress such as normative transitions, pile-up of demands, the outcome of stress-family disruption or adjustment and adaptation. It also seeks to describe the mediating factors between stress and its outcomes, appraisal of the stress and a family's internal and external resources. Research on family stress has focused on the influence of unanticipated, undesired and acute external events (death, rape, war, natural disaster) and the effects of persistent stressors that bring long-term demands (e.g. chronic illness, economic depression, unemployment, & separation due to war or imprisonment). More recent research has focused on the family sense of coherence and family schema. Family coherence and family schema as operationalized by the resiliency model are closely aligned. However, it is yet

unclear to what extent families have a shared coherence and schema or whether shared perception is at all necessary for adequate coping (Lavee, McCubbin & Olson, 1987).

Family SOC and family schema were the focus of a recent article on Native Hawaiian families, and their influence on family dysfunction. FSOC was defined as a worldview, but operationalized similar to Antonovsky & Sourani's (1988) model. Family schema was also a worldview, but defined as beliefs, values, goals and meanings about the world and not just family life. Results via path analysis of trimmed hierarchical regression analysis showed that family problem solving communication (-0.23) emerged as the critical explanatory variable for family dysfunction. The appraisal processes of family schema (+0.18) causally related to coherence (+0.31) linked through family hardiness (+0.41) explained the variability in family problem solving communication and ultimately family dysfunction. Community social support contributed to family schema and family hardiness (+0.22 and +0.24 respectively). In Native Hawaiian single-parent families, the study showed family hardiness was a critical explanatory variable (-0.41) for family dysfunction (McCubbin, Thompson, Thompson, Elver & McCubbin, 1998).

Although this was a well-developed and thorough research study, there seems to be some conceptual overlap between the components of the model that clouds the distinctions between the categories (Staton, 2000). One blurred definition was family hardiness, defined in the research study as the family's dispositional resource of having a sense of commitment, control, confidence and

challenge. This definition is very similar to "world view of confidence, comprehensibility, management and meaningfulness" defining Antonovsky's SOC. In addition, the study compares each function of family schema and family coherence in a comparative analysis that links components. They are classification and confidence, spiritualization and meaningfulness, temporalization and manageability, and contextualization (nature) and comprehensibility, which leave only contextualization (relationships) without a direct link to a sense of coherence. If these conceptual overlaps were eliminated the causal linkages between the FSOC and adaptation could be much stronger (Staton).

A critical difference emerges between level four and level five of the resiliency model. Family schema fosters family problem solving and coping with one of its central components the development of family meanings. These meanings are assumed to transcend the immediate stressor and situation and place the crisis in a larger context of experiences. The family sense of coherence includes family meanings in their cultural, ethnic and social constructs to allow the family to obtain meaningful understanding of the stressor they are confronting. Patterson and Garwick (1994) state that family meanings should be distinct from family consensus, and that family members collectively construct meanings as they interact and share time, space, and life experiences. This is a classic sociology theory that premises all meaning is created and maintained through social interaction (Berger & Luckman, 1966). This does not demean the

importance of the family schema concept, but only requires that it be operationalized more distinctly in order not to confound the variables.

Within the family resiliency model, resilience is viewed as involving two distinguishable but related family processes, 1) adjustment, which involves family protective factors and 2) adaptation, which involves the function of resistant resources. Antonovsky described the characteristics of a general resistant resource as any characteristic of the person, the group or the environment that can facilitate effective tension management. " Whatever one's location on the health ease/dis-ease continuum the extent to which general resistant resources are available to one plays a decisive role in determining the movement toward the healthy end of the continuum, or at least holding one's own" (Antonovsky, 1987, p. 100). Two national surveys of families over the life cycle (Olson, et al., 1983; McCubbin, Thompson, Pirner & McCubbin, 1988) showed that families face risk factors throughout the family life cycle and over time. The study of "normal" families included families from 31 states, at all stages of the life cycle. Stratified random sampling was used, however, it was a predominantly Caucasian, middle-class group. With over 1000 families, it is still one of the largest data sets of intact families collected in the United States.

Ten general resiliency factors (protective and recovery) have emerged from these studies, as well as 25 years of research with families under stress (McCubbin, McCubbin, Thompson, Han & Allen, 1997). Many of these resiliency factors are conceptually linked with the sense of coherence. The first is family problem-solving communication, which conveys support and caring and

emphasizes affirmation as its primary pattern of communication. One could assume a family with a strong SOC would inherently require a supportive communication style to activate their resources in times of crisis. The second, equality, emerges in the context of resiliency research in crisis situations (McCubbin & Dahl, 1976, McCubbin, Dahl, Lester & Ross, 1975). The third, spirituality, encourages families to find meaning through their spiritual beliefs and practices, which is conceptually linked with the meaningfulness component of SOC. The fourth is flexibility in the face of crisis. Antonovsky states that it does not matter if all stimuli are not perceived as coherent, but only those that one defines as important, and that coherence implies that one be flexible in using the resources most appropriate for the given situation.

Truthfulness instead of ambiguity (number five) is necessary not only in a family system but also from those social, medical, and political agencies that inform and guide families. Inherent truthfulness in external resources activated by the SOC is needed. The sixth, hope or its absence, has been shown to either support the family system when present, or threaten it when absent (McCubbin & Dahl, 1976). The SOC implies through its components that one has the confidence that the stimuli deriving from one's external or internal environment are structured, predictable, and explicable and those demands are challenges worthy of investment and engagement. Hope implies that the family's wishes or desires are accompanied by confident expectation of their fulfillment.

The seventh, family hardiness, calls for the family members to work together. Hardiness has been conceptually linked to SOC and in empirical

research SOC is a stronger predictor of adaptation then hardiness (Newton, 1999). The eighth, family times and routines, are behaviors that maintain the family's stability and continuity in the face of adversity. The ninth social support is believed by both theories as an important resource for the family. Antonovsky (1987) stated, "To what extent one is embedded in social networks to which one is committed, I suggest is a crucial general resistant resource" (p.10). The tenth factor, health, is not only an outcome goal of a sense of coherence but reinforces the sense of coherence as an active resource for the family.

Social Support as a Resource

In the last thirty years there have been many research studies looking at the association between the occurrence of a stressor and symptomatology. Although methodological differences are great, those who receive support from others are less likely to be ill then those who do not (Berkman, 1985). Although more limited, there has been some research that provides evidence of a relationship between social support and family adjustment and adaptation (Cobb, 1976; McCubbin et al, 1996; Murray, 2000).

Social support and a sense of coherence are interdependent in Antonovsky's theory. Social support is seen as a critical general resistant resource in supporting the development of a SOC and a protective resource in managing tension associated with stress. People with strong coherence have positive interpersonal relationships based on mutual caring and support. They actively engage in social relationships and activate these resources in times of

need. Ben-Sira (1985) carried out a study looking at factors that facilitated an individual's emotional homeostasis. Although not directly looking at coherence, many of the "potency" components were taken from Antonovsky's work. The study found that "potency" conceptualized as a homeostasis stabilizing mechanism seemed to be predictive of emotional coping when social support was available.

General resistant resource deficits defined as a lack of available options for coping are postulated to lower the sense of coherence and increase the risk of psychological dysfunction. Ying, et al (1991) noted the lack of cultural traditionalism in Southeast Asian refugees as one example of a lack of a general resistant resource, which was significant in lowering sense of coherence scores. Mullen, Smith and Hill (1993), looking at cancer patients and their husbands, found a SOC significantly and negatively predicted psychological distress, while spiritual resources and family social support were significant indirect predictors through their effect on coherence. Social support emerged as an important resource second only to a sense of coherence. Lavee, McCubbin & Olson (1987) felt that the perceived resources that were available dramatically shape the effect of demands upon the appraisal of stress for the family and the effect of accumulated demands on resources. Within the context of the resiliency model, social support can be understood as an important resource available for dealing with stressors and promoting family adjustment.

Social Support and Heart Disease

The world population is aging, and the number of individuals and families living with the comorbidity of cardiovascular disease is increasing. According to the American Heart Association (2002), two-thirds of heart attack victims do not make a complete recovery, even though 86% of those under 65 are eligible to return to work. Medicine emphasizing preventive measures for heart disease concentrates on risk factor reduction. This includes hypertension, diabetes, hyperlipidemia, stress, genetic risks, gender specific risks, and many remote esoteric factors. However, environmental issues, psychosocial, emotional stress and spiritual factors are not included (Joeg, 1997). The heart and therefore heart disease, encompasses not only a physical organ but also an emotional heart (Ornish, 1998). Although the brain is the center of emotions, humans have always associated love and intimacy with the heart. We are social creatures, and therefore intimacy and security is manifested in the relationships between others and ourselves. Social support may be the vehicle for examining the influence that love and intimacy has on heart disease, as it is an acceptable label in scientific literature (Ornish). Social support and its interaction with heart disease is a complex process that includes physical, emotional and psychological dimensions. Validity has been documented through empirical studies, research and literature reviews.

One of the earliest studies that showed a significant relationship between social support and heart disease was the Roseto study (Egolf, Lasker, Wolf & Potvin, 1992). The small town of Roseto, Pennsylvania was composed of

families found to have a strikingly low mortality rate from heart attacks, in comparison to subjects in a similar town of Bangor, Pennsylvania, during the first 30 years of the study. The medical risk factors for heart disease such as smoking, high-fat diet, and diabetes were equally prevalent in the two towns. The difference between Roseto and Bangor was the composition of the families. The Roseto population was composed of families that had immigrated from a small village in Italy in 1882. There was a high level of social and ethnic homogeneity, close family ties and cohesive community relationships. In the late 1960's to 1970's Roseto shifted away from three-generational households and traditional values and became less cohesive with fragmented and weakened community ties. Thirty years later, Roseto's population had a substantial increase in deaths related to heart attacks, and this level equaled that of the neighboring community. Social support of family and community had eroded, negating the protective effects toward heart disease, and many of the qualities that reinforce a strong SOC.

The Temcumseh Community Health Study examined the relationships of 3,000 men and women (House, Robbins & Metzner, 1982), over a period of nine to twelve years. The researchers looked at the number of friends, the closeness to relatives and the number of social groups attended. When relationships were broken or diminished rates for heart disease, stroke, cancer, arthritis and lung disease were two to three times higher than in the preceding ten-year period. This was significantly positive even when controlling for age. In Sweden over 17,000 men and women between the ages of 29-74 were followed for six years. Those most lonely and isolated had almost four times the risk of dying prematurely, even

when age, sex, educational level, employment status and smoking variables were statistically controlled (Orth-Gomer & Johnson, 1987). A study in Finland demonstrated the power of social support. Thirteen thousand people were studied for five to nine years. Men who were socially isolated had a two to three times higher risk of death from cardiovascular disease than those who had a sense of community and social connection (Kaplan, Salonen & Cohen, 1988).

Several studies specifically aimed at the cardiovascular disease population also showed significant results. One study looking at survival after a heart attack, the "Beta-Blocker Heart Attack Trial" (Ruberman, Weinblatt, Goldberg & Chaudery, 1984), noted that men classified as socially isolated had a fourfold greater risk of death than men classified as low risk for social isolation. Support for the relationship between social support and religion and mortality was discussed in the Oxman, Freeman & Manheimer (1995) study. They looked at men and women six months after undergoing elective open-heart surgery. Those who lacked regular participation in organized social groups had a fourfold increased risk of dying six months after surgery. The study indicated that the lack of group participation and absence of strength from religion had independent and additive effects. Those subjects who had neither social support ties nor religious beliefs had a seven-fold increased risk of death at six months.

Social support and personal control were associated with recovery six months after heart transplantation, with social support network helpfulness and attachment most highly correlated with psychological and physical outcomes (Bohachick, Taylor, Sereika, Reeder & Anton, 2002). In a landmark study,

Speigel, Bloom & Gottheil (1989) studied women with metastatic breast cancer (chronic disease), highlighting the effects of intimacy and spirituality. The women were randomly assigned to a treatment group and conventional therapy. For two months, the treatment group participated in a bi-weekly social support group that was led by a therapist whose own cancer was in remission, a social worker or psychiatrist. The group patients became close and lived an average of 50% longer than the control group (Speigel, Bloom & Gottheil, 1989). What the researchers did not anticipate was the continued group support beyond the original study period. The bonds formed during the initial support group endured and continued through many years.

Studying behavioral modification, Freidman, Thoreson and Gill (1986) achieved a nearly 50% reduction in coronary heart disease recurrence among individuals randomized to a support group intervention specifically aimed at reducing all aspects of type A behavior. Dr. Freidman described the field director of the study as becoming a surrogate mother to hundreds of male participants. Inadequate maternal love and affection in the formation of type A behavior had been realized earlier, but they did not realize that such deprivation could be compensated in adult life by providing unconditional affection from a parent figure. In a series of studies in intensive care units, Dr.Lynch and colleagues studied men and women who had significant reductions in irregular heartbeats whenever the nurse or physician touched them to take their pulse (Lynch, Thomas & Paskewitz, 1977). Those observations of the patients' heart rate reductions,

reflects our need to form loving human relationships (Lynch, 1977). Social support is easily seen as the need for love and intimacy.

More recent studies have attempted to identify consistency in findings across data sets because the type of social support that is most effective is still in dispute (Aneshel, Pearlin, Mullan, Zarit & Whitlach, 1995; Li, Seltzer & Greenberg, 1997; Thompson, Futterman, Gallagher-Thompson, Rose & Lovett, 1993). Miller et al. (2001) looked at caregiver distress and social support across four group types. The groups included an Alzheimer care study, a respite care study, an informal healthcare provider study, and an elder care study. They looked at three ways in which social support influenced distress levels. The first was main effect, perceived emotional support as associated with a higher self-worth and acceptance by others. The second effect was informal instrumental support, which aided in lower caregiver distress. The third was formal support that may lower caregiver distress by the provision of aid and respite. Results showed a significant positive association between informal instrumental support and perceived emotional support in reducing caregiver distress and care receiver behavioral problems. The authors noted that understanding the causal process linking stressors, support and distress, is understood by the specific relationship between the elements of the support process. They suggest that social support that does not match the defined need of the caregiver may not be highly valued and thus will have little effect in reducing distress.

