PERSONALITY PREDICTORS OF CORONARY HEART DISEASE

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(ABSTRACT)

Fifty percent of the diagnosed cases of coronary heart disease in the United States are of unknown etiology. This study proposed that five personality traits— achievement, dominance, aggression, succorance and Critical Parent— differentiate individuals with coronary heart disease manifestations. The ultimate goal of this research was to formulate a predictive profile of at-risk individuals of developing coronary heart disease.

Cardiac rehabilitation units' participants from across the United States were recruited as subjects. Randomly selected cardiac rehabilitation units were sent an initial letter inquiring whether their staff would be willing to participate in the study by administering the instruments to their participants. Eight units from each of the 50 states were contacted. A total of fourteen units agreed to participate. One hundred sixty-nine subjects completed the Demographic Data Questionnaire and the Adjective Check List.

Five scale scores, representing the five personality differentials, were analyzed. Comparison of the male subject population (n=135) and the male normative population (n=198) revealed no significant differences in terms of the five traits. Comparison of diagnostic subgroups of the subject population also revealed no

significant differences.

It was concluded that the subject population did not differ significantly from the normative population in terms of the five traits assess by the instrument used. The goal of a predictive profile was not realized due to this lack of findings.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Coronary heart disease has been termed the epidemic of the twentieth century (1). Despite investigative efforts to identify the risk factors of coronary heart disease (CHD), it has remained the number one cause of death in the United States for over a decade. Prior to 1965, investigations of the risk factors of CHD focused exclusively on physical variables. These studies investigated the possible relationship between CHD and age, sex, serum lipids, blood pressure, cigarette smoking and sedentary lifestyle. The Review Panel on Coronary Prone Behavior Pattern and CHD concluded from an extensive literature review that CHD risk is correlated with increased age, elevated systolic blood pressure, increased serum cholesterol and cigarette smoking frequency (2). These variables are predictive of the occurrence of CHD in one half of the cases (3). The explanation for the incidence of CHD in the remaining 50 percent of the cases has been hypothesized.

In recent years the focus of research has broadened to include psychological and social factors in the hopes of discovering these causative risk factors. These variables studied have included religion, socioeconomic status, social mobility, anxiety, neuroticism, work and family dissatisfaction and environmental stress (4). Results from these studies have suggested a positive relationship between these psychosocial variables and the etiology and pathogenesis of cardiovascular diseases. Although the past studies have tended to

focus on one variable in relation to cardiovascular disease,

psychologists and physicians have been aware that certain combinations

of social and psychological factors characterize many patients with

coronary disease (5).

In 1959, a psychobehavioral pattern which was thought to be

associated with CHD was described by Meyer Friedman and Ray Rosenman,

two cardiologists at Harold Bruhn Institute at Mt. Zion Hospital in

San Francisco (6). This behavior pattern, termed Type A, was defined

as:

> A characteristic action-emotion complex exhibited by
>
> those individuals who are engaged in a relatively
>
> chronic struggle to obtain an unlimited number of
>
> poorly defined things from their environment in the
>
> shortest period of time and if necessary against the
>
> opposing efforts of other things or persons in the
>
> same environment (7: p. 1285).

Type A individuals are often excessively committed to their

vocations and tend to neglect other aspects of their life such as

family, recreation, vacation and leisure time. They are often

described as active and energetic to the point of being hyperactive

(8). Friedman and Rosenman (6) further this definition by defining

characteristics of Type A behavior pattern. These components are:

1. persistent drive to achieve self-identified goals which are

usually poorly defined, 2. intense desire and eagerness to compete,

3. persistent need for recognition and advancement, 4. continuous

performance of multiple and diverse tasks which are done to
internally or externally set time restrictions (deadlines),
5. habitual inclination to accelerate the execution rate of many
physical and mental functions, and 6. extraordinary mental and
physical alertness (6).

Jenkins (9) expanded this definition further with a more detailed
list of Type A indicators. Type A individuals seem to value responsi-
bilities and challenges and seek recognition and power. They clearly
value work over relaxation. Within this value system, these
individuals prefer to be respected for what they do rather than who
they are. Their productivity, in terms of quantity and speed, is a
priority criteria which they use to assess themselves and others (10).

In behavioral terms, Type A individuals are observed more often as
thinking or doing several things at one time. Also they tend to
anticipate or react to things in advance. Type A individuals
constantly work under the pressure of both externally and/or
internally set deadlines. Type A pattern is characterized by rapid
actions. These individuals move quickly and tend to hurry other
individuals. Their speech is often rapid and their gestures tense and
energetic.

On the affective level, Jenkins (9) describes Type A individuals
as characterized by internal feelings of hostility, impatience and
irritability. Interpersonally, Type A persons are described as
self-centered, poor listeners, lacking empathy and impatient with
others. This complex behavior pattern appears to be present in Type A

persons in situations which are either internally or externally
perceived as challenging (10). However, individuals who do not react
with this described behavior pattern under similiar conditions are
termed Type B.

This definition has been further separated into four
subdivisions; Type A1, Type A2, Type B3, and Type B4. Type A1 is a
fully manifested Type A behavior pattern whereas Type A2 is less
predominant. Type B3 is a fully developed Type B behavior pattern
whereas Type B4 is less overt (8). Although numerical assignment to
these four behavioral types implies a continuum, it is only partially
true. Also, as with any behavioral measurement it is not possible to
state absolute boundaries between categories (12). A typology rather
than a continuum has also been used to describe the Type A behavior
pattern (13). The empirical question of whether Type A behavior
pattern is a typology or a continuum remains, at present, unanswered.

Another controversy concerning Type A behavior pattern is whether
or not this behavior is a learned response due to environmental
stimuli. Jenkins et al. (14) emphasized that environmental cues are
vital in eliciting Type A behavior pattern, which is a habitual
response. Matthews (13) argues that the Type A behavior pattern may
or may not be a learned characteristic response.

The underlying difficulty of defining accurately the Type A
behavior pattern is the lack of identification of its personality
trait variables. The purpose of this research is to identify whether
specific personality traits which have been theorized to be

characteristics of Type A behavior pattern are present in subjects with CHD manifestations. This identification process will be completed by the use of Gough's Adjective Check List due to the ease of the instrument's completion.

The following hypotheses were investigated by this research project:

1. The personality trait of achievement, as assessed by the Adjective Check List, will be significantly greater in male subjects with manifestations of CHD than in the male normative population.

2. The personality trait of aggression, as assessed by the Adjective Check List, will be significantly greater in male subjects with manifestations of CHD than in the male normative population.

3. The personality trait of dominance, as assessed by the Adjective Check List, will be significantly greater in male subjects with manifestations of CHD than in the male normative population.

4. The transactional analysis concept of Critical Parent, as assessed by the Adjective Check List, will be significantly greater in male subjects with manifestations of CHD than in the male normative population.

5. The personality trait of succorance, as assesssed by the Adjective Check List, will be significantly lower in male subjects with manifestations of CHD than in the male normative population.

The ultimate goal of this research was to develop an assessment profile which can be used to identify at-risk individuals of

developing CHD. This predictive appraisal method could then be used for identification of persons in need of primary dietary intervention. This intervention may decrease the prevalence and/or severity of CHD. Increased dietary compliance may result from moderate dietary modification prior to coronary disease onset as opposed to severe dietary restrictions after disease manifestation.

The following sections are included in this manuscript:

1. Review of Current Literature
2. Methodology
3. Results and Discussion
4. Limitations
5. Summary and Conclusions

CHAPTER II

REVIEW OF CURRENT LITERATURE

The following sections are included in the review of current

literature:

1. Type A Behavior Pattern and Its Relationship to Coronary Heart

    Disease

2. Type A Behavior Pattern Assessment Methods

3. Using The Adjective Check List to Assess Personality Traits

4. Trait Components of Type A Behavior Pattern

Type A Behavior Pattern and Its Relationship to Coronary Heart Disease

Prevalence of Coronary Heart Disease. The relationship of Type A

behavior pattern and the prevalence of coronary heart disease has been

studied extensively. Rosenman and Chesney (1) in 1980 concluded from

their thorough review of the literature pertaining to the relationship

of Type A behavior pattern and the prevalence of coronary heart

disease that the association between these two variables was confirmed

in the findings of numerous studies, almost without exception.

Longitudinal, prospective studies have produced the most highly

significant findings relating Type A behavior to the pathogenesis of

coronary heart disease in men and women. One of the highly respected

and cited studies is the Framingham study and its eight year follow-up

report (15). This follow-up investigation examined the incidence of

angina pectoris, myocardial infarction and coronary heart disease, in

general, in association with Type A behavior pattern.

7

The 1674 subjects, aged 45 to 64, were of various economic,
social and work backgrounds. All the subjects were initially
disease-free and evaluated as Type A or Type B by the Framingham
Scale. This scale, which includes components of the Standard
Interview and the Jenkins Activity Survey, had been previously tested
for validity.

The findings indicated that Type A females were two times more
likely to develop angina than the Type B women. Type A men were found
to have two times the risk of angina, coronary heart disease and
myocardial infarction than the Type B men.

A second large-scale prospective study in this area was the eight
and one half year follow-up of the Western Collaborative Group done by
Rosenman et al. (16) in 1975. This investigation was similiar to the
Framingham follow-up study. The 3524 subjects, aged 39 to 59,
included employed men only. They were disease free at the time of the
initial assessment of the presence of Type A behavior pattern from
1960 through 1961.

The eight and one half year follow-up report indicated that the
Type A subjects were found to have a higher incidence of coronary
heart disease. A significantly higher incidence of symptomatic
myocardial infarction and angina pectoris was also reported in the
Type A subgroup. A multiple regression statistical analysis was done
on the results in order to control the other risk factors' effects.

The researchers (16) concluded from this analysis of the risk
factors (eg; smoking, serum cholesterol, serum triglycerides, and

Type A) that Type A behavior pattern was highly predictive of the incidence of coronary heart disease. This predictive relationship appeared to be independent of the physical variables investigated (8).

