ABSTRACT

LANKEY, L. L. The relationship between personality type preferences and levels of coping resources among cardiac rehabilitation participants at the University of Wisconsin-La Crosse. M.S. in Community Health Education, 1991. 86 pp. (R. Detert).

This study was designed to determine the relationships between personality type preference as measured by the Myers-Briggs Type Indicator (MBTI), and the self-reported coping resources scores as measured by the Coping Resource Inventory (CRI). Data were collected from 31 volunteers of the Cardiac Rehabilitation Program at the University of Wisconsin-La Crosse. Each volunteer completed both the MBTI and the CRI. T-test, stepwise regression, and canonical correlation were used to analyze the research hypotheses. Particular attention was focused on anger for which the researcher developed a subscale from the CRI questions. The T-test results indicated that the mean score for anger did not differ significantly from the three other types; intuitive-perceiving, intuitive-judging, and sensing-perceiving combined. The stepwise regression procedure was used to determine whether anger could be predicted by the variables of the MBTI. There was a significant inverse correlation between anger and sensing-intuitive (SN) score and anger and extrovert-introvert (EI) score. As the score for anger increases, the SN continuum goes from S to N (p>.0085). Also, as the score for anger increases the EI continuum moves from I to E (p>.0082). The .05 alpha level was the accepted probability level for rejection of the null hypothesis. The canonical correlations between the MBTI variables and the variables of the CRI were moderate, the largest being .4952 between social and EI score, and -.4644 between anger and SN score. The first canonical correlation was .6671, which was substantially larger than any of the between-set correlations. The probability level for the null hypothesis that all the canonical correlations in the population was .1305 so no firm conclusion was drawn. The remaining canonical correlations seemed to indicate only a potential for a positive correlation. Results of the data analyses indicate there was a relationship between anger and the sensing and introvert type preferences.
THE RELATIONSHIP BETWEEN PERSONALITY TYPE PREFERENCES AND LEVELS OF COPING RESOURCES AMONG CARDIAC REHABILITATION PARTICIPANTS AT THE UNIVERSITY OF WISCONSIN-LA CROSSE

Thesis Presented

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by

Lori L. Lankey

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Candidate: Lori L. Lankey

We recommend acceptance of this thesis in partial fulfillment of this candidate's requirements for the degree:

Master of Science: Community Health Education

The candidate has completed her oral report.

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Date

Dean of Graduate Studies

Date
DEDICATION

I dedicate this Master's thesis to Paul Peppard, and my parents Russell and Laverne Lankey. These people have shown support by their love and encouragement to me. That unending support has given me the energy and confidence to strive for this goal.
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CHAPTER I
INTRODUCTION

"The best of all possible solutions to coronary artery disease is prevention, and in that sense knowledge is power" (Nourse, 1986). One's lifestyle influences the development of heart diseases, which affect more than 5 million Americans. While there is no single approach to increasing wellness, how one lives and what lifestyle one chooses influences both health and longevity. A wellness approach to lifestyle includes wellness on all levels of the person: social, physical, cognitive, spiritual, and emotional (Nourse, 1986).

Cooley and Moore (1987) recalled the famous Framingham Study of 1952 that was conducted to examine cardiovascular disease (CVD) development among 6,600 individuals ranging from 30 to 59 years of age. Certain risk factors were identified as people in the group developed CVD. These risk factors have now been divided into two categories. Primary risk factors are those that have been proven to contribute to the development of atherosclerosis. They include elevated blood cholesterol, hypertension, and cigarette smoking. Secondary risk factors are those still under research before they can be proven and classified as primary risk factors. "Secondary
risk factors that increase the likelihood of heart disease include elevated blood triglycerides (fat), diabetes, obesity, inactivity, stress, and possibly personality type" (Cooley & Moore, 1987).

This study focused on the secondary risk factor of personality type characteristics and how they relate to coping mechanisms in cardiac rehabilitation participants. It examined the correlations of personality type, as measured by the Myers-Briggs Type Indicator (MBTI) (Myers, 1980), scores on the Coping Resources Inventory (CRI) (Hammer, 1989), and an anger component.

The anger component was a subscale score of the Emotional Scale of the CRI. Three questions were drawn from the Emotional Scale which directly related to the ability to identify and express anger. These three questions were then used as another variable for statistical purposes.

**Background**

There has been considerable research conducted on the relationship between Type A personality and heart disease. Among the researchers in this area the most popular are Friedman and Rosenman (Friedman & Rosenman, 1974). This thesis examined specific personality types among cardiac rehabilitation participants, as described by Jung (Jung, 1971) and Myers-Briggs (Myers, 1980) and coping
resource preference, as described by Hammer (1988) and Marting (1985). Fyfe, Carskadon, and Thorne (1986) and Spencer, Carskadon, and Thorne (1986) have shown an overrepresentation among cardiac patients of the Sensing-Thinking-Judging personality type group, particularly Thinking-Judging types. In the present study, this premise was expanded to compare the effect of coping skills as well.

The MBTI is a psychological personality preference inventory that measures preference on four bipolar traits. It is most widely used for non-psychiatric populations in the areas of clinical counseling and personality assessment. The MBTI grew out of Jung's type theory (Jung, 1971) as interpreted by Briggs-Myers and was designed to implement Jung's theory as she understood it. The instrument consists of four preference scales: (a) extrovert (E) or introvert (I), (b) sensing (S) or intuition (I), (c) thinking (T) or feeling (F), and (d) judging (J) or perceiving (P). According to type theory, the four preferences, or dichotomies, interact. As a result, 16 different 4-letter type preferences are possible. Because the instrument is intended for normal populations and assesses personality dimensions, it is intended more for the respondent than for the professional.

The MBTI was used in this study to "type-preference" a
group of Stage III and Stage IV cardiac rehabilitation participants. "The Cardiac Rehabilitation Program at the University of Wisconsin-La Crosse is part of the La Crosse Exercise Program and is designed to enhance the health status of physician-referred cardiac and high risk individuals" (Thill, 1982).

This group was also given the CRI to determine the coping resources of social, physical, cognitive, spiritual, and emotional dimensions. The CRI has been used in clinical and educational settings for a number of purposes. Coping resources are those resources inherent in individuals that enable them to handle stressors more effectively (Hammer, 1988). Resources play a mediating role in the coping process. A resource can reduce the likelihood of stress-induced disease. Accordingly, individuals with high resources are characterized as resilient and hardy. Coping resources act as the predecessor to a behavior and as background factors. A strategy used by an individual in coping with a stressor can become a resource for that person through prolonged successful use. A strategy will function as a resource after a considerable effort in employing the strategy. Also, strategies can be tried, tested, and then discarded in favor of other resources.

An understanding and knowledge of the various personality types has, in recent years, been recognized as
having potential to aid people in choosing careers, coping with problems, teaching and learning effectively, and dealing with others in general. Since the Framingham Study of 1952, personality type has been analyzed in the study of various diseases such as heart disease. Most notably, Friedman and Rosenman (Friedman & Rosenman, 1974) as well as many others have done extensive work on the specific behavioral pattern labelled Type A, and found this pattern to be at least a secondary risk factor in heart disease. In fact, Type A itself has been called a "coping style" (Cooley & Moore, 1987).

**Significance of Study**

The significance of this study was to provide more research needed to help identify personality type and lifestyle tendencies as an important risk factor in CVD. The relationship between personality type and heart disease is of interest to a variety of disciplines, including social psychology, cardiology, psychiatry, and health education. Identifying and acknowledging resources and competencies as well as their deficits and impairments may prove useful in designing interventions and in improving self-concepts (Hammer, 1988). Prevention programs can be designed to help increase knowledge of resources and their role in the coping process. As a result of such a study, educational programs may be
developed to help individuals deal with anger or other factors identified in this study that relate to Type preference.

There are powerful implications associated with this line of research, and is perhaps one of the most important uses of psychological type. Heart disease is the number one cause of death among adult Americans. Measures predictive of CVD, such as Type A/Type B, are not given to very large numbers of people and generally not until risk for CVD is already suspected. The MBTI, however, is being administered (and, presumably, explained) approximately one to 1 1/2 million times per year.

If Type does prove to be predictive of CVD, health educators would be in a position to make warnings which literally could be lifesaving. It would be suggested to ISTJ personality types, for example, to seek and maintain medical supervision, and eliminate other known CVD risk factors (i.e., smoking, drinking, inappropriate diet, inadequate or inappropriate exercise, and excessive physical and mental stress). Actually, these suggestions would be made to all Types; but if sufficient factual knowledge about Type is gathered, this knowledge could be used to help people avoid or deal with health problems as serious as CVD. Educators would then be in a position not only to bring understanding to people's lives, but to prolong them as well.
Statement of the Problem

This study investigated the possible relationships between personality type, as measured by the MBTI, and levels of coping resources, as measured by the CRI of cardiac rehabilitation participants at the University of Wisconsin-La Crosse. The coping resources tested were the social, physical, cognitive, spiritual/philosophical, and emotional dimensions. The CRI has a subscale to measure each dimension. The anger variable, a subset of the emotional scale, was considered as a separate component.

Research Hypotheses

This study tested the following research hypotheses: 1) There is a significant difference between the SJ personality type preference as compared to the other three combined personality types (NP, NJ, SP) when examining the Coping Resource score that identifies anger among cardiac rehabilitation participants.

2) The following combination of variables have the ability to predict the dependent variable of anger: I-E, N-S, T-F, J-P scores on the MBTI.

3) There is a significant canonical correlation between variables of the MBTI scores and the variables of the CRI subscale scores.
Assumptions

This study was based on the following assumptions:

1) The cardiac rehabilitation participants would answer both the MBTI and the CRI to the best of their ability with honesty in self-disclosure.

2) The sampling process provided the study with a sample that is representative of typical cardiac rehabilitation participants in physician-referred Phase III and Phase IV Cardiac Rehabilitation programs.

3) The subject's answers are reflective of how they would have answered the questions at another given time.

Limitations

This study had the following limitations:

1) It might be improper to extrapolate the results of this study to cardiac rehabilitation patients not in Phase III or Phase IV rehabilitation programs.

2) This study did not test for the following variables which may influence results: age, sex, and social status.

3) It might be improper to extrapolate the results of this study to female cardiac patients since only three females were tested in the study.

4) The anger scale used in this study was developed by the researcher from a subscale of the emotional subscale of the CRI.
5) Both instruments were given to the participants to complete on their own without direct supervision.