Hemingway and Marmot (1999) looked at psychosocial factors in the incidence and prognosis of coronary heart disease across 43 studies. A

psychosocial factor was defined as a measurement that potentially relates psychological conditions or events to the social environment, and ultimately to pathophysiological changes. Four psychosocial factors were examined in a systematic review. They were psychological traits (Type A/hostility), psychological states (depression and anxiety), psychological interaction with the organization of work (job-control-demands-support) social networks and social support. The strongest correlation of the four psychosocial factors was the last one. Individuals with a larger social network structure and the higher quality of social support (including emotional and confiding support) showed the least amount of coronary artery disease or progression. The development and progression of coronary disease has strong theoretical linkages to social support. Social support is not only related to coronary disease, it is also associated with recovery and long term outcomes for patients and their families.

CHAPTER III

METHODOLOGY

Research Design

In order to carry out the objectives of this research most effectively, a descriptive, non-experimental, prospective design was used in a natural setting. Eighty-three family groups composed of a patient scheduled for elective coronary artery bypass surgery and one patient selected family member were asked to fill out the data collection forms prior to surgery and one month to six weeks after surgery. The sample was chosen from all potential patients admitted to a large, suburban teaching hospital. All patients selected came from the same cardio-vascular surgery physician group, which controlled for variation in practice patterns. Information regarding existing family composition, potential resources, perceived social support, general demographics and family sense of coherence was collected during the preoperative appointment or at the physician's office. At approximately one month after surgery, questionnaires regarding general well-being, family adaptation and actual social support behaviors were sent to each family member.

Research Hypotheses

Ha_1: The stronger the Family Sense of Coherence, the higher the adaptation scores after CABG surgery.

Ha_2: The stronger a Family's Sense of Coherence, the higher the early well-being score after CABG surgery.

Ha_3: High Perceived Social Support scores from family and friends before CABG surgery will be associated with higher adaptation scores after CABG surgery.

Ha_4: High Perceived Social support scores from family and friends before CABG surgery will be associated with higher early well-being scores after CABG surgery.

Ha_5: Family Sense of Coherence will have a stronger association with *perceived* Social Support from family and friends before CABG surgery, than with *actual* Social Support received after CABG surgery.

Data Collection

A modal instance sample of 83 patients who met national norms for typical elective CABG patients was chosen from all potential patients scheduled for elective CABG surgery at a large suburban teaching hospital. Elective surgery patients were defined as patients whose cardiac surgery was performed on an admission separate from the admission in which the severity of their disease was discovered. This eliminated emergent, or urgent cases in which the patient may not be able to participate in preoperative data collection. Permission to access the patient list of potential candidates, and their medical records, was obtained from the individual surgeons' offices after signed study consent was obtained from the patient by the surgeon, or his designee.

Once screened for inclusion criteria, permission to participate was obtained from the patient. The permission forms included identification of one

family member whom the patient defined as most supportive. If the identified family member also was present at the time of pre-admission screening, he or she was asked to consent to participate in the study and to complete the surveys. If the designated family member was not present, he or she was contacted by telephone, and the survey tools and consent form were either mailed to the family member or given to the patient to be picked up at a later date. Only patients and designated family members who completed data collection at both survey times were included in the analysis.

Family members were not told of the criteria for their selection as the patient designee to allow for freedom of selection for the patient. Over selection of women as patients was planned in an attempt to include this often-underserved gender in cardiovascular research studies. However, due to time constraints and a deficiency of women who met the selection criteria, a larger representation of women was not possible. One month after surgery both family members were instructed to complete the dependent variable surveys regarding early well-being, adaptation, and social support. Ten to fourteen days after mailing of post-operative survey scales, any respondents not returning the forms were contacted by telephone to verify their status of participation.

Variables

The variables under exploration are principally Antonovskys' sense of coherence, perceived social support, early well-being and adaptation. Antonovskys' SOC is the construct that explains successful coping with stressors.

It is the most important construct in his salutogenic model which focuses on how and why people stay well during times of extremely stressful conditions. The original version has been chosen as this form has the most empirical data to support it.

Recently, attention has been focused on resiliency variables, especially social support and coping strategies. In the resiliency and adaptation model of family stress (McCubbin, et al, 1998) social support is viewed as one of the primary mediators between stress and well-being. The type of social support that mediates stress however, has not yet been clearly defined. Perceived social support is the subjective belief that there are people within the social system of the individual or family that are available to provide needed assistance. It is that subjective perception of support that is most important and not necessarily actual received support (Vaux & Stewart, 1988; Limbert, 2004).

There are many different viewpoints about quality of life. Well-being and adaptation were chosen as outcome measurements because they are the main focus to both models used in this study. To be as unbiased as possible the instruments chosen for outcome measures for this study came from each theory. Well-being relates to health in Antonovskys' model, but health is measured by a tool coming from McCubbin et al (1998) model. The tool for assessing adaptation, the process described in the resiliency model, was developed by Antonovsky & Sourani (1988), therefore an attempt to maintain an unbiased selection of outcome measures was used.

The Instruments

Several instruments for this study represent important constructs in the resiliency model of McCubbin et al. (1998). Existing family types, depicted in the McCubbin model to assess the contribution of family demands (life event stress), was included as demands placed on the family dyad may place undue influence on the responses to the dependent or independent variables. In addition, this information allowed for some assessment of the final family dyad groups, versus the attrition groups for homogeneity between groups. Patients were screened for inclusion against national norms for severity of illness indices. Outliers that represent abnormally high-risk patients were excluded from the study, which eliminated severe chronic illnesses from confounding the early well-being data analysis, and improved matriculation of patients to the recovery data collection time. The relationship between social support to each dependent variable was assessed. Additionally, social support both perceived and actual was examined, as social support is a family resource and it is implicated in the development and maintenance of a sense of coherence (Antonovsky, 1979).

Existing Family Types:

Demographic data form: Developed by the researcher (See Appendix A), it includes information on age, marital status, education, occupation and current working status. Additional data validated criteria regarding the severity of illness. This information was collected from the patient's medical record and by personal interview. Additionally, the relationship of the designated support person was

noted. Severities of illness data were compared to the Michigan Cardiovascular Network Database (Duke, 2003) (collected by all major heart centers in Michigan). National norms and hospital specific norms was used to screen outliers whose severity of illness placed them into a high-risk surgical candidate group.

Family Inventory of Life Events (FILE) (McCubbin, Patterson & Wilson, 1979): This inventory assessed the pile-up of life events experienced by the family (the *aA* factor in the original Double ABCX Model). It was developed as an index of family stress (McCubbin, Patterson & Wilson). FILE (Form C) is a 71-item self-report instrument that is designed to record the normative and non-normative life events and changes experienced by the family unit during the past year. All events experienced by any family member were recorded. This is done because, from a family systems perspective, what happens to any one family member affects the other members to some degree. Reliability (Cronbach's Alpha) for the FILE on two normative samples range from .79 to .83. Test-retest reliability on a normative sample was .72 to .77 over a five-week period. Normative data were available to compare family pile-up of events over the family life cycle (McCubbin & McCubbin, 1998). Either member of the family could complete this form, as it is assumed that events affecting one member of the family influence all members.

Social Support Behaviors Scale (SS-B) (Vaux, Stewart & Reidel, 1987): The SS-B measure consists of 45 items designed to tap five modes of perceived available support: emotional support, socializing, practical assistance, financial assistance, and advice/guidance. Respondents completed the scale separately in regard to family and friends before surgery, and with slight modifications in wording, they were requested to assess actual support from family and friends one month after surgery. During the development of the scale, strategies were used to distinguish the validity that the SS-B measures five distinct modes of support. The strategies used were (1) classification of items by expert judges, (2) convergent and divergent validity with Barrera and Ainlay's (1983) ISSB (actual social support), an examination of levels of each mode of support provided for different problems, and (3) confirmatory factor analyses. Internal consistency computed by Cronbach's alpha for each of the five SS-B scales was .82 to .90. Confirmatory factor analysis loaded significantly and very highly [most >.70 on the factor they were designed to measure (Vaux, Stewart & Reidel).

Independent Variable

Orientation to Life Questionnaire/ Family Sense of Coherence (OLQ/FSOC) (Antonovsky, 1979): The FSOC scale consists of 29 items. Answers are given on a seven point Likert scale. Internal consistency reported for 26 studies averaged .85 to .95 (Antonovsky, 1998). Validity measures are based on the issue of the convergent validity. The 29-item OLQ has been correlated with diverse scales such as generalized perceptions of self and environment, internal locus of control

(.44), self-esteem (.63), hardiness (.50) and trait anxiety (-.75), health and well-being: perceived health (.47), global health evaluation (.46), seriousness of illness (-.39), emotional distress (-.63) quality of life (.76) and life satisfaction (.54). For a complete listing see Antonovsky. Antonovsky presented the means and standard deviations of a variety of samples that appeared in published research. Mean scores would be expected to differ depending upon what was anticipated based on theoretical grounds (Antonovsky). Some of the noted means could be comparable to the current study groups such as, a mean of 138.6 (S.D. 14.9) for a group of women with chronic pain (Petrie & Azariah, 1990), to a mean of 139.6 (S.D. 36.4), which is attributed to United States Veteran Administration male clinic patients (Coe, Romeis, Tang & Wolinsky, 1990).

Dependent Variables

Family Members Well-being Index (FMWB) (McCubbin & Patterson, 1983c): This scale that will measure early well-being is an eight item instrument, which uses a 10-point Lickert scale ranging from Not Concerned to Very Concerned. This scale was developed to measure the degree to which a family member is adjusted in terms of concern about health, tension, energy, cheerfulness, fear, anger, sadness and general well-being. The FMWB was found to be valid through numerous studies with a variety of diverse family groups (McCubbin & Patterson, 1983). Normative mean scores of well-being for a comparative groups were 45.03 to 45.5 on a scale of 0-80 (McCubbin & Patterson). The internal reliability of the FMWB is 0.85.

Family Adaptation Scale (FAS) (Antonovsky & Sourani, 1988): This scale was designed to measure the extent to which the individual expresses satisfaction with the way family members fit with each other and the family fit with the community. The scale consists of ten semantic differential items scored from one to seven. In each case, the extreme anchor phrases are *completely satisfied* and *dissatisfied.* Six of the items are phrased so that the higher the number checked, the poorer the adaptation, these are reversed in scoring, so that a high score indicates good adaptation. Five of the items refer to satisfaction with internal family fit (Items 1, 4, 5, 7 & 10); two items refer to family community fit (Items 8 & 9); the remaining three are less specific, covering both facets of fit. Cronbach's alpha for the ten – item scale is .874. A similar but slightly different adaptation scale was used in a study validating the reliability of the FSOC scale. The average individual score on a seven-item Likert scale would be equivalent to 5.23 through 5.54 respectively on this scale, which represents very high adaptation scores (Newby,1996).

CONFIDENTIALITY

Approval of the research study was first obtained from the Michigan State University Committee on Research Involving Human Subjects (UCRIHS), and then permission was obtained from the hospital research committee before any data were collected. Confidentiality of subjects was maintained. There was a single data collector. Consent for inclusion was obtained from the patient and

family member only after permission was obtained to access the patient's record from the surgeon and patient at the initial surgical consult. Each family member was given a number for identification. Identification of assigned numbers and data were, kept separate from the subjects' names and addresses. The names and addresses were destroyed after a summary of the findings was sent to all individuals requesting this information on the return envelopes. Family member's responses and identification of significance for inclusion was not shared with individual families.

DATA ANALYSIS

Descriptive statistics such as mean and range were used to describe the subjects and family groups. For purposes of modal instance sampling, t-tests of means between patients' demographic variables were examined to understand the relationship to control variables and to validate homogeneity between patients and national normative data. FSOC scores were compared by several methods. FSOC scores were split at the mean FSOC score of 150, placing the dyads with scores above 150 into the *strong* FSOC group, and below 150 into the *weak* FSOC group for this sample. This was based on the use of mean scores from Sagy and Antonovsky's (1998) work with male retirees. That study also supported a salutogenic model view, that an individual member of a family with a strong SOC applies the orchestration resources needed to cope successfully with stressors. The salutogenic model used the highest SOC score of the family dyad.

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Consensus scores were calculated slightly differently. Based on Antonovsky & Sourani study (1988), families who are in disagreement by definition have a weak FSOC. Three groupings were defined which placed family dyads into low/low, medium/medium and high/high groups. The three groups were split by calculating the mean score for the strong FSOC (>150) group, which was 164, and the weak FSOC (< 150) group, which were 132. The consensus model was then defined as scores <132 grouped as low FSOC, medium scores >132 but < 164, and high as scores >164. Anderson (1998), found that consensus and high scores were most predictive of adaptation.

Each method of measurement was compared to the dependent variables by means of Pearson r, to look at which *best* FSOC score defined adaptation and well-being outcomes. Correlation coefficients were calculated for the FSOC scores using a one-tailed test, as the assumed responses should show a positive relationship to accept the hypotheses of this study.

Dichotomized FSOC groups, which were composed of mean scores, highest family score, consensus scores of high patient/high family, medium patient/medium family, and low patient/low family were tested with all variables. T tests of means or patients and family members' scores also were examined separately. Multiple step-wise regressions were used to validate whether FSOC (scores based on the best predictor as described above) or other family variables, such as existing family types (FILE scores), or severity of illness, was the strongest predictor of a relationship with the dependent variables.

Several steps were required to answer the question of whether perceived social support or actual social support was related to well-being and adaptation after surgery, or to FSOC scores. Pre-surgical social support mean scores and standard deviations were tabulated. Social support scores were compared to each of the dependent variables by means of Pearson r. Each mode of calculating the FSOC score was compared to perceived and actual social support scores. T – tests between perceived social support and actual social support were calculated. In addition, social support scores were added in a multiple step-regression with the *best* FSOC score to evaluate the strength of the FSOC, and existing social support as correlating with adaptation and well-being. High, medium and low FSOC dyads perceived social support indices were compared to each other by t tests of means.

LIMITATIONS OF RESEARCH

A general limitation for this research was the convenience sampling of the study group, although modal instance sampling was helpful in improving external validity to the cardiovascular surgery population. National statistics on CABG surgery show that there are an increasing number of female patients (AHA, 2002). However, research studies have failed to increase the enrollment of females in the same degree (AHA, 2004). Hence, there was a deliberate attempt to enroll a larger group of women in this study, although this was not accomplished due to time constrains. Additionally during the data collection period more women were having concomitant valve surgery with CABG. The family dyad has more

potential for variances regarding history between groups, but data on family types was available to control for some variations. Family was defined in this study by only a two-member dyad, which obviously limits generalizing to larger family groups. Quality of life measures also are inherently more difficult to measure, but are paramount in understanding the psychological burdens of adaptation. Inclusion of an objective outcome measure of well-being controlled for some of the subjective issues. This group as a whole was very optimistic, as reflected in their FSOC scores and high overall perceived social support. This may reflect the geographical area from which the patients came, which was a more affluent county. The largest limitation in this study was the final group size. Power analysis calculated before the start of the study assuming a modest influence of the independent variable required 75 family dyads in the final analysis. Although the return rate of the responders was 75%, the final number of complete data groups was 59, below the required n. Therefore this lack of sufficient n could be reflected in some of the results.