Severity of Coronary Heart Disease. Although the prevalence of coronary heart disease in relation to Type A behavior pattern has been well documented (15, 16, 17), researchers have more recently addressed the possible correlation between Type A behavior and the degree and rate of the disease progression (18, 19, 20). Rosenman and his colleagues (19) concluded from their earlier findings of the Western Collaborative Group Study that the younger Type A subjects (under age 50) were 1.6 times more at-risk of a recurrent myocardial infarction than the Type B subjects.

More recent research analyzing specifically the extent of coronary heart disease affirms Rosenman et al.'s (19) conclusion. Williams et al. (20) in 1980 reported that a significantly greater proportion of Type A subjects than Type B subjects had at least one artery with occlusion of 75 percent or more. This finding suggests that Type A behavior may be related to the extent of coronary heart disease as tested by arteriography.

Stevens et al. (21) also studied the theoretical correlation between the extent of coronary heart disease and Type A behavior. They hypothesized that Type A behavior's contributing mechanism to CHD may be the acceleration of coronary atherosclerosis. Atherosclerosis is defined as a disease process of artery blockage which occurs throughout the arterial system. The researchers believed that this

condition is the linking risk factor between Type A behavior pattern and coronary heart disease. They assessed forty-four subjects for the degree of atherosclerosis by arteriography. Type A behavior pattern was also assessed. The results suggested that a moderate degree of atherosclerosis was significantly correlated to Type A behavior pattern. An interesting contradiction found was that the subjects with severe manifestations of atherosclerosis had a relatively low level of Type A behaviorisms. The researchers (21) explained this failure to reveal a correlation as possibly being due to the fact that this group has a higher mortality rate and the survivors of this group would thus be lower in Type A mannerisms.

Scherwitz et al. (22) cited five studies (20, 23, 24, 25, 26) which found correlations between the extent of coronary artery disease and Type A behavior pattern as measured by the Jenkins Activity Survey and/or the Standard Interview. Contradictory research findings were also cited in which no correlation was found between the Jenkins Activity Survey (27, 28) and/or the Standard Interview (28, 29) and the extent of coronary artery disease. They (22) concluded from their literature review that no significant relationship exists between Type A behavior pattern and the extent of coronary artery disease.

Dimsdale et al.'s (27) study tested the same hypothesis as Zyzanski et al.'s (24) study, that Type A personality was related to an increased extent of coronary artery disease. The designs of both studies were also similiar. Conflicting results were reported. Zyzanski et al.'s (24) findings suggest that a positive association

exists between the extent of coronary artery disease and Type A

behavior pattern. Dimsdale et al.'s (27) findings indicated that no

such association existed. Their conclusion (27) was that the Type A

behavior interaction with the heart may be on other pathophysiologic

levels (than those measured by cardiac catheterization) such as

catecholamines or lipids. This hypothesis has been the theoretical

basis of numerous investigations.

Influence of Stress. Several researchers (18, 30, 31, 32, 33,

34, 35, 36) have tested the various physiological responses of Type A

individuals in stress situations. The most commonly measured

physiological components were blood pressure and heart rate. Some

researchers utilized more extensive measurements such as interbeat/

interval, pulse transit time, and various respiratory and

electrodermal measures (30, 31). Hormonal fluctuations, in the

subjects under stress conditions, were also monitored including

epinephrine, norepinephrine, catecholamines and certain adrenocortical

hormones (32).

After extensive review of previous research, Price (37) concluded

that Type A individuals respond physiologically different from Type B

individuals to environmental stress, but no significant difference

exist between these groups in neutral situations. Glass (32)

summarized the psychological stressors which have been studied in

relationship to coronary heart disease into three categories

1. chronic dissatisfactions with various aspects of life,

2. stressful, long-term life events, and 3. acute life events which

are defined as stressful by the individual or society.

Experimental Stress. Researchers in the area most often used experimentally derived stress situations due to the readily available measurement of physiological changes. Investigators using contrived stress conditions have studied whether physiological variances between Type A and Type B individuals may be affected by social situations or solitary environments. Buell et al. (33) concluded from their extensive animal study review that a social structure may reinforce competition, aggression and time urgency performance. This reinforcement may lead to high dominance, competition, aggression and time urgency behavior and result in physiologic mechanisms of coronary ateriosclerosis.

Studies using human subjects have verified these conclusions. Krantz et al. (18) studied 83 cardiac patients while completing a history quiz (solitary situation) and during a Standard Interview (social situation). Their general findings were that systolic blood pressure, heart rate reactivity and rate-pressure product during the Standard Interview was different in Type A subjects verses Type B subjects. These physiological differences were not indicated during the history quiz. The possible reason for this variance may have been due to the increased stress of the social situation.

Glass et al. (32) also tested the hypothesis of the social situation affecting Type A individuals differently in physiological terms. The subject population included 44 male New York City transit workers; 22 Type As and 22 Type Bs. The subjects were tested in a

competitive game situation in which the opponent was either hostile or nonhostile. The Type B subjects responded physiologically similiarly in both the hostile and the nonhostile experimental situations however the Type A individuals' responses were found to differ. In the hostile situation, Type A subjects had elevated systolic blood pressure, heart rates and plasma epinephrine in comparison with the measurements in the nonhostile situations. No statistically reliable differences were found in the physiological measures between Type A and Type B subjects in the hostile situations.

Jennings (30) also studied subjects in competitive situations. Student subjects were offered monetary reward for fast and accurate completion of various tasks. The general conclusions from the numerous physiological measures collected were that Type A subjects responded with increased cardiovascular response to the competitive situations.

Experiments involving solitary stress conditions are much more numerous. Goldband (34) explored the hypothesis of whether stimulus specificity was the cause of variances in physiological responses. The general conclusion Goldband drew from his research findings was that Type A individuals' physiological responsivity is specific to certain types of environmental stressors. The stressors found to be most physiologically challenging were those tasks which reinforced the behaviors of competition, time urgency and loss of control. Goldband extended further this theory by stating that the presentation of relevant, external, stressor cues results in greater physiological

response in Type A subjects.

Glass et al.'s (32) research opposes Goldband's (34) findings by suggesting that Type A subjects may actually infer competition and time urgency in neutral situations. Their conclusion is that Type A individuals internally denote certain situations or tasks as stress relevant and respond physiologically in this manner. Glass and his colleagues addressed this hypothesis by testing whether concrete incentives for success produce internalized stress situations for Type A individuals. Twenty men- ten Type As and ten Type Bs- were tested in a noncompetitive game for which a monetary reward was offered for appropriate task performance. The Type A subjects' responses were significantly elevated in response to the psychomotor tasks with or without incentives offered. No significant interactions between Type A, Type B or incentives were found. Glass et al. concluded that internal rather than external stress results in physiological changes in Type A individuals.

The controversy concerning cardiovascular response is presently unresolved. Several researchers have commented on the possible causes of these variances in findings. Steptoe et al. (31) stated that it may be possible that the tasks were not perceived by the subjects as stressful. Another hypothesized cause is the task's lack of competitive or social stimulation. Houston (35) suggests that stressful tasks used by researchers should include three components. First, the task should have the component of fear of failure which will hypothetically induce Type A subjects to strive to achieve,

thus resulting in stress. Secondly, the task should motivate Type A subjects to gain and maintain control. Finally, the situation should induce the characteristics of the Type A behavior pattern of achievement striving, competitiveness, and hostility.

Holmes et al. (36) addressed this variance in cardiovascular response findings directly. Their study's hypothesis was that cardiovascular variances are due to differences in the level of challenge presented to subjects in past experimental situations. Holmes et al.'s (36) research attempted to control this variation by presenting tasks to subjects which were termed easy, moderately difficult or extremely difficult. Three hundred ninety four male undergraduate students were classified as Type A or Type B by the Jenkins Activity Survey, student version. Each subject was presented with the task of repeating numbers backwards. The results indicated that differences in Type A subjects' and Type B subjects' physiological arousal was only manifested in the extremely difficult task situation. This supporting finding of the hypothesis is minimal since only systolic blood pressure was varied between the Type A subjects and the Type B subjects.

The fact that this physiological difference occurred only in extremely difficult task situations is an important finding which may explain the difference in results of past studies. Further investigation may be more conclusive if more difficult tasks are presented to subjects. Further research in this direction may substantiate the validity of these suggestions.

Stressful Life Situations. ˊA number of studies have addressed
the issue of stress, Type A behavior pattern and coronary heart
disease by assessing the actual life stress situations of subject
populations. It has been suggested that Type A individuals experience
a greater number of stressful situations in daily life. Two reasons
for this increased stress have been hypothesized. This stress may be
due to Type A individuals' perception of the situation. Secondly, the
possible characteristics of Type A may expose these individuals to
higher chances of being in a stressful state. An example of this is
the Type A behavior of time urgency which can cause an individual to
consistently make unreasonable work deadlines thus resulting in
stress.

Smith and Sheridan (38) investigated the first hypothesis by
studying the self-reported actual life stressors of 148 university
students and staff. Research findings suggested that Type A
individuals reported stressful situations as occurrences which
involved a perceived loss of control and in particular those
situations of ambiguity, personal criticism, self-blame,
over-stimulation and/or complexity.

The second hypothesis of specific characteristics of Type A
behavior pattern causing higher degrees of stress was investigated by
Byrne (39, 40). Byrne (39) theorized that each individual differs
in sensitivity and reaction to distressing life events. The ability
of each individual to utilize effective sources of protection, either
interpersonal or intrapersonal, may be the differential factor. One

hundred sixty patients- 120 myocardial infarction (MI) patients and 40 angina patients- were questioned concerning life event occurrences twelve months prior to hospital admission. The results indicated that the two groups did not differ in perceived responsibility of stressful life events. The myocardial infarction patients, however, did report greater feelings of helplessness than the angina subjects. Byrne (39) concluded that this attitude of helplessness implies that the subjects with myocardial infarctions perceived greater self-responsibility for stressful life events.