**Delimitations**

This study had the following delimitations:

1) The population of the sample group involved 31 participants involved in the cardiac rehabilitation program at the University of Wisconsin-La Crosse.
2) The sample group was drawn from physician-referred cardiac rehabilitation participants of the La Crosse area, a predominantly white middle-class community.

**Definition of Terms**

**Cardiovascular Disease** - disorders of the heart and blood vessels caused when the flow of blood through the heart and to the rest of the body is blocked, the flow of blood to the heart itself is blocked, or something goes wrong with the small bundle of specialized cells in the heart that generate electrical impulses that coordinate the heart contractions (Hales, 1989).

**Coping Resource** - a process used to deal with presently occurring inter/intra personal problems (Boyd & Johnson, 1981).

**Coronary Artery Disease** - a symptomless disorder in which one or more of the three coronary arteries is partially or totally obstructed by one or more atherosclerotic plaques.
When and if these plaques give rise to symptoms (for example, angina pectoris or an acute myocardial infarction), coronary disease may be considered to have evolved into coronary heart disease (Friedman & Rosenman, 1974).

**Risk Factors** - characteristics associated with an increased risk of developing coronary heart disease, such as high blood pressure, elevated blood cholesterol, and cigarette smoking (Cooley & Moore, 1987).

**Myers-Briggs Type Indicator (MBTI)** - The MBTI is a self-report psychometric inventory designed to assess personality constructs. It measures preferences for four bipolar traits, showing strength of score on the indices of extraversion (E) or introversion (I), sensing (S) or intuition (I), thinking (T) or feeling (F), and judging (J) or perceiving (P). The MBTI was designed by Isabel Myers and Katherine Briggs, and is based on Carl Jung's theory of psychological types (McCaulley, 1976).

**Extrovert Type** - Extroversion is the MBTI function that allows the individual to enjoy people and communication. Extroverted types like variety and action. They also tend to be faster and to dislike complicated procedures (Myers, 1980).

**Introvert Type** - Introversion is the MBTI function that enables the person to work contentedly alone. The introvert type prefers quiet for concentration to work
with details or on a project for a long time uninterruptedly. Introvert types are interested in the ideas behind a job. They may also have some trouble communicating (Myers, 1980).

**Sensing Type** - Sensing is the MBTI function that helps individuals learn through their eyes and ears and other senses (Myers, 1980). Sensing types prefer to use experience and facts rather than theory, and learn by moving systematically, step by step, typing each new fact to past experience while testing it for practicality (Lawrence, 1979).

**Intuitive Type** - Intuition is the MBTI function that enables an individual to find meaning, relationships, and possibilities that are beyond the reach of his/her senses (Myers, 1980). Intuitive types rely on inspiration rather than on past experience. They have an interest in the new and untried and prefer to learn through an intuitive grasp of meanings and relationships (Lawrence, 1979).

**Thinking Type** - Thinking is the MBTI function that allows the individual to predict the logical result of any particular action taken. Thinking types decide, impersonally, on the basis of cause and effect (Myers, 1980).

**Feeling Type** - Feeling is the MBTI function in which the person tends to be aware of other people and their feelings. Feeling types enjoy pleasing others and strive for harmony. Their decisions are often influenced by
their own or other people's likes and dislikes (Myers, 1980).

Perceptive Type - Perceptive is the MBTI function in which the individual is well-adapted to change, tends to be curious and welcomes newness of a thing, situation, or person. Perceptive types do not mind leaving things open for alternatives, but may have trouble making decisions or postpone unpleasant jobs (Myers, 1980).

Judging Type - Judging is the MBTI function that enables the person to rely mainly on a judging process (thinking or feeling), and live in a planned, decided, orderly way. Judging types want to regulate life and control it (Myers, 1980).

Introverted-Sensing-Thinking-Judging Type (ISTJ) - an MBTI configuration that describes a person who is an introverted, sensing, thinking type, having a judging attitude toward the outer world. An ISTJ type person earns success by concentration and thoroughness. They are practical, orderly, matter-of-fact, logical, realistic, dependable, and they see to it that everything is well-organized. They take responsibility, and make up their minds as to what should be accomplished and work toward it steadily, regardless of protest or distractions. They live their outer life more with sensing (Myers, 1980).

Social Coping Resource - The degree to which individuals are imbedded in social networks that are able to provide
support in times of stress (Hammer, 1988).

**Cognitive Coping Resource** - The extent to which individuals maintain a positive outlook toward others, and optimism about life in general (Hammer, 1988).

**Emotional Coping Resource** - The degree to which individuals are able to accept and express a range of affect, based on the premise that a range of emotional response aids in ameliorating long-term negative consequences of stress (Hammer, 1988).

**Spiritual/Philosophical Coping Resource** - The degree to which actions of individuals are guided by stable and consistent values derived from religious, familial, or cultural tradition or from personal philosophy. Such values might serve to define the meaning of potentially stressful events and to prescribe strategies for responding effectively. The content domain for this scale is broader than traditional western religious definitions of spirituality (Hammer, 1988).

**Physical Coping Resource** - The degree to which individuals enact health-promotion behaviors believed to contribute to increased physical well-being. Physical well-being is thought to decrease the level of negative response to stress and to enable faster recovery. It may also help to attenuate potentially chronic stress-illness cycles resulting from negative physical responses to stressors that themselves become major stressors (Hammer, 1988).
CHAPTER II
REVIEW OF RELATED LITERATURE

Cardiovascular disease (CVD) is still the most popular cause of morbidity and death in the middle-aged population of industrialized western countries. The reasons for the high incidence of coronary heart disease (CHD) are still unsettled. The traditional risk factors of CVD; aging, male sex, elevated serum cholesterol, hypertension, cigarette smoking, diabetes mellitus, genetic factors, physical inactivity, and electrocardiographic signs of left ventricular hypertrophy do not explain all the CHD risk factors.

Coronary Personalities

An association has been seen between CHD and certain behavior patterns and psychological characteristics, and the clustering of contemporary life changes in work, finances, and family life as described in both Glass (1977) and Jenkins (1976). Findings of this kind led to the concept of psychological and physiological problems with which an individual may be burdened, resulting in demands exceeding his potential ability for adaptation. Siltanen (1984) related the very first clinical observations on the psychosocial correlations of CHD found
in the Lumleian lecture given by the great Canadian-American clinician Sir William Osler in 1910. Twenty male patients with angina pectoris, mostly physicians, were found to have common lifestyle features: incessant treadmill of their practice and worries at home or at work. All of these men had great mental and bodily energy with long working hours.

**Sociological Factors**

Jenkins (1976) began a study at the beginning of the urbanization and industrialization era that showed the upper socioeconomic classes were at a higher risk for heart disease, but by the end of the study the lower socioeconomic classes showed the higher risk. Level of education showed a negative correlation with CVD events in many studies.

**Emotional and Personality Factors**

Siltanen (1984) described one unidentified personality inventory which dealt most extensively with the variables of general neuroticism, anxiety, depression, sleep disturbances, and general exhaustion. The subjects who developed CVD during the follow-up period were characterized by authority (acceptance of power). Angina pectoris and myocardial infarction were characterized by higher scores in the scales of
neuroticism. Different manifestations of CVD are associated with different psychological risk factors.

**Life Dissatisfaction and Life Stress**

Jenkins (1976), Glass (1977), and Cassel (1986) all support an association between life dissatisfaction and angina pectoris or other manifestations of CVD. Life dissatisfaction and stress may precede the onset of the symptoms of CVD by several years.

According to Jenkins (1976), the high incidence of CVD in the lower socioeconomic classes is connected with work which allows too little personal freedom, influence, and intellectual discretion in carrying out the task, and thus rising dissatisfaction.

Chronic life stress (i.e., excessive work and responsibility) has been found in numerous studies to precipitate CVD events. In spite of that, it seems probable that burying oneself in work does not itself increase the CVD risk if it is not associated with dissatisfaction, competition, aggression, and impatience.

**Behavior Pattern**

Striving without joy and satisfaction is considered to be typical of many coronary patients. These same features of subjects with CVD were termed "Type A" behavior by Friedman and Rosenman (1978).
Several retrospective studies have demonstrated an association between Type A behavior pattern and the occurrence of CVD events, irrespective of the technique of assessment. The prospective Western Collaborative Group Study (WCGS), which was initiated in 1960, in which the classification of 5154 men was based on a stress interview, showed that during the 8 1/2 year follow-up the men of Type A at entry developed twice as many CHD events as Type B men (Rosenman et al., 1964).

Similar results were obtained from the same male cohort using Jenkins Activity Survey (JAS) for Health Prediction (Williams, 1989). Swedish investigators used "discord" variables to assess the Type A pattern in a prospective cardiovascular study. The discord variables were rated by the examinees themselves, which probably made the method more sensitive. A significant cumulation of subsequent CVD events was found in the upper quintile of the discord index distribution. The composite of the discord variables were hostility, inability to relax oneself, and dissatisfaction with family life. Hostility predicted several diseases including myocardial infarction. Hostility and impatience were partial variables which correlated best with CVD incidence. However, overwork, overcommitment to work, time urgency, and striving for achievements did not correlate with CVD incidence if they were not joined with hostile competition.
and impatience. When the stress interview data of the WCGS were subjected to factor analysis, it was revealed that of a total of 40 indicators only 7 discriminated the cases of CVD. Of the 7, 4 were associated with hostility.

Cardiac-Prone Personality and Type A

As described by Friedman and Rosenman (1978), the Type A behavior pattern is a complex of personality traits involving excessive competitive drive, aggressiveness, impatience, and sense of time urgency. Individuals displaying this pattern seem to be engaged in a chronic ceaseless, and often fruitless struggle with themselves, others, circumstances, time, or life itself. They also frequently exhibit a free-floating, but well-rationalized form of hostility, and almost always a deep-seated insecurity. Abrupt speech and movement patterns, and a total commitment to his/her occupational environment are also characteristic of the Type A personality (Friedman & Rosenman, 1978).

Type A behavior has been implicated as a risk factor in coronary heart disease (Friedman & Rosenman, 1974). Friedman and Rosenman have performed extensive research of the area and have arrived at some interesting conclusions.