CHAPTER IV

RESULTS

This chapter is divided into two sections. The first section presents the characteristics of the sample. The next section describes the results of each hypothesis tested in the study.

Description of the Sample

A convenience sample of all patients meeting the criteria of first time Coronary Artery Bypass Grafting (CABG), without history of cerebral vascular attack, end-stage renal disease (on dialysis) and with the ability to read or verbally answer the questionnaires, were potential candidates for the study. The exclusion criteria were selected to achieve a modal instance sample mimicking national, normative data for clinical comorbidities of first time elective CABG patients. Due to new national guidelines regarding the Health Information Privacy Protection Act (HIPPA), patients were initially informed of the study and permission to approach them was obtained from their attending surgeon or his representative. Permission was then obtained from both the patient and the patient identified family member at the time of pre-surgical screening.

Data were collected between February 2003 and May15, 2003. Patients were approached during pre-admission screening one to seven days before surgery or in the hospital in the same relative time frame. Few (4) patient/family groups refused to participate. Several patients (10) were unable

to participate due to inadequate time to complete questionnaires, no family member wishing to participate, or lack of adequate English or an available translator in the family to assist in completion of forms at both data collection times.

There were an initial total of 83 patient/family dyads, for a total of 166 individuals. Four dyads were eliminated because they did not complete all initial data forms. Seventy-nine family dyads (158 people) were sent return mailings four to six weeks after the surgical date. The length of the patient's hospital stay accounted for the variation in time. Of those 79 family dyads, 59 completed all of the second mailing forms and were included in the final analysis, a 75% return rate. Of the 20 groups who were not included, five patients sent in their forms, but family members did not. There were three family members who completed their forms, but patients did not. There were 47 males out of 64 potential patients, and 12 out of 19 females patients remaining in the final groups. Caregivers for all the patients were overwhelmingly females (Table I).

Table I. Patient Family Group Relationships

Patients	Husband	Wife	Daughter	Son	Other
Males 47	N/A	38	7	0	2
Females 12	4	N/A	5	2	1

Patient/Family dyads that did not return or complete the second data forms were analyzed by method of t- tests of means with all demographic

data, family life stress, and both independent and dependent measures and compared to the remaining groups to assure homogeneity between the groups. There were no significant differences in demographic or clinical indicators, or principle measures between the groups. The patient group was primarily male, 63 years old Caucasians who were married, and 50 % were retired. Prior occupations were primarily white-collar jobs or service industry positions. Patient comorbid conditions common to coronary artery disease patients were compared to the National Cardiac Surgery Database (Duke, 2003).

Comparisons were made between the study patients and national levels of comorbid conditions that are typical of patients in participating centers. When comparing differences between this group and national statistics the following differences were noted. There was a higher number of diabetics, and a third more incidence of hyperlipidemia in the study group. This increased risk of complications related to those two chronic diseases were offset by a reduced history of smoking, or a higher level of patients who had quit smoking before surgery, when compared to national norms.

Approximately one third had a family history of coronary heart disease, whereas nation wide it is closer to 50% (Duke, 2003). Pulmonary disease and peripheral vascular disease were consistent with national levels. Documented low ejection fractions and histories of heart failure were equal. The New York Heart Association classification (AHA, 2004), a way to quantify individuals' symptoms of angina, placed most patients in the sample as Class II, which is equivalent to angina symptoms with exertion. National

levels indicate a higher degree of coronary artery symptoms are present throughout the country. Peripheral vascular disease was double the national level. (See Appendix B for complete data).

Participants were given the Family Inventory of Life Events (FILE) to assess the amount of family group life stressors occurring over the year preceding the surgery. The total scores and scores divided by the various manners in which FSOC groupings were made can be seen in the appendices (Appendix C). Although the lower FSOC dyads had a slightly higher mean FILE score, it was not statistically significant ($t = 1.042$, $df 29$, $p = .321$). Normative data placed all FILE scores in the moderate stress level for the retirement stage of the family life cycle (McCubbin et al. 1996). Correlation statistics were then computed for purposes of sample description with demographic data and the principle instruments in the study. Evaluation of the influence of family life stress on demographic data, FSOC scores, Social Support scores, as well as early well-being and adaptation scores were evaluated. (See Appendix D). Only the type of occupation and the level of education (demographic data) were related to the FILE scores. Individuals whose occupations were listed as service industry or those without a formal occupation (e.g. housewife) reported higher levels of family stress.

RESEARCH QUESTIONS/HYPOTHESES

Research Question/Hypothesis I: *Strong* Family Sense of Coherence scores are associated with high adaptation scores after CABG surgery.

FSOC scores for this study group were stronger than similar age groups with chronic illness. The scores (See Table II) were closer to American university faculty (Ryland, 1990), Jewish kibbutz members (Margalit, Leyser, & Avraham, 1989) and Israeli men who have reached retirement (Sagy, 1990). The study sample also had an average individual question adaptation score of 5.91 for patients and 5.68 for families, which were very high adaptation scores (Newby, 1996; Dantas, Motzer & Ciol, 2002).

This hypothesis was supported by the data. The FSOC scores were dichotomized in several ways. (See Table III). Mean FSOC scores for the family dyads in this study were higher than normative scores (See Appendix E for all mean scores). The *strong* FSOC scores showed a positive correlation to adaptation scores. When looking at scores from a salutogenic standpoint, which implies looking at the highest score, correlation scores improved when one member had a FSOC mean score >150 (defining a *strong* FSOC). Family dyads in which both members had mean scores >150 showed a stronger

correlation; therefore the salutogenic standpoint of assessing strength was seen in the stronger dyad member's score improving the relationship with adaptation. Finally in the congruent High/High group, (congruency in families also was considered salutogenic) family adaptation scores were the strongest.

Table II. FSOC and Adaptation Scores

Groupings (N)	QOL/FSOC scores	FAS scores
Group mean (59)	150.23 (SD. 28.27)	64.01 (SD. 10.66)
FSOC >150 (30)	166.48 (SD.19.86)	65.23 (SD. 11.53)
FSOC <150 (29)	132.54 (SD. 21.23)	62.14 (SD. 11.06)

Table III. Dichotomized FSOC Scores and Adaptation

FSOC Scores	Adaptation correlations
Family dyad mean score	.303, p< .01
FSOC one mem. score > 150	.369, p< .01
FSOC dyad scores both >150	.394, p < .01
Congruent High/High	.625, p < .01

Based on the Antonovsky and Sourani (1988) discussion, FSOC scores for patients and family members were assessed for congruency between scores. There were three groups that scored low/low, five groups that scored medium/medium, and sixteen groups that scored high/high. There were no

significant relationships in the low/low or medium/medium FSOC groups. The salutogenic approach of picking the highest FSOC score of the family dyad appears to have the stronger relationship with patient and family adaptation, except for the congruent high/high group in which 16 dyads also were included in the previous tabulation. Adaptation scores were highest when congruent family dyads also had *strong* FSOC scores.

Multiple single regression equations were calculated looking at a *best* fit approach to explain improved correlations and the percentage of variation that could be attributed to FSOC (See Table IV). Stronger variance percentage also would support the hypothesis that stronger FSOC relates to higher adaptation. Family dyads where both members' scores were over 150 (n = 38), or the High/High group (both members >164, n =16), appear to have the higher variance in adaptation scores, which is attributed to stronger FSOC scores. There was a slightly lower number in the High/High group, which could account for the change in variance percentage.

Table IV. Regression Equations with FSOC and Adaptation

Groups	R^2	Adjusted R	Std. Error of the Mean	F Ratio	Significance
Pt. >150	0.136	0.104	19.196	4.257	p< .05
Fam. > 150	0.191	0.161	17.793	6.392	p < .05
Dyad> 150	0.342	0.291	10.376	6.750	p < .01
High/High	0.330	0.282	5.231	6.902	p <.05

Research Question/Hypothesis II: *Strong* Family Sense of Coherence scores are associated with high early well-being scores after CABG surgery.

Total group scores on the FMWB were slightly below the published normative data, with patients reporting slightly higher scores than their family caregivers (See Table V). Only the FMWB caregiver scores were statistically lower then normative levels ($t = -3.518$, df 58, $p < .001$). They also were significantly lower than the patient scores ($t = -3.286$, df 58, $p < .01$) When divided into *weak* FSOC scores and *strong* FSOC scores on the group mean of 150, FMWB patient scores in the *weak* FSOC group were then statistically lower then normative scores ($t = -2.199$, df 28, $p <. 05$). Caregiver scores in that group remain significantly lower as before ($t = -3.57$, df 28, $p < .001$). Although patient scores in the stronger FSOC score groups were not significantly lower than norms they still did not correlate with higher early well-being. Therefore, this hypothesis was not supported by the data.

Table V. Dichotomized FSOC scores and Relationship to Well-Being

Groups	Patient	Family	Dyads < 150	Dyads >150
FMWB	44.6 (SD. 14.8)	38.91 (SD. 13.2)	37.41 (S.D. 12.72)	41.87 (SD. 14.5)

Research Question/ Hypothesis III: High perceived social support from family and friends before surgery is associated with higher adaptation scores after CABG surgery.

Both family members completed the Social Support Behavior Scale (SSB) before surgery assessing their perception of support from family and friends separately. The social support behavior scale mean scores that patients perceived a very high level of support from their family and friends, with mean scores for friends only slightly lower than family (See Appendix F). The same trend for family members occurs, although their scores were slightly lower than the patient. There were many correlations with the SSB scale. Many of the correlations were expected as family members, especially married couples, usually have shared family and friends. Evaluating the correlations of the total group (See Table VI) there was only one correlation that supported the hypothesis. There was a correlation between the family member perceptions of family support and the adaptation score after surgery. However, there was no significant relationship with friend support. Therefore, since there was not a consistent association with patients or *strong* FSOC dyads, there was insufficient data to support this hypothesis.

Table VI. Perceived Social Support and Dependent Variables

Dependent Variables	SSB Patient/Family	SSB Patient/Friend	SSB Family/Family	SSB Family/friend
FAS	.314	-.035	**.293***	.067
FMWB	.041	-.092	.033	.105

*** $p < .05$**

Research Question/Hypothesis IV: High perceived social support from family and friends before surgery is associated with high early well-being scores after CABG surgery.

Patients' perception of social support from family and friends was not correlated with early well-being scores. Early well-being scores were actually low. Therefore, there is no support for hypothesis IV.

Research Question/Hypothesis V: A *strong* Family Sense of Coherence is associated with high perceived social support and less actual social support after CABG surgery?

This hypothesis was partially supported by the data. Table VII presents correlations between the Social Support Behaviors (SSB) from before surgery (Time 1, perceived) and after surgery (Time 2, actual) with FSOC scores. Patient scores were designated as SSB, and family scores as FSSB. When FSOC scores were assessed in the <150 group (*weak* FSOC) the *weakest* scores related to the lowest perceived social support but rose as FSOC scores increased as reflected in positive correlations. The *weak* FSOC family dyads perceived little support from family and friends (Table VII). In addition, *actual* (FSSB-2) support from other family members but not friends as assessed by the caregiver increased as FSOC scores improved but not to the degree perceived support showed. However, no data supported *stronger* FSOC family dyads having any positive association with family and friend support before surgery or actual support after surgery.

Table VII. FSOC scores and Pearson's Correlations with SSB

Variable (18)	FSSB–1 Family	FSSB-1 Friend	FSSB –2 Family	FSSB-2 Friend
FSOC <150	0.542*	0.422*	0.426*	

*** p<.05**

The difference between social support at time one, perceived support, and social support at time two, actual support, also was assessed. Sample means (See Appendix E) of perceived social support and actual social support were tested using one sample T-tests of paired mean scores. Results revealed that for the total group there were significant differences for patients between SSB 1 and SSB 2 for family support (t = -7.472, df 58, p <. 01) and support from friends (SSB-1 and SSB-2 friend) (t = -5.264, df 58, p < .01). Mean scores for perceived social support before surgery were higher than what patients' believed they actually received after surgery. Family perception of support at time one (FSSB-1 family and FSSB-2 family) and actual support at time two were not significantly different.

SS-B scores were then assessed in the same manner as adaptation. FSOC scores divided into *weak* FSOC dyads and *strong* FSOC dyads. In the weak FSOC dyads there was significant difference in mean scores after surgery (t = -2.376, df 17, p < .05) family dyads received less *actual* support from friends than they anticipated. In the group where only one member FSOC score was over > 150, patients also felt they received less support from friends (t = -2.38, df 37, p < .05) after surgery. When both members' scores

were over 150, there was no significant difference between social support before or after surgery. The paired sample t tests provided some evidence that the *strong* FSOC group perceived social support accurately relative to their actual support levels after surgery.

There were five hypotheses in this study. The first four relate to the independent variable, family's level of coherence and its relationship to a sense of adaptation and early well-being following CABG surgery. In addition, a fifth hypothesis, the assessment of which type of social support was related to FSOC also was investigated. In summary, there is evidence to support Hypothesis I, that FSOC scores are related to adaptation one month following CABG surgery. There was insufficient evidence to support Hypothesis II, that the patients' level of early well-being was related to their level of coherence. Higher coherence scores did not improve early well-being scores at one month after surgery. There was insufficient evidence to support Hypotheses III and IV. Perceived social support (before surgery) does not appear to consistently influence adaptation or early well being after surgery. There was some statistical evidence that family members' perception of social support from other family members was modestly correlated with adaptation after surgery. It does appear that in general family dyads perceive more social support before surgery, than what they actually receive from family and friends after surgery. However, *strong* FSOC dyads more accurately perceive their level of social support relative to the amount they did receive after surgery.

CHAPTER V

DISCUSSION AND IMPLICATIONS

This chapter is divided into five sections. The first section reviews the findings of the study. The second section describes the modifications to the conceptual model of the study. The third section outlines the limitations of the study. The fourth section describes the implications for clinical practice and future research, and the final section presents the conclusions and significance of the study.