This indirect correlation was further investigated by Byrne (40) in the hope that a clearer relationship between perceived self-responsibility of stressful situations and Type A individuals could be identified. In a similiar study in 1981, Byrne (40) questioned 120 myocardial infarction (MI) survivors concerning the occurrence of stressful life-events in the twelve months prior to the myocardial infarction. The results indicated that the MI patients with Type A behavior pattern had experienced a greater frequency of stressful life events. The researcher suggested that this is due to the Type A individuals' response tendencies which influence their organization of life-style.

Byrne (40) further hypothesized that Type A individuals maintain a life-style which is directed toward achievement. This desire for achievement may lead to a high level of social, environmental and occupational stress exposure. These stressors then advance detrimental health conditions.

Ditto (41) investigated this hypothesis that Type A individuals may organize their life styles differently from Type B persons by studying the daily activities of college students. Seventy under-graduate students, who were classified as Type A or Type B by the Jenkins Activity Survey, were asked to write down what they did every hour for a one week time period. Type A students in general spent more time in class, more time studying, less time socializing and more time in religious services. Ditto (41) concludes from these results that a relationship exists between Type A individuals and heavy work loads. No attempt was made to gather data concerning stress, perceived or actual, of the subject group. The question of differences between Type A and Type B individuals in actual or perceived stressful events has not yet been conclusively established.

The psychophysiological mechanisms which may link stressful life events and CHD manifestations have been the basis of several studies. Theorell (42) measured adrenaline and noradrenaline urine levels in 21 post-MI patients. A positive correlation was indicated between stressful life events and the amount of adrenaline and noradrenaline in the urine during the same week. The difficulty in collecting physiological data for long periods of time in free-living subjects has limited the research in this area. Theorell hypothesized that further investigations may identify physiological linking factors of hormonal fluctuation in catecholamines, corticosteriods, sex hormones, growth hormone and/or prolactine. A positive physiological linking factor between CHD and Type A behavior

pattern may be discovered by future research in this area.

Type A Behavior Pattern Assessment Methods

The variances in the definition of Type A behavior pattern have resulted in research studies based on a multitude of empirical hypotheses. The complexity of research has resulted in the development of various appraisal techniques of Type A behavior pattern. Three appraisal instruments are most commonly used in research, the Standard Interview (SI), the Jenkins Activity Survey (JAS), and the Framingham Scale. Assessment measures have focused on the behavioral, cognitive, environmental or physiological facets of the pattern (4).

Standard Interview. Prior to 1970, research focused primarily on the behavioral differences which characterize Type A individuals. The Standard Interview (SI) was developed by Friedman and Rosenman (45) to assess an individual's speech and motor behavior variations during a discussion session. This assessment method has since become the basis for the validation of other assessment techniques (44). The SI involves the presentation of 20 to 25 standardized questions by a trained interviewer. The responses to the questions are not of primary importance, rather, the interview is conducted in a manner to elicit Type A behaviorisms. The interviewer may use specific techniques of questioning the subject in order to elicit a certain response. An example of this is the interviewer asking a question laboriously slow or repetitively in order to evoke an interruption by the subject. The questions asked may also be directed toward

eliciting certain responses. The degree of hostility is assessed by the subject's responses to questions concerning his views on politics, racial, religious or other sensitive topics. Type A responses include continuous nodding, frequent use of profanity and/or facial expressions of irritation or annoyance (5). The SI questions assess the specific Type A behaviorisms of ambition, competitiveness, past feelings of anger, a sense of time urgency, impatience and current feelings of irritation and frustration (5).

The SI assesses exclusively overt behavior and no attempt is made to appraise the underlying cognitive processes of the behavior (44). This measure of overt behavior exclusively may be a limitation of the SI because these observable measurements provide little insight into the motives, affects, attributions, abilities and expectancies of the individual being assessed (13). This limitation is compounded with the impracticality of administering the SI to large subject groups due to time and economic considerations (13).

The question of inter-rater reliability is also a consideration due to the subjective nature of the instrument. Reproduction of classification between raters has been reported as ranging from .60 to .82 (45). A correlation as high as 84 percent was indicated when interviewers were trained by either Rosenman or Friedman (12). In a more recent study conducted by Howland and Siegman (46) a multiple regression of response time and voice volume of the recorded SI sessions correctly classified individuals with a 89 percent accuracy when compared to the traditional method of interviewers' ratings.

Jenkins Activity Survey. In 1964 Jenkins et al. (12) initiated
the development of a more automated, objective technique for assessing
Type A behavior pattern. The test, called the Jenkins Activity Survey
(JAS), is a self-administered, computer-scored questionnaire. The
first draft of the JAS contained 64 multiple-choice questions. Its
content was directly related to the questions asked on the Standard
Interview. The test was initially administered to 100 men who had
previously been determined to be Type A or Type B by the Standard
Interview. Forty questions were found to discriminate Type A and Type
B individuals. Some of the questions which on the Standard Interview
were determined to be discriminatory factors were discarded from the
Jenkins Activity Survey due to lack of validity. The reason for these
differences is unclear (12).

In 1965 the first published edition of the Jenkins Activity
Survey, which contained 40 questions, was administered to the 3000
male subjects of the Western Collaborative Group Study. Twenty one
new questions were also tested for validity. A total of 39 questions
from the 1965 edition of the Jenkins Activity Survey was found to
discriminate behavior-type groups at or above the .05 level of
statistical significance. Some of the responses were more often
checked by the Type A1 individuals than any of the other behavior
types. These responses were collectively described as the A1 scale.
Each of the other behavior type scales was determined by this method.
Type A and Type B scales were also developed. The individual
behavior pattern is determined by the calculated difference between

the Type A, Type Al scale and the Type B, Type Bl scale (12).

The validity of the Jenkins Activity Survey was assessed by comparing the scores of the Type A and Type B scales to the scores obtained by the Standard Interview on a sample population administered both tests. The overall rating agreement was found to be 72.4 percent. The Jenkins Activity Survey was found to be able to identify Type B men with 80.3 percent reliance. The agreement of the Type A assessment was only 65.3 percent. The Type A behavior pattern may then be misclassified more often than the Type B behavior pattern.

Since this initial design and large scale testing, Jenkins and his colleages (5) have continued to test the instrument's validity and reliability and subsequently revised editions have been published. In its most recent form (1979), the Jenkins Activity Survey contains 54 items. Questions concern daily activities, behavior and emotions. Illustrative sample questions are 1. do you ever set deadlines at work or at home? 2. how is your temper nowadays? 3. do you tend to eat fast? (5).

The survey's scores yield four scales- Type A, Speed and Impatience, Job Involvement, and Hard-driving (10). The Type A scale has been related significantly to the Standard Interview's A/B classification. The overall correlation between the Jenkins Activity Survey's classification and the Standard Interview's classification is between 60 and 70 percent. As the classification approachs extremes, either Type Al or Type B4, the classification agreement approachs 90 percent (5).

Other Assessment Instruments. Other self-administered assessment instruments have been used to classify individuals as Type A or Type B. Some instruments were designed for this specific purpose. The Framingham Scale is one of the most respected of these assessment tools. This self-report measure contains ten items that assess the individual's competitive drive, sense of time urgency and perception of job pressure (15). This instrument was originally used in the Framingham Heart Study to classify 3000 subjects as Type A or Type B. Although all three tests— the SI, the JAS and the Framingham Scale— have been used in numerous studies to classify subjects, it is important to note that these three instruments assess different aspects of the Type A behavior pattern.

Various psychological tests have been used in studies in an attempt 1. to define various constructs of the Type A behavior pattern, 2. to determine whether the SI or the JAS differentiate various personality constructs of Type A and Type B subjects, and 3. to determine whether a specific trait is correlated to Type A behavior pattern. These instruments include the Thurstone Temperament Schedule (TTS), the Eysenck Personality Inventory (EPI), Symptom Distress Check List, State-Trait Anxiety Inventory (STAI), Work Environment Scale (WES), California Psychological Inventory (CPI), Minnesota Multiphasic Personality Inventory (MMPI), Cattel 16 Personality Factors Test (16PF), Barrott Impulsiveness Scale and Gough and Heilbrun Adjective Check List (ACL) (1). The psychological constructs measured by each of these instruments varies. The

resulting correlations identified as associated with either Type A or CHD or both will be discussed further in a following section of the current literature review.

Using the Adjective Check List to Assess Personality Traits. Limited research studies have attempted to determine which of the Adjective Check List 37 scale scores may be correlated with Type A behavior pattern and/or CHD. Investigators using the Adjective Check List have based their research on the assumption that Type A classification by the Standard Interview is accurate. The comparison of the Adjective Check List scores and the Standard Interview classified Type A and Type B subjects has been used to identify differences in item and scale scores on the Adjective Check List.

At the 1978 annual meeting of the American Psychosomatic Society, Rahe and his colleagues (47) propose a twenty item adjective check list called the Adjective Check List Type A Scale. This shortened version of the Adjective Check List was developed based on their research findings. It was concluded to be significantly correlated with the Standard Interview scores.

Chesney et al.'s (45) research tested this proposed correlation between the Standard Interview and the Adjective Check List Type A Scale, by administering both instruments to 384 employed men between the ages of 23 and 64 without a known history of heart disease. The results indicated that subjects determined to be Type As by the Standard Interview scored higher on the Adjective Check List Type A Scale's subscales of aggression, autonomy, exhibition,

self-confidence, change, and dominance. Type B subjects (according to Standard Interview assessment), were significantly higher in the self-control subscale.

Although Rahe et al.'s (47) research was directed at determining whether Type A Behavior Pattern or specific components of the pattern are inherited, the results of their investigation support Chesney et al.'s (45) findings. The subjects recruited were 93 pairs of monozygotic twins and 97 pairs of dizygotic twins between the ages of 42 and 56 years. A series of psychological tests was administered including the 300 item Adjective Check List. The subscales which were correlated with Type A behavior pattern were the same as those that Chesney et al. (45) reported as well as exhibition. Negative correlations of self-control, counseling readiness and deference were indicated. The correlation between the Standard Interview and the Adjective Check List's Type A Scale was reported as weak. The investigators concluded that this may be due to the different aspects of Type A behavior pattern being assessed.