The initial study began in 1960 and utilized 3524 male subjects between 39 and 59 years of age (Rosenman et al., 1964). Two questions were asked: 1) what was the
predictability of CVD in people when specific parameters were investigated? and 2) what was the profile of the coronary-prone male after follow-up was performed? Rosenman and Friedman believed that if suspicions of CVD occurrence in populations exhibiting Type A behavior were true, the incidence over a period of years would prove this. Other researchers involved in the study believed two other points should be followed, one being the changes in serum lipoprotein shown by beta/alpha ratios and the relationship with CVD, the other was to measure the defects with blood coagulation in relationship to CVD.

Of the 3542 subjects classified, 113 were found to have pre-existing CVD and were eliminated from future study. The finding for the CVD group showed pattern Type A to be evident in 80 of the 133 men signifying a strong association between the two. A blind technique was used whereby the investigators were unaware of the coronary pattern of the subjects prior to designation as Type A.

At the 2 1/2 year follow-up of the remaining 3411 subjects (Rosenman, Friedman, Straus, Wurm, Jenkins, & Messinger, 1966), 70 subjects turned up with CVD. Significant findings in lipoprotein abnormalities, hypertension, and Type A patterns were prognosticators. Type A was the single factor showing greatest correlations with CVD.
Characteristic reactions of the Type A personality cause increased levels of catecholamine secretion which have been implicated as a precursor of CVD. The higher levels of catecholamine released have been associated with increased stress and lesion development.

The method utilized in classification of the Type A individual was initially designed in 1965 with reviews in 1966 and 1969. It contained 61 items and was devised to measure four variables. The first scale was an over-all measure of the behavior believed to be coronary-prone. The other three were more specific, dealing with speed and impatience, job involvement, and hard-driving qualities. Testing was performed in 1965 on 2750 subjects deemed free of CVD and were followed for 4 years. The reliability of the test was compared to yearly results. The scores obtained at each testing seemed to be stable with 90% of the subjects remaining within 10 points of previous tests. For prediction of CVD, 120 subjects were diagnosed after 4 years as having the disease. These men in whom coronary problems developed, presented positive scores for Type A averaging at 1.70. Controls were slightly below the population mean. In the final discussion of the results, it seems that no single scale alone is as important in distinguishing the coronary-prone personality as the combination of scales.
The Myers-Briggs Type Indicator (MBTI)

In his theory of psychological type, Carl Jung noted and described the patterns in which people prefer to perceive things and make judgments. Jung categorized all mental processes into four mental functions: two perception processes of Sensing and Intuition, and two judgment processes of Thinking and Feeling (Lawrence, 1979). Isabel Myers used the conceptual base of Jung's typology, with additions by herself and her mother, Katherine C. Briggs, to develop the MBTI. An important assumption of Jungian type theory is that no type is better, more highly developed, or more highly differentiated than any other type. Myers (1980) descriptions are meant to apply to normal well-balanced, well-adjusted, happy, and effective people. The basic description assumes good development of both the dominant and auxiliary processes. The MBTI is based on Carl Jung's theory (1921-1926) that much apparently random variation in human behavior is actually quite orderly and consistent, due to certain basic differences in the way people approach life. The underlying assumption is that every person has a natural preference for one or the other pole on each of four indices, analogous to a natural preference for right- or left-handedness (Carlyn, 1977).

The MBTI Form-G is a 126-item forced choice
psychometric inventory based on Jung's theory of psychological types and asks questions based on everyday preferences. The MBTI is scored for four bipolar traits: (a) Extraversion (E), Introversion (I); (b) Sensing (S), Intuition (I); (c) Feeling (F), Thinking (T); and Judging (J) and Perception (P). Points for each pole of the preference are totaled, and a preference score is obtained by using a formula to obtain the difference between the points for the more-preferred and less-preferred pole. An individual's preferences are represented by four letters that correspond to one of the sixteen configurations of the Myers-Briggs Type Chart (See Appendix C). To Isabel Myers, the most important information derived from the MBTI, was the Type formula. She designed the Type Table to provide a consistent way to describe any sample in terms of types of the people in the sample (McCaulley, 1985).

Analysis of type data now usually includes groupings of the types in addition to analysis of the 16 types. Grouping is done for two main reasons: 1) to test theoretical expectations that certain types have common characteristics, and 2) to obtain groups large enough for statistical analysis. This addition of Type groupings meant that 44 chi-square statistics would have to be computed for each table (McCaulley, 1985).

Extroversion-Introversion index answers the person's
preferred orientation to life. Extraverted types are oriented to the outer world of objects, people, and action. Introverted types, conversely, have an inward orientation to thoughts and ideas (Carlyn, 1977).

The Sensing-Intuition index answers the person's preferred mode of perceiving life and its events. Sensing types focus on perceptions of their sense organs. The Sensing type interprets things based on concrete details and practical aspects. The Intuitive type looks at things vaguely. They deal in abstractions, inferred meanings, and hidden possibilities (Carlyn, 1977).

The Thinking-Feeling index answers the person's preferred way of making decisions. The Thinking type makes decisions based on logic; the Feeling type is skilled at understanding other's feelings and basing judgments on personal values (Carlyn, 1977).

The Judging-Perception index answers the person's preferred way of dealing with the outer world. The Judging type is organized and systematic; the Perceiving type is curious and open-minded, flexible and spontaneous (Carlyn, 1977).

Validity of the Myers-Briggs Type Indicator

McCaulley (1977) and Tzeng, Outcalt, Boyer, Ware, and Landis (1984) revealed the MBTI to be a reliable psychometric measure and that the 95 items generate four
clearly distinct dimensions that are in accordance with the theoretical constructs of the inventory. Studies have shown that the Extroversion-Introversion, Sensing-Intuition, and Thinking-Feeling scales seem to be approximately independent of each other and measure the components of personality as described by Carl Jung (Carlyn, 1977). The Myers Longitudinal Medical Sample found significant correlations of the MBTI with scales from other personality instruments used with medical students (McCaulley, 1977). This research concerned itself with predictive validity of the MBTI and involved specialists 12 or more years after taking the MBTI as freshmen in medical school.

Reliability of the Myers-Briggs Type Indicator

Test-retest reliabilities of the MBTI continuous scores showed a range of .73 to .83 for the E-I scale, .69 to .83 for the S-N scale, .60 to .82 for the T-F scale, and .69 to .82 for the J-P scale in five studies conducted on various groups (seventh grade students, the 1963 class of Amherst, the 1963 class of Wesleyan, the 1970-1973 class of medical students of the University of New Mexico, and undergraduates of Howard University). The percent of agreement in each MBTI category in test-retest reliabilities of type categories ranges from 72% to 81% (McCaulley, 1977). It is important to note that only
individuals can validate their scores and preferences.

Myers-Briggs Type Indicator and Type A

MBTI research indicates that many characteristics of Judging types are similar to those of Type A's. For example, Edwards Personal Preference Schedule scores indicate that Judging types have strong needs for order and endurance while scores on the Personality Research Inventory indicate that Judging types are compulsive, aggressive, and work-oriented (Myers, 1962, in Spencer et al., 1986).

In addition, many of the characteristics of Type A's are characteristic of the Thinking types on the MBTI. Scores on the Edwards Personal Preference Schedule indicate that Thinking types need achievement, order, dominance, and endurance (Spencer et al., 1986). Another inventory showed that Thinking types score strongly on self-sufficiency, attitude toward work, and masculine vigor.

Sensing types also have many characteristics similar to the Type A individual. Sensing types demonstrate a need for structure and score high on scales of aggressiveness and masculine vigor. They also place a high value on work and authority.

In the study by Spencer et al. (1986), it was
hypothesized that Type A behavior pattern was related to judging, thinking, sensing, and extraversion. Another study was conducted with patients who had experienced CVD. The patients completed the MBTI. The results indicated that the patients were more likely to score high on the sensing and judging preferences. It was found that Type A's are more likely to prefer organization and planning; they prefer to make decisions on the basis of logical analysis (Spencer et al., 1986).

The Coping Resources Inventory (CRI)

Coping is defined by Boyd and Johnson (1981) as a cognitive process used to deal with presently occurring inter/intrapersonal problems. Most of the behavior used by individuals to cope with the environment is learned behavior. Two factors determine this: perception of the source of the problem, and perception of the consequences of the behavior. Quite simply, coping is the device used by the individual for maintaining control of life's situations.

The CRI (Hammer, 1988) was used to measure the coping resources of this group. The CRI was scored by hand. For each of the 60 items, respondents use a 4-point scale to indicate how often they have engaged in the behavior described in the item over the past 6 months. Scale scores are the sum of the item responses for each scale.
Points for six items with negative weighting must be reversed before adding the points to the scale scores. There was a Total Resource score in addition to the five scale scores. The Total Resource Score was computed by summing the five scale scores; the higher the total scale score, the higher the resource.

**Validity of the Coping Resources Inventory**

The strongest test for validity of any coping measure is its ability to predict symptoms of stress over time. In theory, higher resources should be associated with fewer symptoms. In investigating the link between the two variables physical coping resource and cognitive coping resource, researchers have suggested that some of the correlation is due to overlapping items in the measurement of the concepts. To test whether this was true of the relationship between symptoms and coping resources, a new symptom variable was constructed by removing all physical items from the Total Symptom score. After the revised symptom variable was regressed on life events and the CRI Total Resource score, the two variables accounted for 30% of the variance in symptoms, with the CRI Total Resource score making a significant incremental contribution to the prediction of symptoms (Hammer, 1988).

In establishing the discriminant validity of the CRI, a number of analyses were conducted comparing target
groups and control. All comparisons were investigated using multivariate analysis of variance after testing for homogeneity of variance. One such analysis was conducted on a group of cardiac and pulmonary rehabilitation patients. Data were collected from 86 clients upon entry into the program. The hypothesis was that the patients would have lower resources than a general sample of adults because either the resources were depleted, and/or because the low resources were implicated in their poor health (Hammer, 1988). There were significant differences between all patients and the norm group on Cognitive (p<.01), Emotional (p<.001), Physical (p<.001), and Total Resource (p<.001) scores, with the patients having lower resource scores. The normative adult sample also had significantly higher resource scores than the cardiac patients on the Emotional (p<.05), Physical (p<.001), and Total Resource (p<.001) scales (Hammer, 1988).