Discussion of Findings

The intent of this study was to enhance the understanding of why some families are more resilient than others and why they are better able to cope with and even thrive on life's hardships. The recovery after crisis should be measured by improved quality of life, which should be seen through the eyes of the client. This hermeneutic approach has become increasingly more important as an outcome measure in healthcare intervention research (AHRQ, 2000). This study explored outcome measures of adaptation and early well-being as research endpoints and their relationship to a family sense of coherence as a resistance resource following a significant family stressor, coronary artery bypass surgery. Findings from this study support previous conclusions, that the FSOC is related to adaptation (Antonovsky & Sourani, 1988; Anderson, 1998; Sagy & Antonovsky, 1998). In addition, the study

lends theoretical support to a salutogenic approach in analysis of the FSOC. That is, *strong* FSOC scores and consensus between family dyad members influences adaptation. It lends modest reinforcement that an association exists between perceived social support and the level of FSOC, and support and adaptation.

Patient and Family Group Dynamics

The patients in this study had similar chronic comorbidities associated with coronary artery disease as described by national standards. Although individual comorbid condition percentages varied somewhat, there was a consistent pattern of multiple chronic diseases in this group. If any difference could be implied it is that their level of symptomatic angina appears less than the average. The study participants were mostly Caucasian and from a fairly affluent county, and with similar comorbidities, the ability to generalize these study results to the general Caucasian CABG patient population was somewhat strengthened. With that in mind, the social status variables were assessed for any correlations with the main variables, but no significant contributions were found. The only social status variables with any correlations were occupation (.386, $p <$ .01) and education level (-.233, $p < .05$) with life stress scores (FILE). Individuals whose occupations were coded as service industry or no formal jobs appear to have more life stressors in this sample. There appears to be less life stress as individuals' formal education increases. Several life stress questions on the FILE scale were

related to occupation and monetary stress, which may be inherent in lower paying jobs. This suggested relationship has been seen in current literature concerning stress and health. Individuals scoring higher on stress scales are likely to be less affluent and in lower paying jobs (Fiorentino & Pomazal, 1998).

McCubbin, Patterson & Wilson (1983) developed the FILE to assess a family's vulnerability as a result of the pile-up of several life stressors at one time. Sample mean scores placed the family dyads in this study in the moderate stress level for life stress in the year prior to CABG surgery. FILE scores had relatively little influence in this study, even with modest amounts of life stress. Anderson (1998) found similar results do to the wide variety of stress events. Recent research provides a growing body of evidence that life events checklists measures yield inadequate estimation of stressful events. A multitude of issues surround life stress including gender, economic, social status and ethnic considerations (Turner, & Avison, 2003).

Given the stronger than average FSOC scores, most families in this study appear to have enough resilient characteristics to overcome most life stress, therefore it appears that they were not particularly affected by the pileup demands of life stress. This explanation may be accurate, or variables not currently under investigation may be the causative reason for the lack of effect to the pile up of life stress. However, life event stress managed by the ***strong*** FSOC dyads appear to perceive less reported life stress, which would

mean that *strong* FSOC has already been assisting families by dissipating stress before surgery.

QUESTIONS AND HYPOTHESES

This portion of the results is divided into five areas, each pertaining to the five questions and hypotheses asked in the study. The study explored the family sense of coherence in an acute life event crisis and its relationship to family adaptation and early well-being. Additionally, perceived social support was investigated along with its relationship to adaptation, early well-being and a sense of coherence.

Relationship of FSOC to Adaptation

This study investigated the family's sense of coherence in an acute health crisis. Most families do not self-destruct to the point of requiring therapy when faced with adversity, but most families would define the magnitude of an acute life threatening health crisis as a critical event. Defined as such, a crisis is a sufficient disruption that normal family coping mechanisms would be insufficient to allow the family to manage the stress. CABG surgery allows such a prospective study because the stress of CABG surgery is not predictable or straightforward and normal family paradigms are insufficient to handle the stress. Therefore, a strong FSOC would be needed if Antonovsky's premise is correct, that family coherence is the construct that transforms the family's potential resources into actual resources, thereby

facilitating coping and promoting the adaptation and well being of the family unit (Antonovsky, 1979).

The hypothesis that a strong FSOC would be related to adaptation was supported by the data. The collective mean FSOC scores of 149.94 (SD = 26.04) and 147.88 (SD = 25.30), for patients and family members respectively, were well above the normative mean of 129.74 (SD = 17.4). They were even above the average of a similar cohort group, United States Veteran Administration retirees, (139.6, SD = 36.4; Coe, Romeis, Tang & Wolinsky, 1990) and U.S. female production workers (133, SD = 26.50, Radmacher & Sheridan, 1989). In keeping with these survey results, the means appear to be on the high, optimistic side (Antonovsky, 1998). The selected group of patients and families come from a fairly affluent area, and most are married. This and other social system influences may play a role in the development of stronger FSOC in this sample.

There was one study that reported relative high mean SOC levels found in a group of cardiac arrest survivors. The authors of that study also questioned the possibility that something about their situation could have increased their overall SOC (Underhill-Motzer & Stewart, 1996). Coronary artery disease presentation is often first demonstrated in an acute event such as cardiac arrest or an acute myocardial infarction, with mortality rates of 43% (AHA, 2004). An epidemiological study published in the Journal of the American Medical Association (Fried, Kronmal, Newman, Bild, Mittelmark, Polak, et al. 1998) reported that among the main cohort of 5,201 men and

women followed over a five-year period, one of the factors that was significant and independently associated with mortality was an income of less than $50,000/year. At the National Conference of Cardiovascular Disease Prevention in 2000, results concluded that patients who experienced acute myocardial infarction whom lived in neighborhoods with a high percentage of neighbors below the poverty line of $17,000/year had a death rate that was 30 percent higher than those in the wealthiest neighborhoods (Cooper, Cutler, Desvigne-Nickens, Fortman, Freidman & Havlik, et al. 2000/2004).

The patients in this study and in the Underhill-Motzer & Stewart (1996) study were survivors. The precise pathways by which poverty level affects survival have not been identified, but residents of deprived neighborhoods may be of poorer health or experience more psychosocial factors like stress, social isolation, and depression. Participants in this study did come from an affluent area, and 90% survived myocardial infarction. Could this survival be influenced solely by their economic status or by their high SOC scores? It is only speculatation at this point. However, there appear to be multiple areas in this sample group where scores are unusually high. The overall optimistic scores on the FSOC tool, high consistent perceived social support scores and the FILE scores all reflect a pattern of optimism and support within a context of moderate life stress and an acute illness.

Family adaptation to stress is a dynamic process, which involves stress appraisal, a family response and modifications in family life to dissipate the

tension and ease the stress. Antonovsky and Sourani (1998) conceptualized adaptation as the satisfaction with the fit at two levels, between family members and the family unit and between the family unit and the community. Using their Family Adaptation Scale (FAS), the average response was 5.92 for patients and 5.69 for family members on a seven point Likert scale. These scores indicate a high degree of satisfaction with adaptation to life after surgery. Newby (1996) reported average adaptation scores of only 5.23-5.39 with her criteria of greater than five being high adaptation scores. Dantas, Motzer & Ciol (2002) mean coherence score was five.

Correlations between FSOC scores and adaptation scores were examined in a salutogenic manner. It was not enough to only report results of average scores and adaptation but to look at which FSOC score is the "best" or most predictive when looking at the "family" dyad. McCubbin & Patterson (1983) argued that it is a normal part of adaptation following a crisis for a family to develop a shared viewpoint of the situation and a collective family sense of coherence, which has evolved in the literature. This approach is well supported by the findings in this study.

As theoretical support has yet to determine which method of analysis is *best* to analyze FSOC scores, a salutogenic approach to this issue directs the analysis toward the *stronger* FSOC scores. Strong FSOC scores should improve relational correlations. The mean FSOC scores show weaker correlations with adaptation. A similar finding in Antonovsky & Souranis' (1988) study strengthens the argument that a family's sense of coherence is

more than a sum of its parts. Sagy & Antonovsky (1998) also explored whether one family member's *strong* SOC score could raise the family's FSOC. Andersons' (1998) study showed that both a high/high and high (pt)/ low (fam) score were indicative of family quality of life. Her study had slightly more than 50% females as patients. The present study supports that *strong* FSOC scores of either the patient or the family pulled the total family dyad toward stronger adaptation scores. Incongruent families in this study (not salutogenic by definition) were more likely to be low patient/ high family. In contrast to Anderson (1998) study, males dominated the patient population in this study and family caregivers were overwhelmingly female. Of the 59 groups 38 females with *strong* FSOC scores and 21 males with *strong* FSOC scores influenced adaptation scores. It is clear that gender may play a part in the development of strong SOC, but the most influential predictor of adaptation is a strong FSOC. If the family dyad is incongruent, the *stronger* FSOC is the decisive score, with congruent strong families being the ideal dyad.

Relationship of a FSOC to Early Well-Being

The FMWB index measures the degree to which a family member is adjusted in terms of concern about health, tension, energy, cheerfulness, fear, anger, sadness and general well-being. FSOC scores and early well-being scores were not consistently correlated in this study. This was not an expected result. Given the strong FSOC scores, the anticipated correlation would have

been higher early well-being scores. Actually there was a positive correlation between the mean *patient* FSOC score and early well-being (.245, $p < .01$), but no correlation with mean family score. CABG surgery is unique and a very serious stressor to the family. It may have been too early in recovery to expect early well-being to be much higher than what was reported. Many of the health indices used for comparison, which validated the strength of FSOC, either looked at families with chronic conditions or assessed patient well being later in the illness and/or recovery trajectory (Anderson, 1998, Newton, 1999).

Although early well-being scores did not play a role in supporting this hypothesis of stronger FSOC influencing outcomes, it is still important to discuss the group's scores. It is not unexpected that after coronary artery bypass surgery a patient's level of well-being might be lower than normal in this early post-op period. Although there was a modest correlation with mean patient' FSOC and their perception of early well-being, there was no relationship with the family FSOC and well-being. This replicated the results with SOC and well-being scores of patients following severe multiple trauma over the first one to three years (Snekkevik, Anke,Stanghelle & Fugl-Meyer, 2003) and in well-being scores of parents with children with asthma (Svavarsdottir, McCubbin & Kane, 2000).

What was not expected were the caregiver scores, which were lower than the patients', and statistically lower than average female norms. Even with reported high adaptation scores, early well-being scores were low. Lidell

(2002) studying cardiac patient families found that caregivers' sources of burden are related to the difficulties in coping with patients' emotional responses, physical complaints and altered life style. A meta-analysis of 24 studies regarding care-giver burden with patients with Multiple Sclerosis (MS), providing care for a person with MS has a major influence on all areas of the caregiver's life (McKeown, Porter-Armstrong & Baxter, 2003). Understanding that the process toward bon- adaptation or health, as described by McCubbin and Antonovsky respectively, occurs over time and requires many changes and adjustments before it can be achieved.

Managing an illness and making accommodating changes to family life during recovery takes a considerable amount of work by all. Illness work done in the home takes place in the context of the microsystem of the family with its own concerns and demands. Family adaptation and integrating needed changes requires expending a considerable amount of energy by the family system. The amount of time required by individual family systems to ease the tension caused by the stressor may vary based on a multitude of demands. CABG surgery is a physically and emotionally draining experience for the patient and family in the early recovery period. Unfortunately, the focus of healthcare providers in general is on the patient and not the care provider, and on the physical demands of recovery and not the emotional requirements (Corbin & Strauss, 1988). Evidence of distress in this caregiver sample needs to be considered in the illness trajectory of the family during recovery after CABG surgery. Low levels of patient and family early well-

being four to six weeks after CABG sends a loud signal that family stress is still intense.

Relationship of Perceived Social Support to Adaptation

Overall social support scores for the entire group were relatively high. Vaux (1988) notes, that in comparing individuals, those reporting the greatest support will probably be those experiencing more, and more serious problems or stressors. This may well define this group of families, as overall levels of support were fairly high. There are consistent relationships between members of the family group in their perception of each other's support groups. Most often this is related to mutual friends and acquaintances, but since the composition of support groups was not part of this study, this is only speculation.

The only relationship to perceived social support was the family member's perception of support from his or her family, which was modestly related to adaptation. Since the caregiver to the patient had the majority of illness work, it would not be surprising that additional family support perceived by the primary care provider was related to higher adaptation. McKeown, Posrter-Armstrong & Baxter (2003) also found that perceived social support had a beneficial influence on the care provider.

Family dyads in this study had on average *strong* FSOC scores, and so it would be expected that they have better working relationships within the family. However, the patient did not perceive family support strongly enough to where adaptation scores correlated. This may be attributed to a patient's

lack of perception of other family members giving support. The majority of relationships in this sample were married family dyads. The patients' perception of family support may not have included their spouses, even though they were the primary care providers. That marital relationship and support may have been taken for granted. The *strong* FSOC scores reported by this sample coupled with the reported high levels of social support, did not discriminate between FSOC scores and perceived support. Finite differences may have been seen only if a higher number of participants had been enrolled in the study or addition time between the surgical event and secondary data collection had occurred.

Seeman & Syme (1987), looking at coronary artery disease and social networks, reported an unexpected lack of a relationship with mortality found in their study, which was directly opposite of the landmark Almeda County (Berkman, & Syme, 1979) and Tecumseh (House, Robbins & Metzner, 1982) findings. They also attributed the unexpected results to a smaller sample size that resulted in the inability to detect statistical discrimination of smaller magnitude. A study with post CABG patients and families, showing a strong relationship with well-being/quality of life, looked at SOC and perceived social support as significant mediators in the process of recovery (Dantas, Motzer & Coil, 2002). However, the study participants were surveyed one to two years after the procedure.

Relationship of Perceived Social Support to Early Well-Being

The same outcomes evident between perceived social support and adaptation were seen with early well-being scores. There was no significant improvement in well being with higher perceived social support. Again, the overall high FSOC scores and lack of statistical discrimination on the social support scale used may be related to the number of family dyads in the sample. This particular tool also may be part of the issue. There are a multitude of social support tools, with no clear-cut "ideal" tool from which to choose.