MacDougall et al.'s (48) study sought to identify whether this lack of correlation actually exists. They modified the twenty item Adjective Check List further on the basis of relevant Type A-B behavior. The subjects which included 149 males and 84 females were initially classified by the Standard Interview. This twenty item modified scale of the Adjective Check List was found to be more significantly correlated with the SI than the 300 item Adjective Check List. The findings suggested substantial predictive value of the

modified Adjective Check List as measured by the percentage of

aggreement in categorical assignment with the Standard Interview

(males-37%, females- 30%). The researchers (48) concluded however

that the scale misclassifies between 15 and 25 percent of the subject

population, thus making its reliability questionable.

Herman et al.'s (49) study was initiated to determine more

specifically which descriptive traits differentiate Type A and Type B

individuals and whether individuals possess a self-awareness of

their behavior type. The first process of this study involved the

identification of those adjectives which professionals thought to be

descriptive of Type A individuals. Twenty-four professionals who

attended the 1978 Coronary Prone Behavior Conference sponsored by the

National Heart, Lung and Blood Institute were recruited. These

professionals, representing a wide range of academic disciplines as

well as biomedical laboratory personnel, were asked to complete the

300 item Adjective Check List. The second stage of the study included

378 male subjects who were initially classified by the Standard

Interview. The subjects then completed the adjective list developed

by the analysis of the items checked by the professionals.

Differential adjective analysis was based on this classification of

Type A and Type B subjects and those adjectives selected which had

been determined to denote Type A and Type B individuals.

The adjective scale scores which were examined were similiar to

both Rahe et al.'s (47) and Chesney et al.'s findings (45). Type A

behavior pattern correlated with the subscores of aggression,

dominance, achievement, behavioral activity and time-pressure. The
extreme Type A subjects endorsed an average of 60 percent of the
Adjective Check List scale items; however extreme Type B subjects
marked those same items 48 percent of the time. The researchers (49)
suggested that there may be a need for further examination of the
differential endorsement rates of the groups. Despite this lack of
differential, a significantly positive correlation between the
professionals' selection of adjectives and Type A subjects' selection
was indicated. This finding suggests that Type A individuals may be
aware of their Type A behavior pattern.

Trait Components of Type A Behavior Pattern

The wide range of the definitions of Type A behavior pattern does
not allow easy study of the complete behavior pattern and its
underlying psychological indicies. In order to limit this large scope
of psychological, behavioral and physical manifestations of Type A
behavior pattern, researchers have focused on specific components of
Type A behavior pattern rather than the entire behavior pattern as it
may correlate to CHD (50, 51, 52, 53, 54, 55, 56, 57). The lack of
congruency of a definition for Type A has resulted in examination of
numerous, diverse components of the Type A behavior pattern. Jenkins
et al.'s (14) 1978 literature review listed 24 studies which attempted
to relate some aspect of Type A behavior pattern to some manifestation
of CHD.

In recent literature the principle characteristics investigated
have been hostility, anxiety, self-control, self-attribution,

achievement need, time urgency and competitiveness. Price's (37) review of 101 research studies (1959 to 1979) indicated that the highest number of citations in research literature were the characteristics of competitiveness, time urgency, aggressiveness, drive and achievement striving. Although this immense amount of research is noteworthy, the difficulty arises with interpretation of the terms used such as hostility, aggression, and achievement (32). Despite this ambiguity in terms, the fact that numerous researchers (51, 52, 53, 54) decided that achievement, hostility and dominance are components of Type A behavior pattern warrants a closer examination of these characteristics.

Achievement. Price (37) contends that there exists a number of definitions which are pertinent to the Type A behavior pattern. The descriptive characteristics of achievement which are defined by Price are 1. to carry on a conflict, 2. to strive for control, dominance or superiority, 3. to rival or compete, 4. to struggle against obstacles, 5. to oppose resistance or difficulty, and 6. to advance with extreme effort.

The need for achievement is manifested in varying degrees in individuals. The cause of this differential may be that achievement need is a learned personality trait which motivates an individual to compete and strive for success and excellence (58). Two different types of motivations are developed in varying degrees in childhood. The autonomous motive is the internalized personal standards to which an individual sets his goals. The motivational

drive and direction depends on childhood actions and the resulting environmental reactions. The second type of motivation is termed social motive. This motivational direction is influenced by perceived comparisons made by other people. The final stage of development in the need for achievement is the integration of the two types of motivational drives.

Teevan and McGhee (50) extend this description of achievement by differentiating between positive and negative motives. Achievement which is motivated by a positive factor is the hope of success. A negative motive for achievement is a fear of failure. This differential experience of motivational influences may determine the development of achievement striving and its relation to Type A behavior pattern.

The need for achievement influences a variety of personality traits and individual behaviors. In an adult the achievement need may influence his conformity to society's standards, his performance in daily tasks and his behavioral motivations (58).

Rosenman and Friedman's (7) original definition of Type A behavior pattern implicated achievement strivings as a component of this personality type. This variance in achievement striving has been examined in relation to the Type A behavior pattern. Ray and Brozek's (51) research using a short form of the Jenkins Activity Survey indicated that Type A behavior pattern and achievement striving were associated. Hansson et al. (52) examined the correlation between ambition (assessed by the Calfornia Psychological Inventory) and Type

A behavior pattern (assessed by the Jenkins Activity Survey).

The subjects included 69 undergraduate students at John Hopkins

University. A moderate correlation was indicated between ambition and

Type A behavior pattern. The researchers stressed that this higher

degree of ambition was not necessarily a negative attribution to

health and can not be conclusively correlated to CHD.

Dominance. Although the term dominance has not been specifically

cited as being a component of Type A behavior pattern, this

characteristic closely parallels authoritarianism which has been

examined by researchers. Friedman and Rosenman's (7) definition of

Type A behavior pattern justifies this hypothesis that dominance

correlates with Type A behavior pattern with the statement that Type A

individuals strive to compete against other people or obstacles in the

environment and to gain and maintain control.

The hypothesis of dominance being a measure of CHD proneness

was indirectly investigated by Ray and Bozek (51) when they sought to

develop a shortened, more reliable Jenkins Activity Survey to assess

Type A behavior pattern. Their study focused on psychometric

refinement of the A-B construct of the Jenkins Activity Survey. Their

findings indicated that two scales of the Survey, dominance and

motivation to achieve, correlated with the Type A construct

measurement. In 1982, Ray and Simons (53) investigated these results

further by assessing 112 CHD patients and 201 healthy controls. Their

most pertinent finding was that the Jenkins Activity Survey's measure

of directiveness, which is defined as the authoritarian style of

dominance, was the most valid predictor of CHD. Ray and Simons concluded that the Type A behavior pattern may be too broad a construct by which to predict CHD. They hypothesized that the use of a measurement of authoritarianism may be a more accurate predictor of CHD.

Aggression. The need for dominance has been theorized as an important facilitator of aggressive behavior. When an individual is faced with a situation which inhibits his drive to dominate, aggressive behavior may result (37).

Chesney et al.'s (45) assessment of 384 employed males, aged 23 to 62, by the Jenkins Activity Survey, the Framingham Scale and the 20 item Adjective Check List Type A Scale supports the hypothesis that Type A individuals possess higher levels of the aggressive trait. The Adjective Check List's Type A scale scores indicated that, among the 21 traits examined, aggression correlated most significantly with Type A behavior pattern. Lundberg et al.'s (54) study of 461 undergraduate students confirms these findings. Administration of the Jenkins Activity Survey was conducted to identify Type A and Type B subjects. A series of psychological questionnaires were completed by the subjects. The aggression-hostility traits were significantly higher in Type A subjects than in the Type B subjects. Although these findings are substantial, further research literature in this area was not located as to whether a correlation between aggression, Type A

behavior pattern and/or CHD exists.

Succorance. The key component of succorance which researchers in

the area of Type A behavior pattern have addressed is the coping

styles of Type A individuals (10, 56, 57, 58). The differences in

physiological factors have been discussed in the previous section

entitled Type A behavior and its relationship to coronary heart

disease. The individual differences in actual coping mechanisms are

more difficult to assess due to experimental limitations of assessing

personality diffentials in relation to coping styles.

Limited research has examined coping mechanisms which are

unrelated to physiological reactions. Burke and Weir (10) identified

significant variances in coping styles between Type A and Type B

subjects. The subjects, 127 senior administrators from Canadian

correctional institutions (age range; 50 to 60 years), completed a 38

item behavioral questionnaire concerning their daily living behaviors

in relation to stress situations. The Type A subjects were more

likely to use coping styles involving active behaviors such as

problem-solving. The Type B subjects were more likely to use

distraction, suppression, withdrawal and escapism which are inactive

coping mechanisms.

Pittner and Houston (55) also examined the coping styles of Type

A and Type B subjects and identified significant differences. Their

results however contradicted Burke's and Weir's (10) findings. The

Type A subjects used more denial, suppression and projection than the

Type B subjects. The researchers extended this conclusion with the

theory that Type A individuals use more denial so as to endure the
stress for a longer time than the Type B persons. The longer exposure
to stress may then adversely affect Type A persons' cardiovascular
systems.

Vickers and his colleagues (56) examined the hypothetical
relationship of Type A behavior pattern and high defensiveness as a
coping mechanism. They extrapolated this theory further by stating
that the association between Type A behavior pattern and CHD may be
due to this excessive defensiveness. The researchers (56) tested
these theoretical premises by statistically analyzing the subjects'
scores on the Jenkins Activity Survey and a scale derived from the
California Psychological Inventory to assess coping and defense. The
subjects included 238 fraternal twins and 238 identical twins which
had been previously selected as participants in a study concerning
hereditability of CHD risk factors. The results failed to associate a
higher defensiveness with Type A behavior pattern. The researchers
(64) suggested that this was due to the differences in situational
specific reactions between Type As' and Type Bs' coping and defense
mechanisms. The Type A individuals may in fact exhibit poor coping
mechanisms only in a specific situation which activates the
behaviorisms.