Coping Resource scores were correlated with continuous scores of the MBTI. The expected association was a preference for extraversion and the social scale of the CRI. According to the MBTI Manual (Myers & McCaulley, 1985), it is hypothesized that individuals with a combined preference for sensing and judging would have higher scores on the spiritual/philosophical scale than those with other preference combinations. The alpha level criterion for rejection of the null hypothesis of a zero
correlation was set at .002 (.05/24 tests). There were no significant correlations of the CRI scales with the Sensing/Intuition, Thinking/Feeling, or Judging/Perception dimensions of the MBTI. There were significant correlations of the continuous scores of the MBTI Extroversion/Introversion dimensions with scores of the Social and Emotional scales and with the Total Resource score of the CRI. On the Emotional scale, the findings may be related to items tapping emotional expressiveness. Psychological type theory would likely predict no differences between those preferring Extroversion or Introversion on the ability to identify and accept a range of affect (Hammer, 1988).

Correlations reveal overlap of resource constructs for the Cognitive, Social, and Emotional scales. Relationship among these scales suggests that people with positive outlooks have a supportive social network and are aware of and can express their emotions. More discrimination was seen in these scores among females (Hammer, 1988).

Reliability of the Coping Resources Inventory

Internal consistency reliabilities of the CRI scales were estimated using Cronbach's alpha. Range and pattern of the reliabilities suggest that the CRI scales are homogeneous and reliable. The coefficients for the Total Resource score are quite high. Adults have higher
reliability estimates than college or high school students (Hammer, 1988).

To date, test-retest reliability data are available on only one sample. High school students were tested over a 6-week period using identical forms of the CRI. The reliability estimates indicate that the CRI scale scores are quite stable over this time period. Additional samples are needed to provide stability estimates for other ages and for all samples over differing time periods (Hammer, 1988).

**Psychological Type and Heart Disease**

Overall, there is very little research in this area. According to Dayton Roberts (Carskadon, 1984), there is an association between a high risk for heart disease and strong preferences for Sensing, combined with strong preferences for Judging. Darnell, Hammer, & Young-Eisendrath (1985) studied 89 men who were statistically predicted to be at high risk for heart attack on the basis of smoking, blood pressure, and serum cholesterol. There was no history of CVD, but members of the group were participating in programs at 22 centers across the country to reduce their levels of risk. Introvert-Sensing-Thinking-Judging personality types comprised 28% of the at-risk population (Fyfe et al., 1986).

In a study of several hundred college students, MBTI...
scales did not correlate significantly with Type A on the Jenkins Activity Survey. Spencer (1984) found that in comparison to Type B's, Type A's were more likely to be T's, J's, ESTJ's, and/or ENTP's (Fyfe et al., 1986).

Fyfe et al. (1986) conducted a study to investigate psychological types of actual CVD victims to see if certain types were over- or under-represented in this group when compared to available population estimates or comparison groups. The results of this study of CVD patients were compared to age-matched comparison groups using the Selection Ratio Type Table analysis (McCaulley, 1985). In this comparison, ISTJ's, ISFJ's, ISTP's, ESFP's, SF's, and IS's were significantly over-represented among the heart patients, while INTJ's, ENTJ's, NF's, NJ's, and IN's were significantly under-represented. As a group, N's were most significantly under-represented (Fyfe et al., 1986). The common results of the two analyses are an over-representation of ISTJ's and ISFJ's among the heart patients and an under-representation of N's, IN's, and NF's. The drawback to this study is the huge disparity in age between the Myers' normative samples, based on high school students, and the CVD sample of the present study group with an average age of 61 years.

**Anger and Hostility in Cardiovascular Disorders**

Williams (1989) concluded that hostility, anger, and
their biological consequences are the toxic part of Type A behavior. Hostility and anger not only account for the increased risk of developing CVD among Type A persons, but may also increase the risk of suffering other life-threatening illnesses as well. The other aspects of Type A behavior (i.e., being in a hurry and being competitive) appear to be harmful only to the extent that they activate one's hostility and anger.

The first tool that helped to pinpoint hostility was a questionnaire Blumenthal selected in 1974 to use in his dissertation research (Williams, 1989). Blumenthal chose 50 questions from the Minnesota Multiphasic Personality Inventory (MMPI) that two psychologists, Cook and Medley (1954), had grouped into a "Hostility" (Ho) scale in 1954. Blumenthal's study revealed a strong tendency for patients with high Ho scores to have more severe arteriosclerotic blockages in their coronary arteries.

In 1976, Williams did a similar study to further determine the role of psychological and social factors in various aspects of CVD. The plan was to have patients undergoing coronary arteriography at Duke University complete questionnaires and undergo a structured interview to measure Type A behavior. The key questionnaire, again, was the MMPI. It was again found that Type A patients were significantly more likely to have severe disease.

To further refine the understanding of what was at
work, Williams did statistical tests controlling for first the Ho scores to identify the statistical significances of the Type A; and then controlled the Type A to test the statistical significance of the Ho scale. The contrast between the two was surprising. When the Type A scale was controlled, the relationship of Ho scores to arteriosclerosis became even stronger. The conclusion was that hostility, as measured by the Ho scale, was at least as strong a predictor of coronary blockages as Type A itself, and probably accounted for some of the relationship between Type A behavior and CVD in the patients tested.

Williams (1989) defined hostility as experiencing annoyance, irritation, resentment, anger; the use of emotionally laden words, profanity, and voice emphasis; and an interaction style of rudeness, condescension, disagreeableness, contempt.

The Schachter Study of 1957 revealed the physiological effects of anger directed inward (Biaggio & Maiuro, 1985). In the cardiovascular system, norepinephrine is released and results in general vasoconstriction and a relative increase in peripheral or diastolic blood pressure attended by no increase or a drop in heart rate (Biaggio & Maiuro, 1985). These effects can be measured by a rise in diastolic blood pressure, decrease in heart rate, galvanic skin responses, and muscle tension increases.
Anger is differentially associated with cardiovascular response. A series of studies by Harburg, Blakelock, & Roeper (1979); and Harburg, Erfurt, & Hauenstein (1973) examined the incidence of hypertension and the relationship of suppressed anger to blood pressure levels. Six thousand white and 6,000 black subjects were asked to respond to hypothetical injustice situations. Samples were subdivided according to whether they suppressed anger, expressed anger, expressed, and/or felt guilt about experiencing or expressing the anger. A greater percentage of the hypertensives were found in the suppressed anger group. The conclusion was drawn that suppressed anger has greater effects on the cardiovascular system than other anger, and the same for anger in the form of resentment (Biaggio & Maiuro, 1985). Novaco (1977) conceptualizes anger as an emotional response to provocation determined by three modalities of person variables: cognitive, somatic-affective, and behavioral (Biaggio & Maiuro, 1985).

More recently, anger and hostility have emerged as potential risk factors for cardiovascular and behavioral disorders. Techniques of measurement, however, have hampered progress. As defined by Chesney and Rosenman (1985), anger refers to an emotional state varying in intensity from mild irritation to fury and rage. Hostility is defined as a complex set of attitudes that
motivate aggressive behavior. Hostile attitudes include animosity, resentment, and the major component of chronic anger.

New research also suggests that the most dangerous characteristics of the Type A personality are hostility, anger, and mistrust of others. Other Type A traits, including the frantic urgency to get things done, may not be associated with heart attacks after all, unless those qualities, in turn, activate hostility or anger.

Redford B. Williams Jr., M.D., director of Duke University's Behavioral Medicine Research Center, uncovered the new findings in a series of studies spanning many years. One investigation, for example, took a lengthy look at 118 attorneys, each of whom had been given a standard personality test while in law school. During the ensuing 25 years, the lawyers with high hostility scores had a death rate four to five times higher than that of their more easygoing classmates (Williams, 1989).

As stated above, anger and hostility have long been regarded as important factors in the etiology of essential hypertension and CVD (Diamond, 1982). In 1939, Franz Alexander postulated that hypertensives struggled against their feelings of anger and had difficulty expressing them. He thought angry feelings were suppressed because of the anxiety about the consequences of expressing anger; and the hypertensives strenuous effort to control their
anger lead to chronic activation of the autonomic and cardiovascular systems, and then to fixed elevations in blood pressure.

Flanders Dunbar (1942), a pioneer in psychosomatic medicine, described patients with CVD as ambitious, hard-driving, and strongly aggressive. She postulated a coronary personality which was aggressiveness, compulsive striving, self-discipline, and a strong need for achievement and success. This, of course, corresponds to the Type A behavior pattern of Friedman and Rosenman (Friedman & Rosenman, 1974). Terminology and definitions are major hindrances to the advancement of the study of the correlation between anger and hostility and CVD.

Gentry, Harburg, and Hauenstein (1973) draw upon the literature of this data to support the hypothesis that certain styles of coping with life strain and hostility are related to blood pressure and may predispose Black Americans to hypertension. He also views anger-related factors as learned. Aggression, hostility, and anger dimensions are related to evolutionary gender differences in limbic system anatomy, but more and more evidence shows these as learned behaviors that interact with genetic potentials (Chesney & Rosenman, 1985).

Carefully performed epidemiological and longitudinal studies have found an association between self-reported ineffective management of anger and either higher resting
blood pressure or sustained hypertension (Diamond, 1982; Harburg et al., 1979; Chesney & Rosenman, 1985).

Many other studies have found hypertension subjects to harbor unexpressed hostility and anger (Diamond, 1982) that is associated with exaggerated and more prolonged cardiovascular responses to a variety of stimuli (Chesney & Rosenman, 1985) although, generally, shortened (Harburg et al., 1979) when subjects are provided an opportunity to vent their anger (Hokanson & Burgess, 1962). Many hypertensive subjects have difficulty expressing aggression, hostility, and anger (Alexander, 1939; and Chesney & Rosenman, 1985). They internalize emotions that may evoke the exaggerated and prolonged cardiovascular responses that may be diminished in the lab when they are given an opportunity to vent their anger (Hokanson & Burgess, 1962; Chesney & Rosenman, 1985).

The hypertensive personality appears to involve an avoidance type of defensiveness that prevents successful adaptation to stressful situations. This is relevant to the finding that sustained hypertension is most consistently related to environmental situations that require continuous behavioral adjustments on an individual's part (Chesney & Rosenman, 1985).

The anger/hostility dimension is the dominant characteristic among the coronary-prone Type A behaviors. Aggressive, hostile individuals excrete more
norepinephrine compared with more passive or anxious subjects (Chesney & Rosenman, 1985). The greatest Type A/B differences are found in cardiovascular response to stressful stimuli that elicit hostility/anger (Dembroski, MacDougall, Herd, & Shields, 1979). This supports belief that cardiovascular responsiveness is a marker for CVD.