The level of early well-being at four to six weeks after CABG surgery also may play a role in the inability to support these last two hypotheses. Early well- being may be more influenced by the physical and emotional demands of recovery after this particular surgery than by any other family strength. The support needed by caregivers to meet these demands at four to six weeks may have influenced their scores. It may be those patients who are alive to reach this stage of illness and resulting surgery are different from others. It may require a longitudinal study that assesses family dyads over several months into recovery, where the strength of the FSOC would discriminate well-being scores similar to adaptation.

Relationship of Perceived Social Support to FSOC

Social support is an important general resistant resource, which influences the development of a strong SOC and in turn is influential in

reinforcing it (Antonovsky, 1987). This study design had the family dyads completing the SSB twice before and after surgery. The second set of scores assessed actual support provided by friends and family after surgery. The strength of a sense of coherence is its ability to allow the individual or family to activate the resources they need to overcome the strain caused by the stressor. It is the perception and identification of those resources that is required to utilize social support (Vaux, 1988). When support is perceived to be available, that perception has stronger ties in reinforcing a sense of coherence than measuring the amount of support received in any given situation. The lack of a direct relationship between perceived social support and the outcome measurements of adaptation and early well-being reinforces the notion that social support does not directly influence adaptation, but mediates adaptation through its influence on a SOC (Mullen, Smith & Hill, 1993).

The *strongest* FSOC dyad scores did not have higher scores on the perceived social support scale in this sample, which could be related to the overall robust mean support scores reported. However, there were correlations with *weak* FSOC dyads that perceived less available support. The *weak* FSOC dyads group showed a trend that as FSOC scores improved, they perceived more available support, even if this was not statistically supported by the current study. Weaker FSOC families in general do not appear to have confidence that they have the resources to meet the demands imposed by this stressor. One family that entered the study had such little confidence in their

ability to manage this surgical event that a social work consult was arranged before surgery to support the wife through the actual hospital stay. While assisting them in completing the questionnaires, it was obvious they had no social network on which to rely.

There were significant t- tests differences in mean scores between perceived support and actual support, with actual support significantly less than perceived support. Patients' and family members' perceptions of support are higher than actual support. How to measure social support is still not well defined. The distinction between available support and actual support is critical. However, this study does distinguish between perceived and actual support, lending some confirmation to the literature that perception of support may be more important than actual support received.

MODIFIED CONCEPTUAL MODEL

Modifications to the original conceptual model for this study (See Figure 2, p. 102) are based on the data gathered and analysis of the theory relationships. Although not all relational changes in the modified model were substantiated by statistical evidence from this study, the author has liberally interjected 20 years of clinical practice knowledge into the revisions and discussion. The new model (Figure 5 p. 103) shows the redesigned and theoretical and conceptual relationships. There are some interaction changes noted by alterations in arrows depicting relationships between variables in the

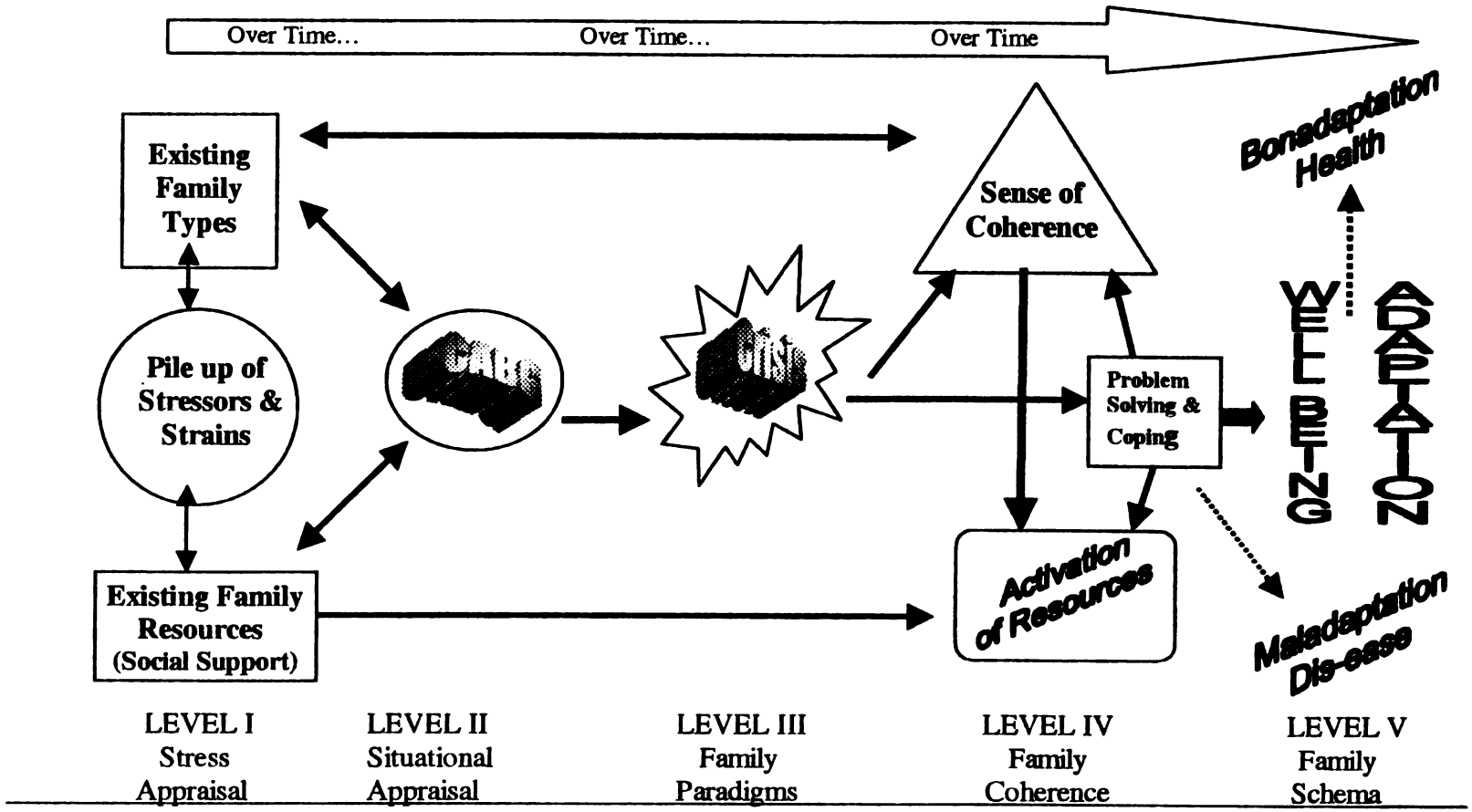

Figure 3: Sense of Coherence and Perceived Social Support as Mediators of Adaptation to CABG Surgery
(Adapted from McCubbin et al 1998)

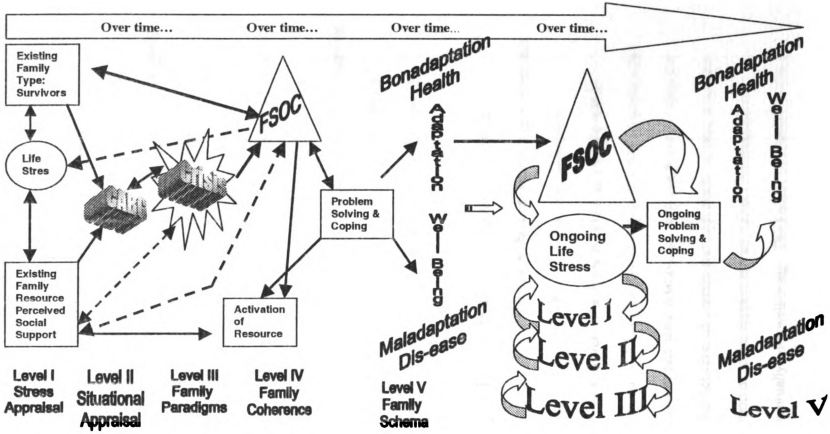

Figure 4: Sense of Coherence & Perceived Social Support as Mediators of Adaptation to CABG Surgery, Modified (Adapted from McCubbin et al 1998; Antonovsky 1979,1987)

original model. Dashed lines represent modifications in the relationship or direction of the relationship. Changes are as follows:

1. **FSOC has an influence on the pile up of life stress.**

This influence was a significant point in the conceptualization of the differences between the resiliency model and Antonovskys' model. The FSOC needs to be defined as more than just the relationships between family members; it should view coherence as how the family perceives its relationships to the world. As discussed in Chapter Two, a sense of coherence should have an encompassing effect on the family appraisal of stress as viewed by Antonovsky. The relationship of FILE and the high/high congruent families showed negative correlations with life stress. Highly coherent, congruent families have less life stress. A sense of coherence therefore influences families in every day life as well as in crises.

2. **Perceived social support has a relationship with FSOC.**

Although not strongly supported by the current data, there is enough evidence suggesting a trend that as FSOC scores rose, perception of social support was stronger. There was minimal direct relationship between adaptation and well being, with only caregivers believing that other family member' support had some relationship with adaptation. Given the positive relationship between adaptation and high FSOC scores, it is most likely that perception of social support has an indirect relationship to adaptation and eventually with well-being. The Lavee, McCubbin & Olson

(1987) study reinforces the concept that perceived resources shape the effects of demands placed upon the appraisal of stress. It is through reinforcement of a sense of coherence that social support directs its strongest influence. A high level of perceived support and FSOC mediates adaptation and ultimately well-being.

3. Existing family resources were insufficient to overcome the level of tension associated with the stress of CABG surgery.

The original model was in error by not depicting a relationship between family resources and the family appraisal of CABG surgery as a crisis. Miller et al. (2001) stated that it is difficult to understand the causal relationship linking stress, distress, and support resources with the defined need of the care provider. However, success in dissipating distress must link needs with support that is valued by the individuals involved, or there is little effect on reducing distress. This surgery consistently was appraised as causing significant tension, as the strain on early physical and mental well-being remained high even with this optimistic group. This relationship is another reason why the bi-directional arrows between existing resources and FSOC exist. FSOC activates the resources needed to dissipate tension, matching coping resources with needs.

4. The level of family crisis appraisal is modified through FSOC where it then affects problem solving and coping.

The arrow between crisis and problem solving and coping (PSC) has been removed in the modified model. If the premise is that FSOC affects all levels of stress appraisal including level five, family schema, then this family strength is the modifier in the model, not the crisis directly activating coping behaviors. The FSOC selects the most appropriate type of coping mechanisms to dissipate or modify tension.

5. There is a bi-directional relationship between FSOC and problem solving and coping behavior.

FSOC activates the needed tools or coping behaviors that lead to adaptation and successful problem solving, and coping reinforces a FSOC as a family strength.

6. The additional major change to the model is the continuation into the future, requiring ongoing PSC, along with continued family appraisal and adaptation before bon-adaptation or well-being occurs.

It would not be unusual for families in crisis situations to take advantage of the event to remain imbalanced in order to force or allow more substantial changes in family function (McCubbin, et al. 2003). The new model depicts some normalization of every day life with levels I-III (family paradigms) returning to management of everyday stress. As the data supported, adaptation to the crisis of CABG surgery is occurring. With continued adaptation and time, well being scores should improve. It was still early in the course of recovery at four to six weeks when subjects were asked to respond to the outcome measures. During this time of recovery the physical

demands after CABG surgery are lower. This is the time where phase two of cardiac rehabilitation (supervised, monitored exercise) usually is initiated. This group's lack of higher early well-being scores may explain the usual poor participation in cardiac rehab programs. Recent data suggest only 15% of eligible patients who would benefit from a cardiac rehabilitation program actually enter or complete such programs (Balady, Fletcher, Froelicher, Hartley, Krauss, & Oberman, et al. 2004). It may well be that they perceive their well being as insufficient to manage an exercise program at four to six weeks after CABG surgery.

STRENGTHS AND LIMITATIONS OF THE STUDY

The major contribution and strength of this study was the inclusion of a family member as an equal partner in the study. There are rare if any instances in medical literature in which coronary artery bypass surgery recovery is viewed from a dyadic, family perspective. Additionally, the study supports the importance of looking at multiple conceptualizations in measuring outcome indices. Most other CABG research measures physical indicators of success, such as survival rates, readmissions to the hospital, or lack of complications. Rarely are self-reported well-being or adaptation measures used, which may miss the importance of patient and family perceptions of illness stress and recovery.

All members of this study were in fact successful, if only by the measurement that they survived. This was a conclusion referred to by Motzer and Stewarts' (1998) study, and noted when comparing AHA statistics (2004). Using a salutogenic approach, this research emphasized the strength of families who were successful in managing stress, and it allowed additional insight into the complexity of recovery after CABG surgery. What is important to remember is that this recovery was difficult, and at four to six weeks they were in the process of adapting, but their sense of well-being was low. The stronger families were more satisfied with life even as physical and psychological recovery lagged. It was not until one to two years after surgery where well-being scores showed a positive relationship with FSOC and quality of life (Dantas, Motzer & Ciol, 2002). A longitudinal study with multiple periods of evaluation may lend considerable more information to understand when recovery turns toward improved well-being in this population.

It was important to include the two different modes of social support, perceived and actual. Healthcare often relies on tangible evidence to validate family's support resources. That evidence of support often requires people to provide proof of the actual support available, for example listing the number of individuals in a social network. Rarely is social support measured by the family's perception of available help or family needs. Actually, there is a tendency to require a family to meet care standards that are imposed by healthcare providers, often driven not by family strength assessments, but

instead assuming that a professional level of care is the gold standard of measurement. That bias negates the intangible strengths of patients and families, which may be the strongest medicine available. Medical decision making is powerfully influenced by social assumptions that are often implicit and unacknowledged, or so firmly entrenched in the mind of the *professional* that it may completely work against the patient (Freund & McQuire, 1995). Support and validation of family strengths is needed to overcome false assumptions of inherent family weaknesses.

One major limitation of this study is its lack of randomization. It is difficult to enroll subjects from one medical institution who would conform to national normative statistics. Although the group was close to national norms, there were variations. Although initial group return rates were excellent, there was attrition. One explanation for the lack of statistically significant interaction with some variables in this study may be the small sample size and therefore a lack of power to reach the significance level. However, with this in mind, some of the suggested trends seen in the perceived social support data suggest that perceived social support effect on FSOC and adaptation may be much stronger than assumed since the small sample size did not completely mask some associations.