The lack of control has been hypothesized as one such situational
component which results in Type A subjects reacting differently from
Type B individuals. Glass (32) defines an uncontrollable situation
as one which may be potentially harmful (either physically or

phychologically), but can not be avoided. A situation which is controllable is one in which a harmful stressor can be avoided by appropriate responses. Glass (32) examined Type A subjects' coping mechanisms during experimentally contrived, uncontrollable situations. The experimental situations contained task performances which were inherently stressful due to the possibility of failure and loss of self-esteem. Glass's (32) conclusion from the results of an extensive number of experiments was that Type A individuals characteristically respond in a manner aimed at achieving and maintaining control over environmental stressors.

Brunson and Matthews's (57) research supports Glass's (32) research findings. The study involved the actual reporting of subjects concerning their thoughts during task performance. Type A subjects used coping mechanisms aimed at maintaining control over stressors. Although this area of research addresses various situational stressors and coping patterns, conclusions linking these coping styles to the degree of an individual's succorance trait has not been defined.

Critical Parent. The Transactional Analysis theory, which was developed by Eric Berne and his colleagues (58), focuses on the conceptualization of the structure and function of personality. Three primary ego states, the Child, the Parent and the Adult, are defined as components of the personality which control thoughts, feelings and motivations. The Child ego state is subdivided into the Free Child and the Adapted Child. The Parent ego state has been

categorized further into the Critical Parent and the Nuturing Parent. All of these ego states interact within each individual's personality and contribute to the person's behavior and interactions with others. Berne and his colleagues (59) stressed the theoretical importance of each of the ego states and their hypothesis that none of the ego states could be termed entirely positive or negative.

Schaeffer (60) conducted research to determine if the ego states according to Berne et al. were theoretically sound. Three professionals in the field of Transactional Analysis were asked to rate 90 adjectives from the Adjective Check List as being positive or negative descriptors of each ego state. The same 90 adjectives were presented to 25 normal subjects who were asked to check those adjectives which were self-descriptive. These 25 scores were analyzed to collect preliminary normative data.

Those adjectives found to correlate the most significantly with the Critical Parent ego state (termed self-depreciating by Schaeffer (60)) were autocratic, bossy, complaining, demanding, distrustful, fault-finding, fussy, intolerant, nagging and opinionated.

Thorne and Faro's (61) research findings confirmed Schaeffer's (60) findings. Those adjectives identified as correlating with the Critical Parent ego state were the same in both studies. Thorne and Faro (61) categorized the adjectives further into positive and negative personality aspects. Positive adjectives identified by the subjects were assertive, determined, forceful, and outspoken. Adjectives judged to be negative personality descriptors included

bossy, prejudiced, demanding and suspicious.

Williams and Williams (62) have attempted to describe more accurately the ego states by developing an egogram from the Adjective Check List's item pool. This egogram was to identify relative ego state strengths and weaknesses. Fifteen certified members of the International Transactional Analysis Association were asked to indicate which Adjective Check List adjectives correlated with each of the ego states. Those adjectives which were most significantly correlated with the Critical Parent ego state were arrogant, bossy, demanding, dominant, fault-finding, forceful, intolerant, nagging, opinionated and prejudice.

Williams and Williams (62) research also involved 100 college students' completion of the Adjective Check List. This data were used by the researchers to develop an egogram. The formulated egogram revealed that the Critical Parent ego state was the least predominant of the self-descriptive ego ratings. The average Critical Parent scale score of the students was 15.45 (SD $\pm$ 2.33) as compared with the group mean scores of 25.12 (SD $\pm$ 2.8) on the Nurturing Parent scale and 23.92 (SD $\pm$ 3.49) on the Adult scale. The comparison of the mean students' scale scores with the professionals' descriptor scores of healthy individuals revealed differences. The professional mean rating was significantly higher in the Adult scale than the students' mean score. The students' mean scores on the Nurturing Parent scale and the Critical Parent scales was higher than the professionals' mean ratings although not significantly.

Williams et al. (63) also attempted to define and assess the Critical Parent ego state. The subjects, 68 undergraduate students were asked to complete the Adjective Check List. The Critical Parent scale score was correlated positively to a high external locus of control and negatively to empathy. The results however did not support their initial hypothesis that the Critical Parent ego state would correlate positively with intolerance of amibiguity, dogmatism, low belief in a just world and a desire for control.

A thorough literature search failed to discover any research which attempted to link the Critical Parent ego state with CHD and/or Type A behavior pattern. Several factors may play a role in this lack of research. First, the Transactional Analysis scales of the Adjective Check List have been developed relatively recently (1978) (75). The use of other assessment instruments which assess Critical Parent was also not cited in the research literature. The limitations of the present personality assessment instruments' abilities to appraise ego states may be the cause for this lack of research.

Several researchers who have initiated studies in this area have suggested that the ego states scoring on the Adjective Check List may have the most significant correlation potential for use in describing various subpopulations' ego states (63, 64, 65).

Self-Concept. The self-concept of an individual can affect the degree of authoritarianism, aggression, succorance, and dominance that the person possesses. This trait determines the perception that an

individual has of himself and his reality (58). An individual's attitudes, judgments and values in respect to behavior, ability and self-worth are rooted in his concept of himself (66).

The factors affecting the variances in self-concept among individuals is still controversial. Studies have been conducted in an attempt to link self-concept with childhood experiences, situational life occurrences, and past failures (66). It is possible that specific variables may result in a change in self-concept. Most clearly evident is the effect of stressful life experiences, such as death, illness and marriage. The degree of negative self-concept was related to a large number of these experiences in a short time period (67).

Self-concept has a profound effect on the behavior of an individual (68). The hypothesis that self-concept may directly affect Type A behavior pattern has been the focus of limited research. In particular, researchers have addressed the hypothesis that self-concept is related to self-awareness (22, 68, 69, 70). Researchers suggest that self-attribution is an indicator of self-awareness (32, 69, 70). The focus of these studies has been to measure the amount of self-attribution statements subjects verbalize under various experimental situations. It is hypothesized that Type A and Type B subjects will differ in their perceptions of themselves.

Scherwitz et al.'s (22) research included the measure of self-references (ie; I, me, my) in the Standard Interview. One hundred fifty men were administered the 20 item Adjective Check List

and the 20 item Thurstone Activity Survey prior to angiographic studies to identify behavior types. Their hypothesis was that self-involvement may be related to Type A behavior pattern due to evidence that self focusing is correlated to intensified emotional reactions. Their findings suggest that the number of self-reference statements were related to both the severity of the myocardial infarction and the severity of the manifestation of the CHD condition.

Rhodewalt's (69) investigation indicated similiar results as Scherwitz et al's (22) findings when subjects were asked to make-up stories concerning hypothetically presented situations (Attributional Style Questionnaire). The Type A subjects made self-attribution comments to positive and negative situations whereas Type B subjects blamed negative situations on situational attributions. The researchers (22) interpreted these findings as evidence that Type A subjects are characteristically high in self-attribution and self-awareness. Rhodewalt did not, however, correlate this greater self-attribution directly with coronary heart disease.

Fengstein and Levine (70) used similiar experimental methods as Rhodwalt (69), however their results differed. Subjects were primed to activate self-reference statements. Their findings suggested that self-awareness did not seem to produce greater self-attributions. The activation factor of this relationship was hypothesized to be a particular self-concept, such as self as a causal entity. This self-concept was the hypothetical moderator of the self-awareness/self-attribution relationship. Their hypothesis (70)

was an extension of their results and further empirical research support is necessary. Rhodwalt (69) concluded that further research may indicate that the actual process between self-attribution and self-awareness (termed the self-evaluation process) could be an independent or a combination of contributors to the behavioral controls of Type A behavior pattern.

The possible limitation of this self-reference instrument is that it is purely a behavioral measurement of self-concept. Cognitive components cannot be assessed by this method. However, this method is the most easily accessible to reseachers and so is utilized the most often in the studies cited.

Herbertt and Innes (71) investigated the self-awareness of Type A individuals by using self-report questionnaires. A total of 233 undergraduate students completed the Jenkins Activity Survey. One hundred thirty-one of these students were selected as subjects. The selected group was similiar in Type A and Type B scores as the entire group tested. The subjects completed the Jenkins Activity Survey for Health Prediction, the short form of the Bortner Type A Scale, the Self-consciousness Scale, the Synder Self-monitoring Scale and a Self-esteem Scale. These tests were designed to assess trait differences of individuals in respect to public and private self-awareness. The scores of these self-reports indicated no significant difference in predisposition of Type A and Type B individuals to be self-aware. The researchers (71) suggested that this correlation may only exist in Type A subjects when presented

with a stressful situation, which was not included in their research design.

Other investigators have tested this hypothesis by utilizing an experimentally devised stress situation. Glass (32) used a treadmill task to test whether 10 Type A subjects reported less fatigue than 10 Type B subjects. The Type A subjects worked at a higher level of endurance suppressing their feelings of fatigue to a greater degree than Type B subjects. These results may be theoretically extended to mean that Type A individuals are less aware of their fatigue. The possibility that Type A individuals' fatigue suppression was due to the greater need for achievement can not be dismissed. Matthews and Brunson (72) contend that the demanding, stressful situation is the specific factor which precipitates self-awareness and self-monitoring between Type A and Type B individuals. The complexity of this interrelationship mandates an experimental design which controls extraneous variables.

CHAPTER III

METHODOLOGY

Subject Population Recruitment

Participate Requirements. The selection of this study's

subject population was conducted from February, 1984 through August,

1984. The current health conditions of the subjects permitted them to

participate in an outpatient cardiac rehabilitation program. The past

medical history of the participants include either a myocardial

infarction or coronary by-pass surgery. The purpose of this was to

insure that the subjects had a definite past history of CHD. This

eliminated at-risk participants of the cardiac rehabilitation

program who did not have a prior history of CHD. All of the subjects

resided in the United States and were be able to read or verbally

understand English.