Implications for Prevention and Treatment

To prevent the development of aggressive habit strength, it is necessary to eliminate or minimize the rewards for aggressive behavior. Swift intervention is necessary to prevent completion of intrinsically motivated (angry) aggressive behavior sequences (Chesney & Rosenman, 1985).

Once aggressive habits have been formed, they are difficult to eliminate, especially in a society that admires and reinforces aggression. Aggressive habits are rarely totally extinguished, but minimizing reinforcement and strengthening alternative responses may prevent any further increase in habit strength.

Although hostility, aggression, and anger have their origins in the limbic system, Rosenman (1985) views these behaviors as the result of social learning. So, hostility, anger, and aggression are amenable to modification and are appropriate targets for intervention in the treatment of hypertension and prevention of heart
disease. Anger management is an appropriate therapeutic intervention in the treatment of hypertension and the prevention of CVD.
CHAPTER III

METHODS

This chapter provides information concerning the procedures of this study. The following sections are used for organization: subjects, instrumentation, data collection, and data analysis.

Subjects

The original research sample was comprised of a total of 46 subjects, 38 males and 8 females. These subjects were in the physician-referred Phase III or Phase IV Adult Cardiac Rehabilitation Program at the University of Wisconsin-La Crosse during a one-year time frame. This group is approximately 30% of the total number of participants in the program. The mean age of the group was 60 years. The subjects were all Caucasian. Their socioeconomic status included retired, employed, and unemployed. The final sample used in this study resulted in 31 subjects, 28 males and 3 females. The decrease in subjects was a result of participants who had left the program or died. All participants in the sample volunteered to take the inventories.
Instrumentation

Myers-Briggs Type Indicator (MBTI)

Form G of the MBTI was used to measure psychological type preference (see Appendix B). Answers were scored by the Computer Center for Applications of Psychological Type (CAPT) in Gainesville, Florida (McCaulley, 1976). In scoring the answer sheet, four preference scores are computed: (a) one for the E-I index, (b) one for the S-N index, (c) one for the T-F index, and (d) one for the J-P index. Each preference score yields two kinds of information: the direction of each preference, denoted by a letter, and the consistency with which each preference was reported, denoted by a number (McCaulley, 1985). In this study, I, N, F, and P had negative scores and E, S, T, and J had positive scores. Isabel Myers designed the "type table" to provide a consistent way to describe any sample in terms of the types of the people in the sample (see Appendix B). In 1976, under the supervision of Isabel Myers, the programmer and director of research of the CAPT developed computer software entitled Selection Ratio Type Table program or SRTT.

The validity and reliability of the MBTI is well documented. Many researchers have studied these components of the inventory. Foremost among them is McCaulley (McCaulley, 1977).
Coping Resources Inventory (CRI)

The CRI (Hammer, 1988) was used to measure the coping resources of the subjects. The CRI was scored by hand. For each of the 60 items, respondents used a 4-point scale to indicate how often they have engaged in the behavior described in the item over the past six months. Scale scores are the sum of the item responses for each scale. Points for six items with negative wording must be reversed before adding the points to the scale score. There is a Total Resource score, in addition to the five subscale scores. The Total Resource score is computed by summing the five scale scores. The higher the scale score, the higher the coping resource for that individual. Both the validity and reliability of the CRI are well documented by Hammer (Hammer, 1988). The Anger score was developed by the researcher by extracting three questions from the Emotional subscale of the CRI directly related to Anger. They were:

Question #40, "I can identify my emotions,"
Question #45, "I accept my feelings of anger," and
Question #47, "I can express my feelings of anger."

These questions comprised the Anger subscale and were used as a separate variable in the analysis. On the CRI, a high score for anger (i.e., 3 or 4) means positively identifying and expressing the feelings of anger.
Data Collection

In the Fall of 1986, 46 participants in the University of Wisconsin-La Crosse Cardiac Rehabilitation Program volunteered to take the MBTI. The booklets and answer sheets were administered to the volunteers individually with instructions to take them home to thoroughly complete the entire instrument at one time following the Form G instructions. Upon return of the 46 answer sheets, they were sent to the Center of Applications of Psychological Type to be computer-scored. Because there was an over-representation of one particular type (ISTJ), the study was expanded to include coping resources.

The same group was given the CRI to take home to complete with similar instructions. At this time, 15 of the subjects had either died or left the program, thus resulting in the sample group of 31 subjects.

Upon return from the Center of Application of Psychological Type, the MBTI scores of the 46 subjects were separated by the four subscales: I-E, N-S, T-F, and J-P, and recorded by letter as data on the University of Wisconsin-La Crosse mainframe computer. The CRI scores ranged from zero to four. For each subject, the number score of the answer was entered as data on the mainframe computer. The two different sets of data were then grouped together per individual for the purpose of applying the statistical treatment.
Statistical Treatment of Data

The following statistical procedures were used to analyze the data:

Hypothesis I: There is no difference between the SJ personality type preference when compared to the three other combined personality types (NP, NJ, and SF) when examining the coping resource score that identifies anger among cardiac rehabilitation participants.

Statistical Test: A T-test was used to analyze Hypothesis I. The independent variable was anger and the dependent variables were a combined variable of SJ, NP, TF, and JP.

Hypothesis II: The following combination of variables have the ability to predict the dependent variable of anger: I-E, N-S, T-F, and J-P scores on the MBTI.

Statistical Test: Stepwise regression was used to analyze Hypothesis II. The dependent variable was anger and the independent variables were I-E, N-S, T-F, and J-P scores.

Hypothesis III: There is a significant canonical correlation between variables of the MBTI scores and the variables of the CRI subscales.

Statistical Test: Canonical correlation was used to analyze Hypothesis III. The dependent variables were the Cognitive, Social, Philosophical, Emotional, and Physical subscale scores of the CRI. The independent variables were the I-E, N-S, T-F, and J-P scores on the MBTI.
CHAPTER IV
RESULTS AND DISCUSSION

In this chapter, data analyses are discussed to determine whether personality type preference is related to coping resources in cardiac rehabilitation subjects. Each hypothesis with its statistical data is presented along with a discussion of the significance of the findings.

Results

Forty-six cardiac rehabilitation participants volunteered for this study. Of this group, 31 people, 28 males and 3 females, completed the requirements of the study. These subjects were in the physician-referred Phase III or Phase IV Adult Cardiac Rehabilitation Program at the University of Wisconsin-La Crosse during a one-year time frame. The mean age of the group was 60. The subjects were all Caucasian.

The MBTI was administered to subjects, scored, and the results were categorized according to the MBTI type-preference chart devised by Myers (Myers, 1980) (see Appendix C). It is important to note here, again, the scores for I, N, F, and P are negative; and the scores for E, S, T, and J are positive.
The CRI was also administered to the group, scored, and categorized. The coping scores involved in the CRI are Social, Emotional, Physical, Spiritual/Philosophical, and Cognitive. An Anger Score was also developed from a subset of questions of the Emotional Score.

The null hypotheses are presented, analyzed, and discussed according to the following procedure: Each null hypothesis has been stated, followed by a table of descriptive data, the inferential statistics, a discussion of analysis and results, and a statement of conclusion regarding rejection or acceptance of the null hypothesis.

Tables 1 and 2 show the descriptive data of the group. Table 1 presents the percentage comparisons of MBTI categories Extroversion-Introversion, Intuitive-Sensing, Feeling-Thinking, and Judging-Perceptive categorized by sex. These percentages coincide very closely with the national norms for type distribution between males and females except for the E-I category.

In the general population there are three E types to one I type, whereas in the study population there are nine E types to nineteen I types. Males were more likely to be thinking types, and of this group 71% of the males were thinking types. Females are more likely to be feeling types, and of this group 67% of the women were feeling types.
TABLE 1
Number of MBTI Categorizations in Male and Female Groups of Phase III and Phase IV Cardiac Rehabilitation Participants at UW-La Crosse
N=31

<table>
<thead>
<tr>
<th>MBTI Function</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>E=67%</td>
</tr>
<tr>
<td>E</td>
<td>9=32%</td>
<td>2=67%</td>
</tr>
<tr>
<td>I</td>
<td>19=68%</td>
<td>1=33%</td>
</tr>
<tr>
<td>S</td>
<td>20=71%</td>
<td>2=67%</td>
</tr>
<tr>
<td>N</td>
<td>8=29%</td>
<td>1=33%</td>
</tr>
<tr>
<td>F</td>
<td>8=29%</td>
<td>2=67%</td>
</tr>
<tr>
<td>T</td>
<td>20=71%</td>
<td>1=33%</td>
</tr>
<tr>
<td>J</td>
<td>18=64%</td>
<td>3=100%</td>
</tr>
<tr>
<td>P</td>
<td>10=36%</td>
<td>0=0%</td>
</tr>
</tbody>
</table>
Also, 37% of all males assessed are SJ type, which validates these findings that 71% of the males in the assessed group were sensing types and 64% of the males were judging types.

Of note also was the low percentage of N types in the male and female groups. This observation agrees with the literature that N types have a lower incidence of disease. Of particular interest in Table 1 is the high percentage of males in the ISTJ type.

Table 2 provides the means and standard deviations of the MBTI and CRI scores for males and females when examining all of the variables. Again one can see a high mean score for S-N Score for males when compared to females. This result agrees with national data. Also, the opposite sign scores for E-I Score and T-F Score that are seen in Table 2 agree with national norms that men are more likely to be thinking types and women feeling types. One can also see in Table 2 that the Coping Resource Scores are quite similar for both males and females, again in agreement with national findings that the coping resources show no differences between the sexes.

Null Hypothesis I: There is no significant difference between the SJ personality type preference as compared to the other combined three types (NP, NJ, SP) when examining the Coping Resource Score that identifies anger among Cardiac Rehabilitation participants.
| Variables | Males | | | Females | | |
|-----------|------|----|------|--------|----|
| E-I Score | -13.357 | 25.145 | 6.333 | 9.010 |
| T-F Score | 11.000 | 19.595 | 17.000 | 26.000 |
| J-P Score | 13.071 | 25.112 | 9.000 | 17.088 |
| S-J Type | 0.535 | 0.507 | 0.333 | 0.577 |
| Anger | 8.642 | 2.197 | 10.666 | 1.527 |
| Cognitive | 28.321 | 4.119 | 27.666 | 5.507 |
| Social | 33.678 | 6.583 | 37.000 | 4.358 |
| Emotional | 45.107 | 7.733 | 51.666 | 10.503 |
| Spiritual | 35.250 | 5.641 | 40.333 | 3.785 |
| Physical | 32.107 | 4.810 | 27.333 | 5.131 |

Positive = E, S, T, J
Negative = I, N, F, P
A T-test was performed comparing the means of the two groups. Table 3 reports the results of the T test with \( t = 0.3038 \) and \( p = 0.1387 \). This indicates that the mean score for Anger did not differ significantly from the SJ type subjects versus the three other types combined. Therefore, the Null hypothesis was not rejected.