The geographical limitation of one Midwest health care system must be considered. There was lack of diversity in relationship to females and minorities. There were too few of either to be able to discriminate any gender or racial differences. Limitations also included cultural difficulties, with lack

of English a barrier to enrollment. Males dominated the patient group, while females monopolized the family care provider group, which resulted in a lack of understanding of the female CABG experience or the male care provider experienced. This remains a common problem in cardiac surgery research and compounds the often difficult recovery experienced by women (Dantas, Motzer & Ciol, 2002; AHA, 2004)

The burden placed on care providers in the early phase of recovery is best understood by the results of well being scores. It is also important to understand that during recovery families are adjusting to the associated tensions and that it takes time to adjust. Unfortunately, there is a gap in understanding how the demands placed on the family group by this surgery are related to well being scores. The lack of significant effects between SOC, family hardiness, on parental well-being was also contradictory to expectations in Svavarsdottir, McCubbin & Kane (2000) study with asthma, another chronic disease. The resiliency model expectations are that stress resistance resources are expected to buffer the relationships between demands and well-being.

The exact causative problem of patient and caregiver distress is still unknown. Was it the physical demands of recovery or the emotional aspects of heart disease that caused the greater distress? Using measures that address these questions may improve our understanding of the lack of improvement in early well-being. In addition, recognizing the needs of this informal support provider could be as simple as acknowledging them as legitimate care

providers and as such, providing them access to information and education to better understand their role (Forbes, 2001).

IMPLICATIONS FOR CLINICAL PRACTICE AND FUTURE RESEARCH

The most important implication for clinical practice is the need to include families in medical care. Most chronic illnesses are managed in the home by family member caregivers. As severity of illness escalates in the home, the amount of care required is challenging the family unit as never before. The demands required for survival of health care facilities are controlled not by people's needs, but by government requirements. As limitations imposed by restrictions on length of stay, and patients are classified as a diagnostic related group, individualism is being lost. This requires a health promotion focus on caregiver demands, and needs and behooves professionals to support family strengths and resiliency factors to promote recovery.

Assessment of illness demands on early well-being must begin with an assessment of the family. Families need to be evaluated as a whole unit, and patients' requirements should not be the only driving force in interventions. It needs to be determined what composes a family in terms and values that are defined by the individuals involved in the relationship, and not by the traditional definitions that currently are not universal. Predicting family needs

based on assessing the family's strengths and resiliency is desirable, instead of focusing on the pathogenic origins of the disease. Abrahamsson & Ejlertsson, (2002) found using a salutogenic, instead of a pathologic perspective helped prevent smoking in pregnant women by using encouragement, understanding, and the patients own capacity and motivation as a way of coping. They also felt that this approach would strengthen the woman's SOC therefore support long term smoking cessation.

The other certainty is that most care occurs in the home. However, our assumption that it is always provided by spouses would be another bias. Care provider support needs to be based on family needs, not on assumptions and biased beliefs. The outcomes of this study should be helpful to health care professionals. The road to recovery after CABG surgery is still not clearly defined at four to six weeks. However, adaptation correlations suggest that stronger FSOC scores are moving families through this process, and adaptation is occurring even as perception of early well-being is low.

There are probably a multitude of other assumptions about medical interventions that are based on professional outcome measurements and not on family goals. Communication breakdown is a common complaint between families and their health care providers (Freund & McGuire, 1995). This lack of communication is most likely of a greater magnitude than health care professionals think, as it is rare that people or families are asked what their goals are and by what outcomes they would measure success, health, or well being. A hermeneutic understanding of the how the family group would

measure improved quality of life would enhance patient and family satisfaction.

Family assessment instruments that are easy and accurate to administer are needed and should be used to enhance the ability of a healthcare provider to meet the requirements of family's experiencing chronic disease, and acute exacerbations. Concentrating our limited resources on supporting specific resilient characteristics known to enhance recovery or strengthen SOC would give families more specific resources in which to face future stress.

Many of the existing models of family stress and coping hold that the effects of life events and strains contribute to psychological distress. There is an implicit untested assumption in much health care research that is based on the deficit model which demonstrates that the higher risk of psychological distress the greater chance for the development of illness (Ayis, Gooberman & Ebrihaim, 2003). The currently dominant disease orientation view is insufficient to explain both the research and clinical evidence that families adapt successfully to the presence of chronic disease in their family members and demonstrate healthy adaptation in spite of the increased demands and strains (McCubbin, Thompson, Pirner & McCubbin, 1988; Patterson & Garwick, 1994).

Research needs to value clinical indicators of success, health, well-being, and adaptation as defined with the family and not only by the researcher. Research studies therefore need to define their variables by asking what the family's goals are, and what quality of life is in the family's' terms

and not the researchers standards. Future research needs to include all compositions of family groups. It is not enough to base family research just on married couples, because diversity in family forms is a reality of life. The definition of family therefore needs to be how the members perceive who is their *family* because diversity in family forms is a reality. Future CABG research needs to expand patient characteristics to include more minorities, female patients, and male care providers.

This research used two measurements of recovery, adaptation, and early well-being. If only one measurement had been used, the study may have had different conclusions. These different results also concur with McCubbin's and colleagues' (1998) belief that investigation attempts with research need to be inclusive of multiple outcome measures to better understand the dynamic process of family adjustment and adaptation. Health indices need to be more specific to address the types of stress and tension patients and families are experiencing. Through feedback from families, distinct measurements could be developed or existing tools modified, which would enhance our understanding of the family experience. Research needs to use instruments that measure family resiliency, family coping strategies and family support measures. It would be better to expand our understanding of the intricacies of family adaptation by focusing on family strengths rather than their failings. Qualitative research studies alone or in combination with quantitative instruments could help bring a clearer understanding of the entire process of adaptation and family appraisal.

Patients and family members with known risk for coronary artery disease may need to be studied in a longitudinal design to assess if differences are present in family strengths, and if those differences effect who survives myocardial infarctions or reaches CABG surgery. Longitudinal designs in most health related research are ideal, as families adapt and adjust to required changes at their own pace. This would improve our understanding of the process of appraisal over time and allow for more permanent changes in families to be assessed. Family schema, the area where more permanent changes occur and family meanings are central, also requires time for families to process the understanding of the crisis that they have experienced and what meaning it held for the family (McCubbin et al. 1998)

The FSOC used as a measure to screen the family group could be a key family characteristic that a practitioner could use in determining the need for additional interventions or reinforcing family problem solving and coping. Theoretically, families with strong FSOC are more likely to adapt to the demands imposed by the stress of chronic disease and acute exacerbations. Anticipating and preparing families for the degree of tension associated with a stress may reduce the amount of tension, or enhancing their SOC by positive feedback and encouragement may allow for clearer problem solving and coping.

All professionals need to educate themselves about family theory and how strong families are less vulnerable to disruption. Learning what characteristics enhance successful family coping would enable professionals

to support less resilient groups and hopefully improve their chances of recovery. Chronic conditions are rarely cured but they can be managed over time through individual and family efforts and with the support of healthcare systems if they enhance strengths instead of focusing on weaknesses. Once strong families are identified, practitioners need to understand what those families do that makes them successful. They can then develop interventions that reduce risk factors, strengthen protective family processes, and reduce vulnerabilities for weaker families. One such family theory driven approach is explained in Anderson's (2000) article based on a holistic perspective in care delivery. Assessment techniques are driven by family needs and interventions are achieved by enhancement of specific family strengths.

Healthcare providers need to build therapeutic partnerships by collaborating with families and not defining their relationship as professional versus layperson, but realize that the strengths of both can be a learning experience for all parties. Health care is a business, but the service it provides is critical. Matching consumer needs and service is logical and a good business practice. Ironically, the focus of health care is prevention based on changing what people are doing wrong, but the strengths of families often are ignored. It is an injustice to focus on the weaknesses of patients and their families in providing health care. Given a different orientation the whole paradigm of health and disease could change.

There are some existing public policies that have shifted slightly toward rewarding good behavior, such as health maintenance organizations

and reimbursement for fitness memberships. Although many of these policies are driven by cost containment and not necessarily enhancing family life, these policies can be useful examples of rewarding strengths. It is unfortunate that family needs are often met with bureaucratic red tape and answers that are policy driven. Our healthcare dollars are spent still spent on pathology and not preventive care. Mobilizing, enhancing, and rewarding families who are successful in adapting to stress could unleash a new paradigm focus, one that would reward strength and not ignore it. Even small policy changes could have a greater effect then we can imagine.

SIGNIFICANCE AND CONCLUSIONS

Cardiovascular disease has a momentous physical and psychological effect, with prolonged stress to the family requiring both short and long-term adjustments to manage the variability of the biophysical components of the disease. Caregivers stress levels are high as the strain of caring for his or her family member is reflected in lower scores for caregivers than recovering patients. The number of individuals and family groups affected by this time of high vulnerability is staggering, with professional assumption and expectations of recovery not matching the reality of family life.

The correlations in this study support the Antonovsky (1998) thesis that one's sense of coherence plays an important role in facilitating adaptation. Although the demands of recovery after CABG surgery place a burden on the

perception of early well being of both the patient and the family, Pearson correlation statistics support that FSOC is related to high levels of adaptation.

The type of social support to measure has not been conclusively defined in the literature. Perception of social support was the most influential in this study. Perceived social support maintains its role as a general resistant resource and a reinforcement of a stronger sense of coherence. Perceived support indirectly through FSOC, mediates adaptation.

In the regression analysis, high/high congruent family groups and the highest FSOC score of the family lent strength to adaptation coefficients. The FSOC as a collective characteristic of families is measurable and statistically linked with better adaptation in the face of an acute illness imposed on a chronic disease. Stress appraisal and adaptation is a dynamic process requiring multiple reassessments, adjustments and time before adaptation and well-being occur. The FSOC could be a potent assessment tool for healthcare providers to help them understand the strength of the families with whom they are working. Finding and exploiting the "strongest" member's skills may help to enhance the whole family adaptation to a stressful situation.

APPENDICES

APPENDIX A

DEMOGRAPHIC DATA FORM

1. Gender: Female (1) ____ Male (0) ____

2. Age: ____

3. Marital Status:
   Married (0) ____
   Single (1) ____
   Divorced (2) ____
   Widowed (3) ____

4. Education:
   (Highest Level Completed)
   Grade School (0) ____
   High School (1) ____
   College (2) ____
   Graduate (3) ____

5. Work Status (Before Surgery)
   Retired (0) ____
   Part Time (1) ____
   Full Time (2) ____

6. Occupation: White Collar (0) ____
   Blue Collar (1) ____
   Service Industry (2) ____
   No Formal Job (3) ____

7. Race:
   Caucasian (0) ____
   Black (1) ____
   Other (2) ____

Comorbidities

8. Body Surface Area _____

9. Diabetes
   None (0) ____
   Diet (1) ____
   Oral (2) ____
   Insulin (3) ____

10. Hypertension
    No (0) ____
    Yes (1) ____

11. Hyperlipidemia
    No (0) ____
    Yes (1) ____

12. Family History
    No (0) ____
    Yes (1) ____

13. Smoker
    Never (0) ____
    Yes (1) ____
    Current (2) ____

14. Chronic Lung Disease
    No (0) ____
    Yes (1) ____

15. Ejection Fraction
    > 40% ____
    < 40% ____

16. CHF
    No (0) ____
    Yes (1) ____

17. NYHA Class
    Class I (0) ____
    Class II (1) ____
    Class III (2) ____
    Class IV (3) ____

18. PVD
    No (0) ____
    Yes (1) ____

APPENDIX B

Demographics and Clinical Indicators of Sample

Patient	Percentages	National Norms
Males/Females	79.7% / 20.3%	72.5% / 28.5%
Age (mean)	63.3 yrs	65.68 yrs
Race (White / Other)	91.5% / 8.5%	87% /13%
Work Status	49% retired; 40% part.	No data
Occupations (WC; BC; service; no-form)	42%; 8.5%; 35.6%, 13.7%	No data
Diabetic	49.15 %	34 %
Diabetic type	Diet = 54.2% Type II = 30.5% Type I = 15.3%	Diet = 32% Type II = 18.6% Type I = 10.3%
Hypertension	79.66%	73.1%
Hyperlipidemia	93.22%	64.8%
Family History	30.5%	44.6%
Smoking history	Non = 40% Quit = 47.5% Current = 13.4%	Non = 18.9% Quit = 60%; Current = 21.1%
COPD	13.56%	18.2%
CHF	11.86%	13.6%
Ejection Fraction	< 40% = 11.86% > 40% = 88.14%	< 40% = 16.6% > 40% = 83.4%
NYHA Class Angina	Class I = 10.17% Class II = 61.02% Class III = 27.12% Class IV = 1.69%	Class I = 16.6% Class II = 18.4% Class III = 36.4% Class IV = 20.5%
PVD	23.7%	15.75%

APPENDIX C

Sample Profile of the FILE

N	File	Minimum	Maximum	Mean	S.D.
59	Total	0	1160	365.39	284.78
29	>150	0	1160	348.62	337.43
30	<150	0	1029	391.97	224.12

APPENDIX D

Pearson's Correlations with FILE

	Correlation Coefficient	Significance
Occupation	. 386	p < .01
Education	-.233	P < .05
FSOC (patient)	-. 234	p < .05
FAS (patient)	-. 399	p < .01

APPENDIX E

Profile of Dependent and Independent Variables of the Sample

Variable (respondent)	Mean Scores	Standard Deviations	Range of Responses
FAS (Patient)	65.03	10.06	30 - 77
FAS (Family)	62.51	11.273	23 -77
FMWB (Patient)	43.88	14.80	13 - 80
FMWB (Family)	39.24	13.3	10 - 72
FSOC (Patient)	149.94	26.04	87 - 200
FSOC (Family)	147.88	25.30	73 –199
FSOC (mean >150)	164.48	19.85	125-199
FSOC (mean< 150)	132.53	21.20	78-176

APPENDIX F

Sample Profile of the SSB

Social Support	Mean	Standard Dev.	Range
*SSB 1 Family	221.7	26.8	65 – 224
*SSB 1 Friends	168.75	48.63	45 - 225
*SSB 2 Family	187.19	43.87	47 -225
*SSB 2 Friends	155.39	47.46	35 -225
**fSSB 1 Family	194.58	34.82	63 -225
**fSSB 1 Friends	173.0	43.2	45 -225
**fSSB 2 Family	185.39	44.61	67 -225
**fSSB 2 Friends	160.05	52.78	35 -225

*Patient responses ** f = Family Responses

REFERENCES

LIST OF REFERENCES

Abrahamsson, A. & Ellertsson, G. (2002). A salutogenic perspective could be of practical relevance for the prevention of smoking amongst pregnant women. *Midwifery, 18(4),* 323-331.