Cardiac Rehabilitation Unit Selection. The subject population

was recruited from participants of randomly selected cardiac

rehabilitation centers throughout the United States. The list of

centers was selected from the American Heart Association's Directory

of Cardiac Rehabilitation Units-1981. The random selection included

all sites which were listed as cardiac rehabilitation units. A random

numbers table was used to facilitate the selection of eight centers

from each of the 50 states. In state listings which contained less

than eight units, the total number of rehabilitation units located in

that state were included in the study. The states in which no units

were listed with the term cardiac rehabilitation unit included

Delaware, Oregon and Wyoming. These states were omitted from the selection process.

Several large metropolitan locations were listed separately from the state in which the city is located. Centers in these cities were randomly selected separately from the states. These metropolitan locations included Chicago, IL; District of Columbia; Los Angeles, CA; and New York City, NY.

Participation Procedure. The randomly selected cardiac rehabilitation units were sent an initial letter inquiring whether their staff would be willing to participate by administering two instruments to their center's clients who met the criteria and were willing to participate (Appendix A). Brief explanation of the research purpose was offered at this time. The contacted staff member was asked to request a sample packet if their cardiac rehabilitation unit might be interested in participating in the study. The sample packet included a short explanatory note to be given to the participants (Appendix B), a sample demographic questionnaire (Appendix C), a sample Adjective Check List (Appendix D), and instructions for the staff to administer the instruments (Appendix E). A brief cover letter was included with this sample packet (Appendix F).

The staff was asked to have the participants complete the questionnaires in a location which would bar outside interference of others. A quiet, unrushed environment was noted as the optimal setting as was feasible.

After review of the sample packet, those units agreeing to participate in the study were sent a specific number of questionnaires depending upon their expressed needs. The questionnaires were coded so that the location of the returned data could be easily identified.

Data Collection

Demographic Questionnaire. The Demographic Data Questionnaire used by this research project was developed by Hodges (73). The information requested included the subject's age, sex, race, primary medical diagnosis, length of time which diagnosis had been known, education level and living situation (ie; number of persons with whom the subject lives). The other demographic data which was collected will not be reported in this research but will be analyzed at a future date.

Adjective Check List. The Adjective Check List was also completed by the subjects. This psychological instrument has been used extensively by researchers and practitioners to assess personality traits of individuals and specific subpopulations (75).

The Adjective Check List was developed initially in 1949 by A. B. Gough and A. B. Heilbrun. The initial selection of 125 adjectives was derived from Cattell's (74) 171 personality trait definers. An additional 154 adjectives were added to the first edition of the Adjective Check List based on the theoretical viewpoints of Freud, Jung, Mead and Murray (76). The first edition contained 279 adjectives and was used in studies beginning in 1950. Completion of the present edition occurred in the latter part of 1952.

Since this time various subject populations were administered combinations of adjectives in order to determine which adjectives differentiated individuals. The present form of the Adjective Check List contains a list of 300 adjectives. Its validity and reliability have been tested through administering the instrument to normative populations (75). The normative scale scores reported in the Adjective Check List manual are based upon sample populations of 5238 males and 4164 females (75). This sample population was comprised of a cross-section of different subgroups including high school students, college students, graduate students, medical students, delinquents, psychiatric patients, and adults. Mean scale scores were also reported separately for each of these subgroups. The adult normative group of individuals consisted of 198 males and 200 females.

The goal of the Adjective Check List is to present a comprehensive collection of descriptive terms, covering the widest possible range of behaviors, self-conceptions and personal values (76). Although the initial purpose of the Adjective Check List was for observers to classify others, the test is now used frequently for self-descriptive purposes.

The 300 adjectives were selected to insure that the range and scope of the description were adequate. The large number of adjective also increases the ability of the instrument to differentially assess individuals.

Thirty seven scales are derived from cluster analysis of the specific adjectives checked and other adjectives not checked

(Appendix G). The standards of these scale scores are differentially reported according to sex and total number of adjectives checked. These scales have been further categorized into five groups— modus operandi scales, need scales, topical scales, transactional analysis scales, and origence-intellectence scales.

Adjective Check List Scale Scores. Four subscales of the need scale category were examined by this research – achievement, aggression, dominance and succorance. The fifteen need scales assess an individual's needs based on Murray's need-press personality theory (75). One subscale of the transactional analysis category was also examined, the Critical Parent subscale.

Achievement Scale. As defined by the Adjective Check List, achievement is the need to strive to be successful in socially defined significant pursuits. The high scorer in the achievement scale of the Adjective Check List is characteristically an ambitious, hard working individual who is determined to reach a goal and usually does. Impatience, coercion, self-aggrandizement, high energy and enterprise characterize high achievement scale scorers. Lower scorers are in general less effective, less adventuous, and more congenial (75).

The hypothesis of the positive correlation between the need for achievement and CHD was examined by analyzing whether the Adjective Check List's mean achievement scale score was significantly higher in subjects with CHD manifestations in comparison with the normative population's mean scale score.

Dominance Scale. The dominance scale score of the Adjective

Check List is also a component of the fifteen scales which assess
individual needs. The term dominance, as defined by the Adjective
Check List, is to strive to maintain a role as a leader in groups or
to be influential and controlling in interpersonal relationships (75).
High scorers on the dominance scale are strong-willed, ambitious,
forceful individuals who are free of self-doubt. In the pursuit of
goals these individuals exhibit little reserve when they encounter
disapproval or opposition from others. Lack of confidence,
assertiveness and competitiveness characterize low scorers on the
dominance scale.

The hypothesis that persons with CHD manifestations will be
higher in the dominance trait was examined by analyzing the Adjective
Check List's dominance scale score mean of subjects with CHD
manifestations in comparison with the normative population's mean
scale score.

Aggression Scale. The Adjective Check List defines aggression as
engaging in behavior that purposely attacks or intimidates others
(75). The aggression scale is also a component of the fifteen need
scale grouping. In general, aggressive individuals are competitive
and perceive others as rivals to be overcome. High aggression is also
characterized by strong impulses and a tendency to possess
little regard for conventional society's practices. The low-scorers
on the Adjective Check List's aggression scale tend to be patient,

forbearing, conciliatory and avoid conflicts. They also, in general, make fewer demands on other people.

The hypothesis that persons with CHD manifestations possess a higher degree of the aggression trait was examined in this research study by comparing the Adjective Check List's mean aggression scale score of subjects with CHD manifestations with the normative population's scale score mean.

Succorance Scale. The solicitation of sympathy, affection or emotional support from others is the definition of succorance according to the Adjective Check List (75). The scale is also a component of the fifteen need scales. High scorers on the succorance scale usually feel inadequate in coping with stress, crisis, and/or confrontation. Lower scorers tend to appear stronger, more effective and their support is often solicited. Confidence, independence and goal attainment effectiveness also characterize low scorers on the succorance scale.

The hypothesis that a lower level of the succorance trait is present in individuals with CHD manifestations was examined by comparing the Adjective Check List's mean succorance scale score of subjects with CHD manifestations with the normative population's mean scale score.

Critical Parent Scale. The final scale score of the Adjective Check List examined was the Transactional Analysis scale termed Critical Parent. The five transactional analysis scales are based on the personality theory developed by Eric Berne and his colleagues

(58). The personality structure, as described by Berne, consists of three primary ego states: the Parent, the Child, and the Adult. These three ego states are used to conceptualize both personality structure and function (75). Transactional Analysis theory describes these ego states as being in dymanic interdependency.

The Critical Parent ego state, which is a component of the primary Parental ego state, is comprised of a combination of feelings, attitudes and behavioral predispositions resembling those of a parent who criticizes, finds fault, sets limits and generally imposes the rules of society (75). The basic concept of the Parent state is to control the Child ego state. The Critical Parent ego state admonishes, punishes, rejects, disapproves and elicits feelings of anxiety in the Child (58).

High scorers of the Adjective Check List's Critical Parent subscore are easily angered, skeptical, and counteractive. They tend to be narcissistic and are irritated by others interference as well as indifferent to other people's needs. The low scorers are more cognizant and accepting of interdependency, less egotistic and more tolerant of the fears and weaknesses of others (75).

This research study examined whether persons with CHD manifestation have a higher degree of the Critical Parent trait by analyzing the Adjective Check List's mean score of the Critical Parent scale of subjects with CHD manifestations in comparison with the normative population's mean scale score.

Self-Concept. The self-awareness or self-consciousness trait was

not assessed directly by this research. The intercorrelation between the scale scores however allowed for some hypothetical conclusions as to the self-concepts of the subjects. It was suggested that these subjects possess a relatively high self-concept as indicated by low scores on the Adjective Check List's succorance scale score (75).

Data Analysis

Scoring of the Adjective Check List into raw scale scores and standard scale scores for the five scale was accomplished. This data plus the individual item responses to the Adjective Check List were entered on the VM2 data base of the Virginia Polytechnic Institute and State University's computer system.

Two categories of data analysis were completed - analysis of the subjects' responses on the demographic questionnaire and standard scale score analysis of five computed Adjective Check List's scales from item selection. Data were analyzed with the use of the Statistical Analysis System (SAS) of the Virginia Polytechnic Institute and State University's computer system.

Demographic Analysis. The purpose of the demographic analysis was to describe the basic characteristics of the subject population. Demographic data was collected by the use of the Demographic Data Questionnaire. These indices include age, sex, race, primary medical diagnosis, length of time primary medical diagnosis had been known, weight, height, education level and living situation. The range of these indices was determined. Mean age, weight, height, time length primary diagnosis had been known and education level were

calculated. Frequency distributions and percentages of the reported primary diagnosis, education level and living situation were also tabulated.