**Null Hypothesis II:** The variables I-E, N-S, T-F, and J-P are not able to predict the dependent variable of Anger.

A stepwise regression procedure was used to determine whether Anger could be predicted by the variables of the MBTI (see Table 4). There was a significant correlation between Anger Score and S-N Score, and Anger Score and E-I Score. As the value for the Anger subscale increases, the S-N Score moves from a positive to a negative value (from S type to N type).

The equation for predicting Anger Score was \(-0.0378 \times S-N \text{ Score} + \text{an intercept of 9.851.}\) The level of significance of this Regression Equation was \( \text{Prob} > F = 0.0085 \).

Also, as the score for the Anger subscale increases, the E-I Score moves from a negative to a positive value (from I type to E type). The equation for predicting Anger Score was \(0.0244 \times E-I \text{ Score} + \text{an intercept of 9.851.}\) The level of significance of this Regression Equation was \( \text{Prob} > F = 0.0082 \).
### TABLE 3

T-test Comparing SJ Types With Anger as a Subscale Score

<table>
<thead>
<tr>
<th>SJ Type</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>St.Error</th>
<th>Min</th>
<th>Max</th>
<th>Prob&gt;[T]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-SJ</td>
<td>15</td>
<td>9.2</td>
<td>2.6</td>
<td>0.6</td>
<td>4.0</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>SJ</td>
<td>16</td>
<td>8.4</td>
<td>1.7</td>
<td>0.4</td>
<td>5.0</td>
<td>12.0</td>
<td>0.3038*</td>
</tr>
</tbody>
</table>

Prob> F = 0.1387

*not significant at p=.05 level of testing*
### TABLE 4

**ANOVA Table of the Stepwise Regression Analysis of Anger with the MBTI Types S-N Score and E-I Score**

Regression Equation:

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>SS</th>
<th>Meansquare</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2</td>
<td>42.4</td>
<td>21.2</td>
<td>5.72</td>
<td>0.0082</td>
</tr>
<tr>
<td>Error</td>
<td>28</td>
<td>103.7</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>146.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ R^2 = 0.290 \]

Regression Equation:

\[ \text{Anger} = 0.0244 \text{ EI Score} - 0.0378 \text{ SN Score} + 9.851 \]
This means as Anger Score increases (better coping skills), the S-N Score moves from positive to negative (from S type to N type). And, as Anger Score increases the I-E Score moves from negative to positive (from I type to E type). In summary, the EN personality type is better able to identify and express his/her anger. Or, the IS type is less able to identify and express his/her anger. In this case then, Null Hypothesis II was rejected.

Null Hypothesis III: There is no significant canonical correlation between the independent variables of the MBTI subscale scores (I-E, N-S, F-T, and J-P) and the dependent variables of CRI subscale scores (Cognitive, Social, Emotional, Physical, and Philosophical/Spiritual).

Canonical Correlation is the name given to the procedure for correlating two derived variables, each representing a weighted combination of other variables (Cooley & Lohnes, 1971). A canonical correlation is one linear combination of variables that explains another linear combination of variables. The simple correlations between the MBTI variables and the variables of the CRI are moderate, the largest being .4952 between Social and E-I Score and -.4644 between Anger and S-N Score (see Table 5). Four canonical correlations were performed for the data. The first two correlations explained over 75% of the variability. The remaining two correlations were of little value in explaining the combination of variables.
TABLE 5  
Simple Correlations of the MBTI Variables With the CRI Variables

<table>
<thead>
<tr>
<th></th>
<th>E-I Score</th>
<th>S-N Score</th>
<th>T-F Score</th>
<th>J-P Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger</td>
<td>0.2457</td>
<td>-0.4644</td>
<td>-0.0868</td>
<td>-0.1964</td>
</tr>
<tr>
<td>Cognitive</td>
<td>0.2652</td>
<td>-0.1900</td>
<td>0.2153</td>
<td>-0.0328</td>
</tr>
<tr>
<td>Social</td>
<td>0.4952</td>
<td>-0.1614</td>
<td>-0.0836</td>
<td>-0.1266</td>
</tr>
<tr>
<td>Emotional</td>
<td>0.3311</td>
<td>-0.3027</td>
<td>-0.0061</td>
<td>-0.0713</td>
</tr>
<tr>
<td>Physical</td>
<td>0.0862</td>
<td>0.0092</td>
<td>0.1770</td>
<td>-0.0636</td>
</tr>
<tr>
<td>Spiritual</td>
<td>0.2706</td>
<td>-0.2498</td>
<td>-0.0707</td>
<td>0.0159</td>
</tr>
</tbody>
</table>
The first canonical correlation explained the most variability between the sets of variables. The raw coefficients are shown for the first and second canonical correlation equations in Table 6. Table 7 shows the descriptive information and the significance test of the first canonical correlation. The probability was p > .1305.

In the first canonical correlation, S-N Score, with a standardized coefficient of 1.1547, contributed strongly to the derived correlation. The interpretation of this is as S-N Score moves from positive to negative (from S type to N type), Social score moves from low to high (better social resources). As S-N Score moves from positive to negative, Anger Score moves from high to low (less able to identify and express anger). This suggests that a person with a tendency toward the sensing type, has lower social resources and they are less able to identify and express anger.

Feeling-Thinking Score appears to have a negative correlation in that as the above occurs, it is suggested that F-T Score moves from negative to positive (from F type to T type). This means the thinking type has higher social resources and is less able to identify and express anger than the feeling type. The first canonical correlation was not significant. Therefore, any interpretation must be done cautiously.
| TABLE 6  
Canonical Correlation Equations of the MBTI Variables  
With the CRI Variables |
|----------------------------------------------------------|
| **First Canonical Correlation Equation:**  
(0.0032 E-I Score + 0.0411 S-N Score - 0.0259 T-F Score - 0.0190 J-P Score =  
= [-0.4998 Anger - 0.1767 Cognit + 0.2355 Social - 0.0442 Emote + 0.0307 Physical + 0.0031 Spirit]) |
|----------------------------------------------------------|
| **Second Canonical Correlation Equation:**  
(0.0398 E-I Score - 0.0122 S-N Score + 0.0022 T-F Score + 0.0023 J-P Score) =  
= [-0.1716 Anger - 0.0159 Cognit + 0.1674 Social + 0.0622 Emote - 0.0962 Physical - 0.0013 Spirit]) |
### TABLE 7

Descriptive Information and Significance Test of First Canonical Correlation

#### Canonical Correlation Analysis:

<table>
<thead>
<tr>
<th>Canonical Correlation</th>
<th>Adjusted Canonical Correlation</th>
<th>Squared Canonical Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.667159</td>
<td>0.503521</td>
<td>0.101310</td>
</tr>
</tbody>
</table>

#### Significant Test of First Canonical Correlation:

<table>
<thead>
<tr>
<th>Likelihood Ratio</th>
<th>Approx. F</th>
<th>Num. DF</th>
<th>Den. DF</th>
<th>PR&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.26982026</td>
<td>1.4141</td>
<td>24</td>
<td>74.4703</td>
<td>0.1305</td>
</tr>
</tbody>
</table>
Another canonical correlation was performed to test whether any more of the variability between the two sets of variables can be explained. This canonical correlation process tested the variability that is independent of the variability explained by the first canonical correlation. This second canonical correlation explained the remaining and independent variability, therefore, another canonical correlation equation is generated. The second canonical correlation showed that as E-I Score moved from a negative to a positive value (from I type to E type), the Social Score moved from low to high (better social skills). And, as E-I Score moved from a negative to a positive value (from I type to E type), the Emotional Score moved from high to low (higher emotional coping skills). This seemed to suggest that with a tendency toward the introvert type, was low social resources and higher emotional resources.

Again, the canonical correlation was not significant so Null Hypothesis III was not rejected. Any of the above interpretation, therefore, must be considered cautiously.

Table 8 shows the breakdown of the subjects based on type and examines the means and standard deviations of the eight type preferences with the Anger, Cognitive, Social, Emotional, Spiritual, and Physical Coping Scores. When the coefficients were standardized they can be compared to see which variables contributed most to the derived correlation (see Table 8).
<table>
<thead>
<tr>
<th>Variable</th>
<th>1ST Canonical Correlation</th>
<th>2ND Canonical Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-I Score</td>
<td>0.0812</td>
<td>0.9830</td>
</tr>
<tr>
<td>S-N Score</td>
<td>1.1547</td>
<td>-0.3425</td>
</tr>
<tr>
<td>T-F Score</td>
<td>-0.5577</td>
<td>0.0485</td>
</tr>
<tr>
<td>J-P Score</td>
<td>-0.4625</td>
<td>0.0563</td>
</tr>
<tr>
<td>Anger</td>
<td>-1.1033</td>
<td>-0.3790</td>
</tr>
<tr>
<td>Cognitive</td>
<td>-0.7359</td>
<td>-0.0662</td>
</tr>
<tr>
<td>Social</td>
<td>1.5133</td>
<td>1.0753</td>
</tr>
<tr>
<td>Emotional</td>
<td>-0.3569</td>
<td>0.5024</td>
</tr>
<tr>
<td>Physical</td>
<td>0.1526</td>
<td>-0.4775</td>
</tr>
<tr>
<td>Spiritual</td>
<td>0.0180</td>
<td>-0.0078</td>
</tr>
</tbody>
</table>
Of note was the high Emotional Score of this group in every preference. This might suggest that as a whole this group had difficulty dealing with their emotions. The low anger scores for all types, however, may be due to the small number of questions in this component.

**Discussion and Implications**

The results of these statistical tests seemed to indicate a possible relationship between personality type and potential for CVD. This sample group contained an over-representation of the ISTJ type which agrees with the literature in this area regarding personality type studies as well as those using Type A scales. The ISTJ personality has many of the Type A characteristics including the intensity for thoroughness and organization.

The anger factor as revealed in this and other studies warrants the attention of professionals concerned with the prevention or treatment of CVD. If further study in this direction continues, the trend may be seen that those who have suffered from CVD, and have difficulty identifying and expressing anger, are likely to be 1-5 types.