Agency for Healthcare Research and Quality, (AHRQ). (2000, March). *Outcomes Research: Fact Sheet. [No. 00-P011].* Rockville, MD. Author. from http://www.ahrq.gov/clinic/outfact.htm.

Ainsworth, M. D.S., Blehar, M., Waters, E. & Wall, S. (1978). *Patterns of Attachment.* Hillsdale, NJ: Erlbaaum.

American Heart Association, (2002). *Cardiac Rehabilitation Statistics.* Dallas, TX: Author.

American Heart Association, (2004). *Heart Disease and Stroke Statistics: 2004 Update.* Dallas, TX: Author.

Anderson, K. (2000). The family health system approach to family systems nursing. *Journal of Family Nursing, 6(2),* 103-119.

Anderson, K. H. (1998). The relationship between the family sense of coherence and the family quality of life after illness diagnosis: Collective and consensus views. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency (pp. 169-187).* Thousand Oak, CA: Sage.

Anderson, B., Kiecolt-Glasser, J. & Glaser, R. (1994). A biobehavioral model of cancer stress and disease course. *American Psychologist, 49,* 389-404.

Anderzen, I. & Arnetz, B.B. (1999). Psychophysiological reactions to international adjustment: Results from a controlled, longitudinal study. *Psychotherapy & Psychosomatic, 68,* 67-75.

Aneshel,C., Pearlin, L.L., Mullan, J.T., Zarot, S.H. & Whithall, C. J (1995). *Profiles In Caregiving: The Unexpected Career.* San Diego, CA: Academic Press.

Anke, A.G.W. & Fugl-Meyer, A.R. (2003). Life satisfaction several years after severe multiple trauma - a retrospective investigation. *Clinical Rehabilitation, 17(4),* 431-442.

Anson, O., Paran, E., Neuman, L. & Chernichovsky, D. (1993). Gender differences in health perceptions and their predictors. *Social Science and Medicine, 36,* 419-427.

Antonovsky, A. (1979). *Health, Stress and Coping.* San Francisco, CA: Jossey-Bass.

Antonovsky, A. (1984). The sense of coherence as a determinant of health. In J. D. Materarazzo, S. M. Weiss, J. A. Herd, N. E. Miller & S. Weiss. (Eds.), *Behavioral Health: A Handbook of Health Enhancement and Disease Prevention.* New York: Wiley.

Antonovsky, A. (1987). *Unraveling the Mystery of Health.* San Francisco, CA: Jossey-Bass.

Antonovsky, A. (1991). The structural sources of salutogenic strengths. In C. L. Cooper & R. Payne (Eds.), *Individual Differences: Personality and Stress* (pp. 67-104). New York: Wiley.

Antonovsky, A. (1993). Complexity, conflict, chaos, coherence, coercion and civility. *Social Science and Medicine, 37(8),* 969-981.

Antonovsky, A. & Sagy, S. (1986). The development of a sense of coherence and its impact on responses to stress situations. *Journal of Social Psychology, 126(2),* 213-225.

Antonovsky, A. & Sourani, (1988). Family sense of coherence and family adaptation. *Journal of Marriage and Family Therapy, 50,* 79-92.

Ayis, S., Gooberman-Hill, R. & Ebrihim, S. (2003). Long-standing and limiting long-standing illness in older people: Association with chronic diseases, psychosocial factors and environmental factors. *Age and Aging, 32(3),* 265-272.

Baker, L. K. (1998). Sense of coherence in adolescents with cystic fibrosis. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency.* Thousand Oak, CA: Sage.

Baker, M., North, D. & Smith, D.F. (1997). Burnout, sense of coherence and sources of salutogenesis in social workers. *Journal of Human Behavior, 34,* 22-66.

Balady, G. J., Fletcher, B. J., Froelicher, E. S., Hartley, H., Krauss, R. M., Oberman, A., Pollack, M. L., Barr-Taylor, C. (1994). *Cardiac Rehabilitation Programs: A Statement for Professionals from the American Heart Association.* [Electronic Version]. (No. 71-0055). Dallas, TX: American Heart Association.

Barrera, M., Jr. & Ainlay, S. (1983). The structure of social support: Conceptual and empirical analysis. *Journal of Community Psychology, 11,* 133-143.

Ben-Sira, (1985). Potency: A stress-buffering link in the coping-stress-disease relationship. *Social Science in Medicine, 21(4),* 397-406.

Berger, P. L. & Luckmann, T. (1966). *The Social Construct of Reality.* New York: Double Day.

Berkman, L. F. & Syme, S.L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of the Alameda County residents. *American Journal of Epidemiology, 109,* 186-204.

Bernstain, J. & Carmel, S. (1987). Trait anxiety and the sense of coherence. *Psychological Reports, 60,* 1000.

Bohachick, P. Taylor, M.V., Serika, S., Reeder, S. & Anton, B.B. (2002). Social support, personal control, and psychosocial recovery from heart transplantation. *Clinical Nursing Research, 11(1),* 34-51.

Bowlby, J. (1969). *Attachment and Loss.* New York, NY: Basic Books.

Bowlby, J. (1977). The making and breaking of affectional bonds: Etiology and psychopathology in the light of the attachment theory. *British Journal of Psychiatry, 130,* 201-210.

Bronfenbrenner, U. (1972). *Influences on Human Development.* Hinsdale, IL: Dryden.

Bulboz, M.M. & Sontag, M.S. (1993). Human Ecology Theory. In P.G. Boss, W.J. Doherty, R. LaRossa, W.R. Schumm, & S. K. Steinmetz. (Eds.), *Sourcebook of Family Theories and Methods: A Contextual Approach.* (pp. 419-448), New York: Plenum Press.

Campbell, T. & Patterson, J. (1995). The effectiveness of family interventions in the treatment of physical illness. *Journal of Marital and Family Therapy, 21,* 545-583.

Caplan, G. (1974). *Support Systems and Community Mental Health: Lectures on Concept Development.* New York, NY: Behavioral Publications.

Cassel, J. (1974). An epidemiological perspective of psychosocial factors in disease etiology. *American Journal of Public Health, 64,* 1040-1043.

Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology, 104,* 107-123.

Chamberlain, K. & Zika, S. (1992). Stability and change in short subjective well-being over short time periods. *Social Indicators Research, 26,* 101-117.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300-314.

Coe, R. M., Romeis, J. C., Tang, B. & Wolinsky, F. D. (1990). Correlates of a measure of coping in older veterans: A preliminary report. *Journal of Community Health, 15,* 287-296.

Cooper, R., Cutler, J., Desvigne-Nickens, P., Fortman, S. P., Freidman, L., Havik, R., Hogelin, G., Marler, J., McGovern, p., Morosco, G., Mosca, L., Pearson, T., Stamler, J., Stryer, D. & Thom, T. (2000). Trends in disparities in coronary heart disease, stroke and other cardiovascular disease in the United States: Findings of the National Conference of Cardiovascular Disease Prevention. *Circulation, 102,* (3137-3147).

Corbin, J. M. & Strauss, A. (1988). *Unending Work and Care: Managing Chronic Illness At Home.* San Francisco: Jossey- Bass.

Dalbokova, D., Tzenova, B. & Ognjanova, V. (1995). Stress states in nuclear operators under conditions of shift work. *Work and Stress, 9,* 305-313.

Dantas, R.S. Motzer, S. A. & Ciol, M. A. (2002). The relationship between qualitu of life, sense of coherence and self-esteem in persons after coronary artery bypass graft surgery. *International Journal of Nursing Studies, 39,* 745-755.

Depue, R.A. & Monroe, S.M. (1986). Conceptualization and measurement of human disorder in life stress research: The problem of chronic disturbance. *Psychological Bulletin, 99(1).* 36-51.

Duke University Life Science Data Warehouse. (2003). *Michigan Cardiovascular Network Database.* Durham, NC: Duke University, Author.

Egolf, B., Lasker, J., Wolf, S. & Potvin, J. (1985). Featuring health risks and mortality: The Roseto effect: A 50 year comparison of mortality rates. *American Journal of Public Health, 82(8),* 1089-1092.

Ell, K. (1984). Social networks, social support, and health status: A review. *Social Service Review, 56,* 133-149.

Fiorentino, L. M. & Pomazal, R. J. (1998). In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency (pp. 91-106).* Thousand Oak, CA: Sage.

Flannery, R. B. & Flannery, G. J. (1990). Sense of coherence, life stress, and psychological distress: A prospective methodological inquiry. *Journal of Clinical Psychology, 46(4),* 415-420.

Forbes, D. A. (2001). Enhancing mastery and sense of coherence: Important determinants of health in older adults. *Geriatric Nursing, 22(1),* 29-32.

Freidman, M., Thoreson, C.E. & Gill, J.J. (1986). Alteration of type A behavior and its effects on cardiac reoccurrences in post myocardial infarction patients: Summary results of the recurrent coronary artery prevention project. *American Heart Journal, 112(4),* 653-665.

Freund, P. S. & McGuire, M. B. (1995). *Health, Illness and the Social Body.* New Jersey: Prentice Hall.

Fried, L. P., Kronmal, R. A., Newman, A. B. & Bild, D. E., Mittelmark, M. B., Polak, J. F., et al. (1998). Risk factors for 5-year mortality in older adults: The Cardiovascular Health Study. *Journal of the American Medical Association, 279,* 585-592.

Garbarino, J. (1983). Social support networks: Rx for the helping professions. In J. K. Whittaker & J. Garbarino, (Eds.), *Social Support Networks: Informal Helping in the Human Services.* New York; Aldine De Gruyter.

Gilbar, O. (1998). Relationship between burnout and sense of coherence in health social workers. *Social Work and Healthcare, 26(3),* 39-49.

Glass, T. A., Dym, B., Greenberg, S., Rintell, D., Roesch, C., & Berkman, L. F. (2000). Psychosocial intervention in stroke: Families in recovery from stroke trial (FIRST). *American Journal of Orthopsychiatry, 70,* 169-181.

Goleman, D. (1995). *Emotional Intelligence.* New York: Bantam Books.

Hawley, D.R. & DeHann, R. (1996). Toward a definition of family resilience: Integrating life span and family perspectives. *Family Process, 35,* 511-524.

Hazen, C. & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 51,* 511-524.

Hemingway, H. & Marmot, M (1999). Psychosocial factors in the aetiology and prognosis of coronary heart disease: Systematic review of prospective cohort studies. *British Medical Journal, 318(7196),* 1460-1469.

Hill, R. (1949). *Families Under Stress.* New York, NY: Harper.

Hill, R. (1958). Generic features of families under stress. *Social Casework, 49,* 139-150.

Holmes, T. H., & Rahe, R. H. (1969). The social readjustment rating scale. *Journal of Psychosomatic Research, 11,* 213-218.

House, J. S., Robbins, C. & Metzner, H. L. (1982) The association of social relationships and activities with mortality: Prospective evidence from the Tecumseh Community Health Study. *American Journal of Epidemiology, 116(1),* 123-140.

Hurdle, D. E. (2001). Social support: A critical factor in women's health and health promotion. *Health and Social Work, 26(2).* 72-79.

Joeg, J. M. (1997). Evaluating coronary heart disease risk: Tiles in the mosaic. *Journal of the American Medical Association, 277,* 1387-1390.

Kahn, A.J. (1979). *Social Policy and Social Services.* (2nd Ed.). New York: Random House.

Kaiser, C. F., Sattler, D. N., Bellack, D. R. & Dersin, J. (1996). A conservation of resources approach to a natural disaster: Sense of coherence and psychological distress. *Journal of Social Behavior and Personality, 11,* 459-476.

Kaplan, G. A., Salonen, R. D. & Cohen, R. D. (1988). Social connections and mortality from all causes and from cardiovascular disease: Prospective evidence from eastern Finland. *American Journal of Epidemiology, 128(2),* 370-380.

Kivimaki, M., Feldt, T., Vaherta, J. & Nurmi, J. E. (2000). Sense of coherence and health: Evidence from two cross-lagged longitudinal samples. *Social Science and Medicine, 50,* 583-597.

Klang, B., Bjorvell, H. & Clyne, N. (1996). Quality of life in pre-dialysis uremic patients. *Quality of Life Research, 5,* 109-116.

Kobasa, S. (1979). Stressful life events, personality and health. *Journal of Personality and Social Psychology, 37,* 1-11.

Kravatz, S., Drory, Y. & Florian, V. (1993). Hardiness and sense of coherence and their negative affect. *European Journal of Personality, 7,* 233-244.

Lavee, Y., McCubbin,H. I. & Olson, D. H. (1987). The effect of stressful life events and transitions on family functioning and well-being. *Journal of Marriage and the Family, 49,* 857-873.

Lazarus, R. S. (1984). On the primacy of cognition. *American Psychologist, 39,* 124-129.

Lazarus, R. S., & Cohen, J. B. (1977). Environmental stress. In I. Altman & J.F. Wohlwill, (Eds.), *Human Behavior and Environment, (Vol. 2).* New York, NY: Plenum.

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal and Coping.* New York: Springer.

Lev, E. L. & Owen, S. V. (2002). Association of cancer patients' quality of life, symptoms, moods & self-care, self-efficacy with family caregivers' depression reaction and health. *Dependent Care and Nursing, 10(2),* 3-12.

Lidell, E. (2002). Family support-a burden to patient and caregiver. *European Journal of Cardiovascular Nursing, 1(2),* 149-152.

Limbert, C. (2004). Psychological well-being and job satisfaction amongst military personnel on unaccompanied tours: The impact of perceived social support and coping strategies. *Military Psychology, 16(1),* 37-51.

Linn, J., G., Lewis, F. M., Cain, V. A. & Kimbourgh, G. A. (!993). HIV- illness, social support, sense of coherence and psychosocial well-being in a sample of help-seeking adults. *AIDS Education & Prevention, 5,* 254-262.

Lundberg, O. (1997). Childhood conditions, sense of coherence, social class and adult ill health: Exploring their theoretical and empirical relationships. *Social Science and Medicine, 44(6),* 821-831.

Lutgendorf, S. K., Vitaliano, P. P., Tripp-Reimer, T., Harvey, J. H. & Lubaroff, D. M. (1999). Sense of coherence moderates the relationship between life

stress and natural killer cell activity in healthy older adults. *Psychology and Aging, 14(4),* 552-563.