Standard Scale Score Analysis. The purpose of the standard scale score analysis was to examine the five previously stated hypotheses (See Introduction Section, page 5). Those five standard scale scores of the Adjective Check List hypothesized to differentiate the subject population from the normative population include the achievement scale, the dominance scale, the aggression scale, the succorance scale and the Critical Parent scale.

All scale score analysis of the subject population was done by comparison with a normative group's mean scale score reported by Gough and Heibrun (75). Differences in mean scale scores according to sex were reported for the norm population.

The male subjects of the sample population (n=135) were analyzed exclusively due to the relatively small sample size of the female subject population (n=34). The male norm group used for comparative analysis with the male subject group consisted of 198 adult males. This group represented a cross-section of various occupations including actors, architects, business executives, mathematicians, military officers, nurses, police officers, prison guards, research scientists, and writers. It was assumed that this norm population was the most similiar demographically to the subject group.

Total Number of Adjectives Checked. The total number of adjectives which the subjects select are interrrelated to the scale

scores. Gough and Heilbun (75) proposed that distinct personality differentials are associated with the number of items checked and the subject's sex. Each individual's disposition to respond differs. This difference is theorized to be an indicator of a distinct personality characteristic. Higher-scorers on the numbers of adjectives checked tend to be more expressive whereas low-scorers are more reserved. A detailed manner is indicated by a greater number of items checked. A restrained manner of response is indicated by a smaller number of items checked.

The subject's sex is also related to the number of adjectives checked. The average number of items checked by males in the norm group was 95.67±40.14 adjectives.

Standard Scale Score Analysis Procedures. The initial step in the analysis was to derive the raw scale scores by the computation of specific checked adjectives and other adjectives not checked (Appendix G). This derivation process of scale scores has been previously tested for validity (75).

Raw scale scores were recorded and then converted to standard scale scores. The Adjective Check List manual (75) provided the conversion charts for this procedure. Standardized scores are reported in percentiles. Normative group standard scale score means do not vary significantly from the 50th percentile.

Internal Comparison of Diagnostic Subgroups. The purpose of this analysis was to determine whether the primary diagnoses' effects on each of the five mean standard scale scores varied significantly.

The theorized differential effect of each of the primary diagnoses on the total combination of the five scale score means was evaluated by analysis of variance to obtain F values.

Tukey's studentized range test (HSD) was completed on all possible combination of pairs of primary diagnostic subgroup pairs. The purpose of the statistical test was to determine whether any diagnostic group was significantly different from another in terms of the mean standard scale scores.

External Comparison with the Normative Population. The purpose of this analysis was to determine whether the subject population differed significantly from the normative population in terms of the mean standard scale scores. Secondly, each primary diagnostic group was compared separately to the normative population to determine whether any significant differences existed.

The first t-test compared the entire male subject population's mean standard scale scores (n=5) and the norm population's mean standard scale scores to determine any statistically significant differences.

The entire male subject population was then separated into groups according to reported primary diagnosis. Each diagnostic subgroup was compared separately with the norm population in terms of the five mean standard scale scores.

CHAPTER IV

RESULTS AND DISCUSSION

A total of 14 cardiac rehabilitation units agreed to participate in this study. The location, total number of questionnaires sent to each center, and the total number of questionnaires returned is presented in Table 1. The units were located across the United States and represented ten states. Four of the participating units were located in Virginia.

The number of questionnaires sent to each unit ranged from 15 to 50. The total number of completed questionnaries returned by each unit ranged from one to 34. The overall percentage of returned questionnaires which were complete in comparison to the number sent was 41.22 percent. This low percentage of return may have been due to several factors. The centers tended to overestimate the number of questionnaires needed and requested more than they had participants who met the study's subject requirements. Also several questionnaires had only the demographic responses completed. It was not feasible to question respondents who did not answer completely thus these questionnaires were not used.

Subject Description

A total of 169 subjects, 135 males and 34 females, participated in this study. Only the male subjects' demographic data are reported since these subjects' scale scores were analyzed exclusively (Tables 2 and 3).

The 135 male subjects ranged in age from 33 years to 73 years.

Table 1.   Participating cardiac rehabilitation units described by
location, total number of questionnaires sent, and total
number of complete questionnaires returned.

Cardiac Rehabilitation Untis (n = 14)	Location	Number Sent	Number Returned Completed
Unit 1	Prescott, Arizona	50	1
Unit 2	San Bernardino, California	50	34
Unit 3	Ft. Lauderdale, Florida	30	9
Unit 4	Ft. Wayne, Indiana	25	3
Unit 5	Trenton, Michigan	40	21
Unit 6	Manchester, New Hampshire	30	29
Unit 7	Hoboken, New Jersey	30	29
Unit 8	North Tarrytown, New York	20	2
Unit 9	Omaha, Nebraska	20	6
Unit 10	Salem, Virginia	25	15
Unit 11	Radford, Virginia	25	1
Unit 12	Roanoke, Virginia	15	5
Unit 13	Blacksburg, Virginia	25	11
Unit 14	Clarksburg, West Virginia	25	3
	Totals	410	169

Percent returned = 41.22

Table 2. Demographic Description of Subject Population (n = 135).

	Mean	Range
Age (years)	55.87 ± 9.44	33 - 73
Weight (pounds)	178.79 ± 30.39	120 - 268
Height (inches)	69.86 ± 2.64	60 - 76

	Frequency	Percentage
Education level		
Below 8th grade	6	4.44
8th grade	4	2.96
9th grade	0	0.00
10th grade	3	2.22
11th grade	4	2.96
High School graduate	27	20.00
One year of college	11	8.15
Two years of college	22	16.30
Three years of college	5	3.70
Graduated with Bachelor degree	34	25.19
Master's degree	9	6.67
Doctoral degree	7	5.19
Other	3	2.22
Living Situation		
Alone	8	5.93
One other person	96	71.11
More than one other person	28	20.74
Other	3	2.22

Table 3. Frequency distributions and percentages of primary diagnoses and length of time diagnoses had been known (n = 135).

Diagnostic Groups	Frequency	Percentage	Length	Frequency	Percentage
Group 1 Unspecified heart problem	18	13.33	0-6	59	43.70
			7-12	15	11.11
Group 2 Angina	8	6.02	13-36	23	17.04
Group 3 Coronary artery blockage	15	11.11	37-60	11	8.15
			61-84	8	5.93
Group 4 Arteriosclerosis	40	29.63	85-108	6	4.44
			109-132	6	4.44
Group 5 Hypertension	6	4.44	133-156	1	.74
			157-180	1	.74
Group 6 Myocardial infarction	46	34.07	181-204	1	.74
			205-228	0	.00
Group 7 Congenital heart disease	1	.74	229-252	4	3.00
Group 8 Tachycardia	1	.74			

The mean age was 55.87 ± 9.44 years. The mean weight was 178.79 ± 30.39 pounds and the mean height was 69.86 ± 2.64 inches. All of the male subjects were caucasian with the exception of one negroid subject.

Education. The education level of the male subjects ranged from less than eight years of education to the doctoral degree level. Of the total population, 25.19 percent reported having a college bachelor's degree. Some college education was completed by 65.20 percent of the total subject group.

Twenty percent of the population reported having a high school diploma as the highest education level attained. Only 12.58 percent of the entire subject popualtion had an education level below the level of high school completion.

The general conclusion of these findings is that the subject population tended to be well educated with over half having some college education. Additionally, this paralleled the approximate educational status of the normed population.

Living Situation. The majority of the subject population lived with one other person (71.11 percent). Only 5.93 percent lived alone in comparison to the 91.85 percent who lived with one or more individuals. The general conclusion from these findings is that the subjects tended to live with others and the majority resided with only one other person.

Health Condition. The subject population was restricted to those individuals who were healthy enough to participate in an outpatient cardiac rehabilitation program. A second requirement for

participation was a past medical history which included either a
myocardial infarction or coronary by-pass surgery. The basis for this
requirement was to insure that all the participants had a past history
of some severe manifestation of CHD.

Frequency distributions of the primary diagnoses and the time
length the diagnosis had been known are reported on Table 3. The
greatest number of the subjects (34.07%) report a myocardial
infarction as a primary diagnosis. The second most frequently
reported primary diagosis was artherosclerosis. Only one subject
respectively reported tachycardia or congenital heart disease as a
primary diagnosis.

The mean length of time which the subjects had been diagnosed
was $35.02^{\pm}53.60$ months. The range that the subjects' primary
diagnosis had been known was from one month to 250 months.

Standard Scale Score Results

Internal Comparison with the Normative Population. The
diagnostic subgroups of the subject population, described previously,
were compared separately with the normative population acccording to
mean standard scale scores. The small cell size (one subject) of
subgroups seven and eight excluded these categories from the analysis.
The other six diagnostic subgroups' (n=133 subjects) mean standard
scale scores and standard deviations are reported in Table 4. The
subgroups' mean standard scores tended to be greater than the norm
group's mean standard scores on the achievement scale, the dominance

scale, and the aggresssion scale. Five of the six diagnostic subgroups had a mean standard scale score greater than the norm group on the achievement scale and the dominance scale. Four of the six diagnostic subgroups had a higher mean standard score on the aggression scale. These values were not statistically significant as indicated by the t-values. The subgroups' mean standard scores on the succorance scale tended to be lower than the norm group's mean standard score although not statistically significant.

T-values of the comparison of each diagnostic subgroups and the norm groups are reported in Table 4. None of the t-values are significant at the .05 level. This lack of significance indicates that none of the diagnostic subgroups varied significantly from the norm group in terms of the five mean standard scale scores.

The separate effect of each diagnosis on the combination of the five standard scale scores was tested by analysis of variance (Table 5) to determine if any internal difference were present between the diagnostic subgroups. Each diagnostic group was examined in a one way analysis of variance. Each of the five mean standard scale scores was used as a dependent variable to compute five F values. None of the F values was statistically significant at the .05 level to indicate a diagnostic effect on the combination of the five scale scores. This finding suggests that the variation within the diagnostic subgroup in terms of the five standard scale scores was not statistically different from the variation between the groups.