Intervention and prevention techniques for CVD may be expanded to include attention to this affect, in addition to the primary risk factor treatments of exercise, fat-controlled diets, and weight management. Counseling
relevant to anger control, and education regarding the identification and positive ways of coping with anger could be recommended pending more conclusive studies of the same results.

Williams (1989) takes this one more step to clearly define what he calls "the hostile heart." He also offers three suggestions for reducing the inclination for a "hostile heart."

First, reduce your cynical mistrust of the motives of others. Second, reduce the frequency and intensity with which you experience negative emotions of anger, irritation, frustration, rage, and the like. And third, rather than behaving aggressively toward others, learn to treat others with kindness and consideration, and develop your positive assertiveness skills for use in those unavoidable situations that will crop up (Williams, 1989).
CHAPTER V
SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

Summary

The purpose of the study was to determine the relationship between personality type preference and coping resources among Phase III and Phase IV cardiac rehabilitation participants. All the subjects were initially given the Myers-Briggs Type Indicator (MBTI) to measure personality type, and the Coping Resources Inventory (CRI) to measure coping resources.

The subjects of this study were 48 volunteer participants of the University of Wisconsin-La Crosse Cardiac Rehabilitation Program. The final sample group resulted in 31 people, 28 males and 3 females. T-test, regression, and canonical correlation statistics were used to analyze the hypotheses.

Threats to Validity

Before the conclusions are stated, the researcher must acknowledge the following possible threats to the validity of the study and the results of the data analyses.

The study's small sample size resulted in only 31
subjects in the assessment group with an unequal representation of males to females. With this sample size, however, there was seen an overrepresentation of the Type Preference ISTJ, which may be indicative of the general cardiac-prone personality.

The study also relied on volunteers as subjects. It is assumed they had a variety of motivations for volunteering for such a study, thus making them different in unknown ways from those who did not volunteer to participate.

Subjects were given the MBTI and the CRI to complete at home on their own. This may have minimized the seriousness of the inventories. It is possible that the inventories were completed in a distracting environment, with the questions read and answers given without much consideration.

The Anger Scale was developed by the researcher from a subset of questions from the Emotional Subscale of the CRI. This was done to single out that particular emotion which has been shown in other studies (Friedman & Rosenman, 1974 and 1978) to be relational to the cardiac-prone person. Three questions directly addressing Anger were chosen from the Emotional Subscale questions. Because of the small number of questions in the Anger Subscale, all aspects of Anger and what contribute to it have not been examined. Finally, the conclusions of this study may only be extrapolated as far as the reader's
belief that this sample group is typical of Phase III and Phase IV cardiac rehabilitation groups.

Conclusions

This study attempted to determine the relationship between the preference types of the MBTI and the coping resource factors of the CRI in Phase III and Phase IV cardiac rehabilitation participants. Further research is needed to better understand the relationship between coping resources and personality types. Health educators can be more effective in informing the general population, and specifically those people who have histories of health problems, if more was known about the influence of personality type and coping resources on disease. Additional research will hopefully show better clarity on this factor, and provide data to assist with decreasing the disability and deaths due to cardiovascular disease.

Based on the findings of the research and acknowledging the possible threats to validity, the following conclusions are stated with caution:

(1) There was no difference between the SJ personality type preference when compared to the three other personality combined type preferences (NP, NJ, and SF) when the Coping Resource score that identifies anger is examined among cardiac rehabilitation participants. The researcher believes that further studies may reveal
prove a correlation between anger and the SJ type, particularly Sensing types.

(2) The I-E and N-S subscales are able to predict the dependent variable of Anger. As shown in the statistical analysis, as the subject's score on the I-E continuum went from I to E, the score for anger increases, or the individual was better able to identify and express his/her anger. Also, as the S-N continuum went from S to N, the score for Anger increased. This means that the intuitive type was better able to identify and express the anger.

(3) There was no canonical correlation between variables of the MBTI scores and the variables of the CRI subscales. Here again, further studies may implicate the emotional subscale and the intuitive and/or sensing subscale as a coronary risk.

Recommendations

Based upon the findings and limitations of this study, the following recommendations have been made:

(1) A similar study should be conducted involving a larger group of subjects.

(2) If possible, the inventories should be given to the subjects in a controlled environment, with the appropriate time allotted for each.

(3) The Anger factor should be more closely analyzed using an inventory specifically designed to measure anger
and/or hostility, (i.e., Ho scale from the Minnesota Multiphasic Index).

(4) A similar study should examine the ISTJ personality type more closely in regard to the anger component both among cardiac rehabilitation participants and the general population.
REFERENCES CITED


Lawrence, G. (1979). *People types & tiger stripes: a practical guide to learning styles,* (2nd ed.). Gainesville, FL: Center for Applications of Psychological Type, Inc. 2720 N. W. 6th Street, Gainesville, Florida 32609.


APPENDIX A

Permission to Use MBTI and CRI
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APPENDIX B

Myers-Briggs Type Indicator
DIRECTIONS:

There are no "right" or "wrong" answers to these questions. Your answers will help show how you like to look at things and how you like to go about deciding things. Knowing your own preferences and learning about other people's can help you understand where your special strengths are, what kinds of work you might enjoy and be successful doing, and how people with different preferences can relate to each other and be valuable to society.

Read each question carefully and mark your answer on the separate answer sheet. Make no marks on the question booklet. Do not think too long about any question. If you cannot decide on a question, skip it but be careful that the next space you mark on the answer sheet has the same number as the question you are then answering.

Read the directions on your answer sheet, fill in your name and any other facts asked for and, unless you are told to stop at some point, work through until you have answered all the questions you can.
PART I. Which Answer Comes Closer to Telling How You Usually Feel or Act?

1. When you go somewhere for the day, would you rather
   (A) plan what you will do and when, or
   (B) just go?

2. If you were a teacher, would you rather teach
   (A) fact courses, or
   (B) courses involving theory?

3. Are you usually
   (A) a "good mixer," or
   (B) rather quiet and reserved?

4. Do you prefer to
   (A) arrange dates, parties, etc., well in advance, or
   (B) be free to do whatever looks like fun when the time comes?

5. Do you usually get along better with
   (A) imaginative people, or
   (B) realistic people?

6. Do you more often let
   (A) your heart rule your head, or
   (B) your head rule your heart?

7. When you are with a group of people, would you usually rather
   (A) join in the talk of the group, or
   (B) talk with one person at a time?

8. Are you more successful
   (A) at dealing with the unexpected and seeing quickly what should be done, or
   (B) at following a carefully worked-out plan?

9. Would you rather be considered
   (A) a practical person, or
   (B) an ingenious person?

10. In a large group, do you more often
    (A) introduce others, or
    (B) get introduced?

11. Do you admire more the people who are
    (A) conventional enough never to make themselves conspicuous, or
    (B) too original and individual to care whether they are conspicuous or not?

12. Does following a schedule
    (A) appeal to you, or
    (B) cramp you?

13. Do you tend to have
    (A) deep friendships with a very few people, or
    (B) broad friendships with many different people?

14. Does the idea of making a list of what you should get done over a weekend
    (A) appeal to you, or
    (B) leave you cold, or
    (C) positively depress you?

15. Is it a higher compliment to be called
    (A) a person of real feeling, or
    (B) a consistently reasonable person?

16. Among your friends, are you
    (A) one of the last to hear what is going on, or
    (B) full of news about everybody?

   [On this next question only, if two answers are true, mark both.]

17. In your daily work, do you
    (A) rather enjoy an emergency that makes you work against time, or
    (B) hate to work under pressure, or
    (C) usually plan your work so you won’t need to work under pressure?

18. Would you rather have as a friend
    (A) someone who is always coming up with new ideas, or
    (B) someone who has both feet on the ground?
19. Do you
   (A) talk easily to almost anyone for as long as you have to, or
   (B) find a lot to say only to certain people or under certain conditions?

20. When you have a special job to do, do you like to
   (A) organize it carefully before you start, or
   (B) find out what is necessary as you go along?

21. Do you usually
   (A) value sentiment more than logic, or
   (B) value logic more than sentiment?

22. In reading for pleasure, do you
   (A) enjoy odd or original ways of saying things, or
   (B) like writers to say exactly what they mean?

23. Can the new people you meet tell what you are interested in
   (A) right away, or
   (B) only after they really get to know you?

24. When it is settled well in advance that you will do a certain thing at a certain time, do you find it
   (A) nice to be able to plan accordingly, or
   (B) a little unpleasant to be tied down?

25. In doing something that many other people do, does it appeal to you more to
   (A) do it in the accepted way, or
   (B) invent a way of your own?

26. Do you usually
   (A) show your feelings freely, or
   (B) keep your feelings to yourself?

Go on to Part II.
PART II. Which Word in Each Pair Appeals to You More?
Think what the words mean, not how they look or how they sound.

27. (A) scheduled unplanned (B) 50. (A) sensible fascinating (B)
28. (A) gentle firm (B) 51. (A) forgive tolerate (B)
29. (A) facts ideas (B) 52. (A) production design (B)
30. (A) thinking feeling (B) 53. (A) impulse decision (B)
31. (A) hearty quiet (B) 54. (A) who what (B)
32. (A) convincing touching (B) 55. (A) speak write (B)
33. (A) statement concept (B) 56. (A) uncritical critical (B)
34. (A) analyze sympathize (B) 57. (A) punctual leisurely (B)
35. (A) systematic spontaneous (B) 58. (A) concrete abstract (B)
36. (A) justice mercy (B) 59. (A) changing permanent (B)
37. (A) reserved talkative (B) 60. (A) wary trustful (B)
38. (A) compassion foresight (B) 61. (A) build invent (B)
39. (A) systematic casual (B) 62. (A) orderly easygoing (B)
40. (A) calm lively (B) 63. (A) foundation spire (B)
41. (A) benefits blessings (B) 64. (A) quick careful (B)
42. (A) theory certainty (B) 65. (A) theory experience (B)
43. (A) determined devoted (B) 66. (A) sociable detached (B)
44. (A) literal figurative (B) 67. (A) sign symbol (B)
45. (A) firm-minded warm-hearted (B) 68. (A) party theater (B)
46. (A) imaginative matter-of-fact (B) 69. (A) accept change (B)
47. (A) peacemaker judge (B) 70. (A) agree discuss (B)
48. (A) make create (B) 71. (A) known unknown (B)
49. (A) soft hard (B)  

Go on to Part III
PART III. Which Answer Comes Closer to Telling How You Usually Feel or Act?