Lynch, J. J (1977). *The Broken Heart: The Medical Consequences of Loneliness.* New York: Basic Books.

Lynch, J. J., Thomas, S. A. & Paskewitz, D. A. (1977). Human contact and cardiac arrhythmia in a coronary care unit. *Psychosomatic Medicine, 39(3),* 188-192.

Mason, D. J., Leeman, J. & Funk, S. G. (2002). Living with illness. *American Journal of Nursing, 102(2),* 7.

Margalit, M., Leyser, Y. & Avraham, Y. (1989). Classification and validation of family climate subtypes in kibbutz fathers of disabled and nondisabled children. *Journal of Abnormal Child Psychology, 17,* 91-107.

McCoy, M. A. (1992). Daily Hassles and the Mood of Patient During Early Home Recovery Following CABG Surgery. *Unpublished Master's Thesis, Oakland University, Rochester, MI.*

McCubbin, H., I. & Dahl, B. (1976). Prolonged family separation in the military: A longitudinal study. In H. I. McCubbin, B. Dahl, & E. Hunter (Eds.), *Families in the Military System.* Beverly Hills: CA.

McCubbin, H. I., Dahl, B., Lester, G. & Ross, B. (1975). The returned prisoner of war: Factors in family integration. *Journal of Marriage and the Family, 37,* 471-478.

McCubbin, M.A. & McCubbin, H.I. (1991). Family assessment in health care. In H.I. McCubbin & A.I. Thompson (Eds.). *Family Assessment Inventories for Research and Practice, (2nd Ed.).* Madison, WI: University of Wisconsin-Madison.

McCubbin, M. A. & McCubbin, H. I. (1993). Family coping with health crises: The resiliency model of family stress, adjustment and adaptation. In C. Danielson, B. Hamel-Bissel, & P. Winstead-Fry (Eds.), *Families, Health and Illness.* New York, NY: Mosby.

McCubbin, M. A. & McCubbin, H. I. (1998). Family assessment in healthcare. In H. I. McCubbin, A. I. Thompson, (Eds.), *Family Assessment Inventories in Research and Practice.* Madison, WI: University of Wisconsin-Madison.

McCubbin, H. I., McCubbin, M. A., Thompson, A. I., Han, S. Y. & Allen, C.T. (1997). Families under stress: What makes them resilient. *Journal of Family and Consumer Sciences, 89(3),* 2-11.

McCubbin, H. I., & Patterson, J. M. (1982). Family adaptation to crises. In H. I. McCubbin, A. E. Cauble, & J. M. Patterson (Eds.), *Family Stress, Coping and Social Support.* Springfield, IL: Charles C. Thompson.

McCubbin, H.I . & Patterson, J. M. (1983). Family transitions: Adaptation to stress. In H. I. McCubbin, & C. R. Figley, (Eds.), *Stress and the Family: Volume I: Coping With Normative Transitions.* New York, NY: Brunner/Mazel.

McCubbin, H. I., & Patterson, J. M. (1983a). Family stress and adaptation to crises: A double ABCX model of family behavior. In D. Olsen & B. Miller (Eds.), *Family Studies Review Yearbook.* Beverly Hills, CA: Sage.

McCubbin, H. I., & Patterson, J. M. (1983b). The family stress process: The double ABCX model of family adjustment and adaptation. *Marriage and Family Review, 6,* 7-37.

McCubbin, H. I., & Patterson, J. M. (1983c). Family Member Well-being Index (FMWB). In H. I. McCubbin, A. I. Thompson, & M. McCubbin(Eds.), *Family Assessment: Resiliency, Coping and Adaptation- Inventories for Research and Practice (1996).* Madison: University of Wisconsin System.

McCubbin, H. I., Patterson, J. & Wilson, L. (1983). *FILE: Family Inventory of Life Events and Changes.* University of Wisconsin-Madison.

McCubbin, H. I., Thompson, A. I. & McCubbin, M. (1996). *Family Assessment: Resiliency, Coping and Adaptation- Inventories for Research and Practice.* Madison: University of Wisconsin System.

McCubbin, H. I., Thompson, A. I., Pirner, P. & McCubbin, M. A. (1988). *Family types and strengths: A life cycle and ecological perspective.* Edina, MN: Bell-Weather Press.

McCubbin, H.I., Thompson, A.I., Thompson, E. A., Elver, K. E., & McCubbin, M.A. (1998). Ethnicity, schema and coherence. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency.* Thousand Oak, CA: Sage

McCubbin, H.I., Thompson, E. A., Thompson, A. I., McCubbin, M. A., & Kasten, A. (1993). Culture, ethnicity and the family: Critical factors in childhood chronic illness and disabilities. *Journal of Pediatrics, 91(5),* 1063-1070.

McKeown, L. P., Porter- Armstrong, A. P. & Baxter, G. D. (2003). The needs and experience of caregivers of individuals with multiple sclerosis: A systematic review. *Clinical Rehabilitation, 17(3),* 234-248.

Miller, B., Townsend, A., Carpenter, E., & Montgomery, R., V., J. (2001). Social support and caregiver distress. *Journals of Gerontology, 56B(4),* 249-263.

Motzer, S. A. & Stewart, B.J. (1996). Sense of coherence as a predictor of quality of life in persons with coronary heart disease surviving cardiac arrest. *Research in Nursing and Health, 19,* 287-298.

Motzer, S.A., Hertig, V., Jarrett, M & Heitkemper, M.M. (2003). Sense of coherence and quality of life in women with and without irritable bowel syndrome. *Nursing Research, 52(5),* 329-337.

Mullen, P., M., Smith, R., M. & Hill, E., W. (1993). Sense of coherence as a mediator of stress for cancer patients and spouses. *Journal of Psychosocial Oncology, 11*(3), 23-46.

Murray, J. S. (2000). A concept analysis of social support as experienced by siblings of children with cancer. *Journal of Pediatric Nursing, 15*(5), 313-319.

Nesbitt, B. J. & Hendrich, S. M. (2000). Sense of coherence and illness appraisal in older women's quality of life. *Research in Nursing and Health, 23,* 25-34.

Newby, N.M. (1996). The reliability, construct and discriminate validity of the Family Sense of Coherence Questionnaire. (Doctoral dissertation, St. Louis University, 1996). *Dissertation Abstracts International* (UMI No. 9718145).

Newton, S. E. (1999). Relationship of hardiness and sense of coherence to post-liver transplant return to work. *Holistic Nursing Practice, 13(3),* 71-79.

Ornish , D. (1998). *Love & Survival: 8 Pathways To Intimacy and Health.* New York: HarperCollins Publishers.

Orth-Gomer, K. & Johnson, J., V. (1987). Social network interaction and mortality: A six-year follow-up of a random sample of Swedish population. *Journal of Chronic Diseases, 40(10),* 949-957.

Oxman, T.E., Freeman, D. H. & Manheimer, E. D. (1995). Lack of social participation or religious strength and comfort as risk factors for death after cardiac surgery in the elderly. *Psychosomatic Medicine, 57,* 5-15.

Patterson, J. M. (1988). Families experiencing stress: The family adjustment and adaptation response model. *Family Systems Medicine, 7,* 202-237.

Patterson, J. M. & Garwick, A. (1994). Levels of meaning in family stress theory. *Family Process, 33,* 287-304.

Patterson, J.M. & Garwick, A.W. (1998). Theoretical linkages: Family meanings and sense of coherence. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency.* Thousand Oak, CA: Sage.

Pertrie, K. & Azariah, R. (1990). Health-promoting variables as predictors of response to brief pain management program. *Clinical Journal of Pain, 6,* 43-46.

Petrie, K. & Brook, R. (1992). Sense of coherence, self-esteem, depression, and hopelessness as correlates of reattempting suicide. *British Journal of Clinical Psychology, 31,* 293-300.

Pipher, M. (1996). *The Shelter of Each Other: Rebuilding Our Families.* New York, NY: Ballantine Books

Poppius, E., Tenkanen, L., Kalimo, R. & Heinsalmi, P. (1999). The sense of coherence and the risk of coronary heart disease in the Helsinki, Heart Study. *Social Science and Medicine, 49,* 109-120.

Post-White, J. (1994). The role of sense of coherence in mediating the effects of mental imagery on immune function, cancer outcome, and quality of life. In H. I. McCubbin, E.A. Thompson, A. I. Thompson, & J. E. Fromer (Eds.), *Sense of Coherence and Resiliency: Stress, Coping and Health.* Madison, WI: University of Wisconsin.

Radmacher, S. A. & Sheridan, C. L. (1989). The global inventory of stress; A comprehensive approach to stress assessment. *Medical Psychotherapy, 2,* 183-188.

Rankin, S.H. (1989). Women as patients and women as caregivers: Difficulties in recovery from cardiac surgery. *Community Nursing Research, 22,* 9-15.

Ransom, D. C., Fisher, L. & Terry, H. E. (1992). The California family health project: II. Family worldview and adult health. *Family Process, 31,* 251-267.

Reis, H. (1984). Social interaction and well–being. In S. Duck, (Ed.), *Personal Relationships V: Repairing Personal Relationships.* London: Academic Press.

Robinson, K.R. (1999). Envisioning a network of care for at-risk patients after myocardial infarction. *Cardiovascular Nursing, 14(1),* 75-88.

Ruberman, W.E., Weinblatt, J.D., Golberg, J. D. & Chaudery, B.S. (1984). Psychological influences on mortality after myocardial infarction. *New England Journal of Medicine, 311(9),* 552-559.

Ryland, E. & Greenfeld, S. (1990). Work stress and well-being: An investigation of Antonovsky's sense of coherence. *Journal of Applied Business Research, 6,* 39-54.

Ryland, E. K., Tegarden, L. F. & King, J. C. (1998). The salutogenic effect of an MBA program: Sense of coherence and the academic experience of U.S. and foreign MBA students. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency.* Thousand Oak, CA: Sage.

Sagy, S. & Antonovsky, A. (1990). Coping with retirement: Does the sense of coherence matter less in the kibbutz? *International Journal of Health Sciences, 1,* 233-242.

Sagy, S. & Antonovsky, A. (1998). The family sense of coherence and the retirement transition. . In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer, (Eds.), *Stress, Coping and Health in Families: Sense of Coherence and Resiliency.* Thousand Oak, CA: Sage.

Sagy, S. & Antonovsky, H. (2000). The development of the sense of coherence: A retrospective study of early life experiences in the family. *Journal of Aging and Human Development, 51(2),* 155-166.

Sarason, B. R., Peirce, G.R. & Sarason, I. G. (1990). Social support: The sense of acceptance and the role of relationships. In B. R. Sarason, I. G. Sarason & G.R. Pierce. (Eds.), *Social Support: An Interactional View.* New York, NY: Wiley.

Schnyder, U., Buchi, S., Morgeli, H., Sensky, T. & Klaghofer, R. (1999). Sense of coherence: A mediator between disability and handicap. *Psychotherapy and Psychosomatics, 68,* 102-110.

Schott, T. & Bandura, B. (1988). Wives of heart attack patients: The stress of caring. In R. Anderson & M. Bury, (Eds.), *Living With Chronic Illness:*

The Experience of Patients and Their Families. (p.117-136), London: Unwin Hyman.

Seeman, T. E., & Syme, S., L. (1987). Social networks and coronary artery disease: A comparision of the structure and function of social relations as predictors of disease. *Psychosomatic Medicine, 49*, 341-354.

Selye, H. (1956). *The Stress of Life.* New York : McGraw-Hill.

Snekkevik, H., Anke, A.G.W., Stanghelle, J. K., Fugl-Meyer, A.R. (2003). Is the sense of coherence stabke after multiple trauma ? *Clinical Rehabilitation, 17(4), 443-453.*

Sontag, M. S. & Bubolz, M. M. (1996). *Families on Small Farms.* East Lansing, MI: Michigan State University Press.

Sourani, T., & Antonovsky, A. (1988). Family Adaptation Scale (FAS). *Journal of Marriage & the Family, 50*(2), 79-82.

Sottle, W. M. (1992). *Heart Illness and Intimacy: Caring Relationships Aid Recovery.* Baltimore, MA: John Hopkins University Press.

Speigel, D., Bloom, J.R., Kraemwr, H.C. & Gottheil, E.)1989). Effect of psychosocial treatment on survival of patients with metastatic breat cancer. *The Lancet, ii,* 888-891.

Staton, M. (2000). Stress, coping, and health in families: Sense of coherence and resiliency. *Family Relations, 49*, (3), 350-351.

Thompson, E.H., Futler, A.M., Gallagher-Thompson, V., Rose, J.M. & Lovett, S.B (1993). Social support and caregiving burden in family caregivers of frail elders. *Journal of Gerontology & Social Sciences, 48(S),* 245-254.

Turner, R. J. & Avison, W. R. (2003). Status variation in stress exposure: Implications for the interpretation of research on race, socioeconomic status and gender. *Journal of Health and Social Behaviors, 44(4),* 488-506.

Underhill-Motzer, S. & Stewart, B.J. (1996). Sense of coherence as predictor of quality of life in persoms with coronary artery disease surviving cardiac arrest. *Research in Nursing & Health, 19,* 287-298.

Vahtera, J., Uutela, A. & Pentti, J. (1996). The effects of objective job demands on registered sickness absences: Does personal, social and job related resources act as moderators? *Work and Stress, 10,* 286-308.

Vaux, A. (1988). *Social Support: Theory, Research, and Intervention.* New York, NY: Praeger Publishers.

Vaux, A., Stewart, D., & Riedel, S. (1987). Modes of social support: The social support behaviors scale. *American Journal of Community Psychology, 15(2),* 209-237.

Walker, (1985). Reconceptualizing family stress. *Journal of Marriage and the Family, 47,* 827-837.

Walsh, F. (1998). *Strengthening Family Resiliency.* New York, NY: Guilford Press.

Walsh, F. (1998b). Families in later life: Challenges and opportunities. In B. Carter & M. McGoldrick (Eds.), *The Expanded Family Life Cycle.* Needham Heights, MA: Allyn & Bacon.

Whittaker, J., K. (1983). Social support networks in child welfare. In J. K. Whittaker & J. Garbarino, (Eds.), *Social Support Networks: Informal Helping in the Human Services.* New York: Aldine De Gruyter.

Ying, P., Akutsu, P. D., Zhang, X. & Huang, L. N. (1991). Psychological dysfunction in Southeast Asian refugees as mediated by the sense of coherence. *American Journal of Community Psychology, 25(6),* 839-859.