72. Would you say you
(A) get more enthusiastic about things than the average person, or
(B) get less excited about things than the average person?

73. Do you feel it is a worse fault to be
(A) unsympathetic, or
(B) unreasonable?

74. Do you
(A) rather prefer to do things at the last minute, or
(B) find doing things at the last minute hard on the nerves?

75. At parties, do you
(A) sometimes get bored, or
(B) always have fun?

76. Do you think that having a daily routine is
(A) a comfortable way to get things done, or
(B) painful even when necessary?

77. When something new starts to be the fashion, are you usually
(A) one of the first to try it, or
(B) not much interested?

78. When you think of some little thing you should do or buy, do you
(A) often forget it till much later, or
(B) usually get it down on paper to remind yourself, or
(C) always carry through on it without reminders?

79. Are you
(A) easy to get to know, or
(B) hard to get to know?

80. In your way of living, do you prefer to be
(A) original, or
(B) conventional?

81. When you are in an embarrassing spot, do you usually
(A) change the subject, or
(B) turn it into a joke, or
(C) days later, think of what you should have said?

82. Is it harder for you to adapt to
(A) routine, or
(B) constant change?

83. Is it higher praise to say someone has
(A) vision, or
(B) common sense?

84. When you start a big project that is due in a week, do you
(A) take time to list the separate things to be done and the order of doing them, or
(B) plunge in?

85. Do you think it more important to be able to see the possibilities in a situation, or
(A) to adjust to the facts as they are?

86. Do you think the people close to you know how you feel
(A) about most things, or
(B) only when you have had some special reason to tell them?

87. Would you rather work under someone who is
(A) always kind, or
(B) always fair?

88. In getting a job done, do you depend on
(A) starting early, so as to finish with time to spare, or
(B) the extra speed you develop at the last minute?

89. Do you feel it is a worse fault
(A) to show too much warmth, or
(B) not to have warmth enough?

90. When you are at a party, do you like to
(A) help get things going, or
(B) let the others have fun in their own way?

91. Would you rather
(A) support the established methods of doing good, or
(B) analyze what is still wrong and attack unsolved problems?
92. Are you more careful about
(A) people's feelings, or
(B) their rights?

93. If you were asked on a Saturday morning what you were going to do that day, would you
(A) be able to tell pretty well, or
(B) list twice too many things, or
(C) have to wait and see?

94. In deciding something important, do you
(A) find you can trust your feeling about what is best to do, or
(B) think you should do the logical thing, no matter how you feel about it?

95. Do you find the more routine parts of your day
(A) restful, or
(B) boring?

96. Does the importance of doing well on a test make it generally
(A) easier for you to concentrate and do your best, or
(B) harder for you to concentrate and do yourself justice?

97. Are you
(A) inclined to enjoy deciding things, or
(B) just as glad to have circumstances decide a matter for you?

98. In listening to a new idea, are you more anxious to
(A) find out all about it, or
(B) judge whether it is right or wrong?

99. In any of the ordinary emergencies of everyday life, would you rather
(A) take orders and be helpful, or
(B) give orders and be responsible?

100. After being with superstitious people, have you
(A) found yourself slightly affected by their superstitions, or
(B) remained entirely unaffected?

101. Are you more likely to speak up in
(A) praise, or
(B) blame?

102. When you have a decision to make, do you usually
(A) make it right away, or
(B) wait as long as you reasonably can before deciding?

103. At the time in your life when things piled up on you the worst, did you find
(A) that you had gotten into an impossible situation, or
(B) that by doing only the necessary things you could work your way out?

104. Out of all the good resolutions you may have made, are there
(A) some you have kept to this day, or
(B) none that have really lasted?

105. In solving a personal problem, do you
(A) feel more confident about it if you have asked other people's advice, or
(B) feel that nobody else is in as good a position to judge as you are?

106. When a new situation comes up which conflicts with your plans, do you try first to
(A) change your plans to fit the situation, or
(B) change the situation to fit your plans?

107. Are such emotional "ups and downs" as you may feel
(A) very marked, or
(B) rather moderate?

108. In your personal beliefs, do you
(A) cherish faith in things that cannot be proved, or
(B) believe only those things that can be proved?

109. In your home life, when you come to the end of some undertaking, are you
(A) clear as to what comes next and ready to tackle it, or
(B) glad to relax until the next inspiration hits you?

110. When you have a chance to do something interesting, do you
(A) decide about it fairly quickly, or
(B) sometimes miss out through taking too long to make up your mind?
111. If a breakdown or mix-up halted a job on which you and a lot of others were working, would your impulse be to
(A) enjoy the breathing spell, or
(B) look for some part of the work where you could still make progress, or
(C) join the "trouble-shooters" in wrestling with the difficulty?

120. Has it been your experience that you
(A) often fall in love with a notion or project that turns out to be a disappointment—so that you "go up like a rocket and come down like the stick", or do you
(B) use enough judgment on your enthusiasms so that they do not let you down?

112. When you don’t agree with what has just been said, do you usually
(A) let it go, or
(B) put up an argument?

121. When you have a serious choice to make, do you
(A) almost always come to a clear-cut decision, or
(B) sometimes find it so hard to decide that you do not wholeheartedly follow up either choice?

113. On most matters, do you
(A) have a pretty definite opinion, or
(B) like to keep an open mind?

122. Do you usually
(A) enjoy the present moment and make the most of it, or
(B) feel that something just ahead is more important?

114. Would you rather have
(A) an opportunity that may lead to bigger things, or
(B) an experience that you are sure to enjoy?

123. When you are helping in a group undertaking, are you more often struck by
(A) the cooperation, or
(B) the inefficiency, or
(C) or don’t you get involved in group undertakings?

115. In managing your life, do you tend to
(A) undertake too much and get into a tight spot, or
(B) hold yourself down to what you can comfortably handle?

124. When you run into an unexpected difficulty in something you are doing, do you feel it to be
(A) a piece of bad luck, or
(B) a nuisance, or
(C) all in the day’s work?

116. When playing cards, do you enjoy most
(A) the sociability, or
(B) the excitement of winning, or
(C) the problem of getting the most out of each hand, or
(D) or don’t you enjoy playing cards?

125. Which mistake would be more natural for you:
(A) to drift from one thing to another all your life, or
(B) to stay in a rut that didn’t suit you?

117. When the truth would not be polite, are you more likely to tell
(A) a polite lie, or
(B) the impolite truth?

126. Would you have liked to argue the meaning of
(A) a lot of these questions, or
(B) only a few?
APPENDIX C

Myers Briggs Type Indicator Chart
<table>
<thead>
<tr>
<th>Contribution Made by Each Preference to Each Type</th>
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<tbody>
<tr>
<td>with Thinking</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>ISTJ</td>
</tr>
<tr>
<td>I   Depth of concentration</td>
</tr>
<tr>
<td>S   Reliance on facts</td>
</tr>
<tr>
<td>T   Logic and analysis</td>
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<tr>
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</tbody>
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APPENDIX D

Coping Resources Inventory
LIFESTYLE QUESTIONNAIRE

For each of the statements below please circle the letter which best describes you.

NR = Never or Rarely
S = Sometimes
O = Often
AA = Always or Almost Always

NR S O AA 1. I have plenty of energy.
NR S O AA 2. I say what I need or want without making excuses or dropping hints.
NR S O AA 3. I like myself.
NR S O AA 4. I am comfortable with the number of friends I have.
NR S O AA 5. I eat junk food.
NR S O AA 6. I feel as worthwhile as anyone else.
NR S O AA 7. I am happy.
NR S O AA 8. I am comfortable talking to strangers.
NR S O AA 9. I am part of a group, other than my family, which cares about me.
NR S O AA 10. I accept the mysteries of life and death.
NR S O AA 11. I see myself as lovable.
NR S O AA 12. I actively look for the positive side of people and situations.
NR S O AA 13. I exercise vigorously 3-4 times a week.
NR S O AA 15. I show others when I care about them.
NR S O AA 16. I believe that people are willing to have me talk about my feelings.
NR S O AA 17. I can show it when I am sad.
NR S O AA 18. I am aware of my good qualities.
-2-

NR  =  Never or Rarely
S  =  Sometimes
O  =  Often
AA  =  Always or Almost Always

NR  S  O  AA  19. I express my feelings to close friends.
NR  S  O  AA  20. I can make sense out of my world.
NR  S  O  AA  21. My weight is within 5 lbs. of what it should be.
NR  S  O  AA  22. I believe in a power greater than myself.
NR  S  O  AA  24. I can tell other people when I am hurt.
NR  S  O  AA  25. I encourage others to talk about their feelings.
NR  S  O  AA  26. I like my body.
NR  S  O  AA  27. I initiate contact with people.
NR  S  O  AA  29. I can cry when sad.
NR  S  O  AA  30. I want to be of service to others.
NR  S  O  AA  31. I say what I need or want without putting others down.
NR  S  O  AA  32. I accept problems that I cannot change.
NR  S  O  AA  33. I know what is important in life.
NR  S  O  AA  34. I admit when I'm afraid of something.
NR  S  O  AA  35. I enjoy being with people.
NR  S  O  AA  36. I am tired.
NR  S  O  AA  37. I express my feelings clearly and directly.
NR  S  O  AA  38. Certain traditions play an important part in my life.
NR  S  O  AA  40. I can identify my emotions.
NR  S  O  AA  41. I attend church or religious meetings.
NR  S  O  AA  42. I do stretching exercises.
NR = Never or Rarely  
S = Sometimes  
O = Often  
AA = Always or Almost Always

NR S O AA 43. I eat well-balanced meals.
NR S O AA 44. I pray or meditate.
NR S O AA 45. I accept my feelings of anger.
NR S O AA 46. I seek to grow spiritually.
NR S O AA 47. I can express my feelings of anger.
NR S O AA 48. My values and beliefs help me to meet daily challenges.
NR S O AA 49. I put myself down.
NR S O AA 50. I get along well with others.
NR S O AA 51. I snack between meals.
NR S O AA 52. I take time to reflect on my life.
NR S O AA 53. Other people like me.
NR S O AA 54. I laugh wholeheartedly.
NR S O AA 55. I am optimistic about my future.
NR S O AA 56. I get enough sleep.
NR S O AA 57. My emotional life is stable.
NR S O AA 58. I feel no one cares about me.
NR S O AA 59. I am shy.
NR S O AA 60. I am in good physical shape.