The Tukey's Studentized range test (HSD) which compared all

Table 4. Mean values, standard deviations and t-values for five
standard scale scores of each diagnostic group separately and
normative population.

	S Ach	S Dom	S Agg	S Suc	S CP
Mean					
Group 1 (n = 18)	48.17	50.56	48.67	48.56	47.50
Group 2 (n = 8)	53.75	53.50	53.00	44.38	55.88
Group 3 (n = 15)	51.93	52.00	48.40	48.86	48.40
Group 4 (n = 40)	52.80	53.43	49.70	48.28	49.48
Group 5 (n = 6)	52.33	52.83	54.17	56.67	57.50
Group 6 (n = 46)	51.96	52.07	50.30	47.85	50.93
Norm Group (n = 198)	50.01	50.98	50.71	49.24	50.02
SD					
Group 1	6.41	6.43	8.53	7.66	10.15
Group 2	8.70	10.34	9.67	8.28	9.31
Group 3	8.99	8.41	7.29	7.15	8.47
Group 4	9.10	9.06	8.80	10.04	9.51
Group 5	9.33	5.12	7.22	12.74	8.57
Group 6	9.64	8.99	8.74	9.67	9.45
Norm Group	10.12	10.15	9.32	9.11	9.92
t-values*					
Group 1	.068	.016	.056	.021	.059
Group 2	.152	.086	.084	-.207	.222
Group 3	.274	.031	.082	.013	-.049
Group 4	.049	.043	.018	.015	.009
Group 5	.101	.147	.196	.238	.356
Group 6	.030	.018	-.007	.021	.014

*no significance at the .05 level

Group 1 = Unspecified heart problem
Group 2 = Angina
Group 3 = Coronary artery blockage
Group 4 = Arteriosclerosis
Group 5 = Hypertension
Group 6 = Myocardial infarction

S Ach = Standard score for achievement scale
S Dom = Standard score for dominance scale
S Agg = Standard score for aggression scale
S Suc = Standard score for succorance scale
S CP = Standard score for critical parent scale

Table 5. F-values for analyses of variance for five standard scale scores of six diagnostic groups and normative population comparison.

	S Ach	S Dom	S Agg	S Suc	SCP
F-value*	.77	.33	.69	1.27	.12

*no significance at the .05 level

S Ach = Standard score for achievement scale

S Dom = Standard score for dominance scale

S Agg = Standard score for aggression scale

S Suc = Standard score for succorance scale

S CP = Standard score for critical parent scale

possible combinations of the diagnostic subgroups according to each
scale score separately also indicated no statistically significant
differences between subgroups in the diagnostic effect on any of the
five scale scores.

External Comparison with the Normative Population. The entire
subject population (n=133), excluding diagnostic subgroups seven and
eight, was compared with the normative population in terms of the mean
standard scale scores. Mean standard scale scores and standard
deviations for the subject population and the normative population are
reported in Table 6. The mean standard score of the entire subject
population was greater than the normative population on the
achievement scale, the dominance scale and the Critical Parent scale.
The subjects' mean standard scores on the dominance and succorance
scale was lower than the mean score of the norm group.

The t-values derived from the comparison of the subject
population's and the normative population's mean standard scale
scores are reported in Table 6. This statistical comparison indicated
no significant differences in the five mean scale scores at the .05
level.

A second t-test comparison was computed between the entire
subject population (excluding subgroup 1) and the normative
population. The subgroup one included those subjects who reported a
primary diagnosis which was too general to specifically categorize
into any of the other five subgroups. Since this group's primary
diagnosis was essentially unknown, the addition of this group into the

Table 6. Mean values, standard deviations and t-values for five
standard scale scores of all diagnostic subgroups and
normative population.

	S Ach	S Dom	S Agg	S Suc	S CP
Mean					
Subjects (n = 133)	51.82	52.38	50.02	48.38	50.34
Norms (n = 198)	50.01	50.98	50.71	49.24	50.02
SD					
Subjects	8.92	8.50	8.53	9.41	9.56
Norms	10.12	10.15	9.32	9.11	9.92
t-values*	.018	.014	.007	.008	.003

*no significance at the .05 level

S Ach = Standard score for achievement scale
S Dom = Standard score for dominance scale
S Agg = Standard score for aggression scale
S Suc = Standard score for succorance scale
S CP = Standard score for critical parent scale

entire subject population may have statistically skewed the t-values. A t-test comparison of the subject population, with the exception of group one, and the normative population was computed to test this possibility.

Mean standard scale scores and standard deviations for this five diagnostic subgroup combination (n=115) and the norm group are reported in Table 7. The five diagnostic group combination was similar to the six subgroup combination in terms of the differences in the mean standard scale scores when compared with the normative population. The achievement, dominance and Critical Parent mean scale scores were greater than the normative population. The mean scores on the aggression and the succorance scales were lower than the mean scores of the norm group.

T-test comparison indicated no statistically significant differences between this five subgroup combination and the normative population at the .05 level. T-values are reported on Table 7. Thus the unknown diagnostic subgroup does not seem to affect the statistical significance of the comparison.

Two general conclusions can be inferred from these results. First, the entire male subject population does not vary significantly from the normative population in terms of the five mean scale scores. The unknown diagnostic group (group 1) does not affect the staistical significance of this comparison. Secondly, none of the diagnostic subgroups differed significantly from the normative population when compared separately according to the five standard scale scores.

Table 7. Mean values, standard deviations and t-values for five
standard scale scores of five diagnostic subgroups (excluding
group 1) and normative population.

	S Ach	S Dom	S Agg	S Suc	S CP
Mean					
Subjects (n = 115)	52.39	52.67	50.23	48.35	50.78
Norms (n = 198)	50.01	50.98	50.71	49.24	50.02
SD					
Subjects	9.15	8.77	8.55	9.69	9.44
Norms	10.12	10.15	9.32	9.11	9.92
t-value*	.024	.018	-.005	.009	.007

*no significance at the .05 level

S Ach = Standard score for achievement scale

S Dom = Standard score for dominance scale

S Agg = Standard score for aggression scale

S Suc = Standard score for succorance scale

S CP = Standard score for critical parent scale

CHAPTER V

LIMITATIONS

The lack of statistical evidence to verify any of the proposed
research hypotheses may be the result of several limitations of this
study's design. First the collection of the data by mail limited the
ability of the researcher to control completely the administration of
the quesionnaires. This lack of control may have resulted in
environmental variations during questionnaire completion.
Theoretically the participating cardiac rehabilitation unit's staff
may have failed to control the participants seeking other person's
help in answering the questions. The participating rehabilitation
units may have been unable to provide an appropriate environment which
was quiet and unrushed to allow the participants to think about their
responses.

Misunderstanding of the questionnaire is also a possibility. If
this situation did arise, the subject would not have been able to
elicit the correct answer from the researcher.

The completion of the questionnaires was voluntary. It is
presumed that all of the participants at each unit, who met the
requirements for participating in this study, were asked to complete
the questionnaires. Refusal to complete the questionnaires was an
option. Those participants who refused may have differed
significantly in their responses. Thus it is possible that the
subject population was not entirely randomly selected.

The reporting of the primary diagnosis was done by each subject.

This self-reporting may have resulted in inaccuracy. This is most clearly evident in the 18 subjects who responded nonspecifically as having a heart problem. Subjects may have an inaccurate or incomplete understanding of their diagnosis which may have caused inaccuracy in their responses. A reporting of the primary diagnosis by each subject's health care team professional would have been much more accurate. This process was not feasible within the constraints of this study's design.

The use of unhealthy subjects possesses the question of biases due to the disease condition's effect on the personality traits assessed by the Adjective Check List. Jenkins and Zyzanski (78) cited research which does correlate both state and trait anxiety with manifestations of CHD. Patients with CHD tended to experience higher anxiety levels particularly after myocardial infarction occurrences. The anxiety levels of subjects in this study however was not addressed since the influence of the illness process on this trait is questionable.

Studies which have focused on the possible influence of the disease process on Type A behaviors have indicated no such correlational effects on the specific personality traits which were examined by this study. Spielberger and Hiland's research (cited in 78) studied hospitalized men with and without CHD by administering the Jenkins Activity Survey to assess Type A behavior pattern. CHD diagnosed subjects were found to score significantly higher in Type A behavior pattern than the hospitalized men without CHD. Since this

study was examining the specific personality traits which hypothetically constitute Type A behavior pattern, these findings supported the validity of using individuals with CHD as subjects.

A more recent study (79), reported in the literature after completion of this study's data collection, contradicts Spielberger and Hiland's findings. The study conducted by Case and his colleagues involved the one to three year follow-up of 516 patients who had experienced an acute myocardial infarction. No significant relationship was indicated between Type A scores on the Jenkins Activity Survey and mortality during the follow-up time period.

Case et al. (79) suggested several pertinent theoretical possibilities for this lack of correlation. The myocardial infarction survivors may possibly have some subdued personality traits which are not evident by assessment. They also suggested that the use of myocardial infarction patients resulted in a behaviorally selected subject population since those patients with Type A behavior pattern may have had an increased fatality rate from myocardial infarction. These theoretical statements may apply to this study's subject selection in which a high percentage of the subject were myocardial infarction survivors. Thus this group may have not been representative of the at-risk population.

This study's focus was the assessment of five personality traits appraised by the Adjective Check List. The theoretical basis for examining these traits appeared to be strongly supported by the current literature reviewed. Other traits, which were not examined,

may actually differentiate this population from the normative group. Further examination of other scale scores seems warranted. Case et al. (79) suggested that the certain personality traits which have not been defined as components of the Type A personality may actually be adverse factors on established CHD.

CHAPTER VI

SUMMMARY AND CONCLUSIONS

The goal of this study was to identify specific personality

traits of at-risk individuals of developing CHD. A thorough review of

the current literature revealed predominant citation of five

personality traits being related to CHD - achievement, aggression,

dominance, succorance, and self-concept. The assessment instrument

used by this study was the Adjective Check List. Five scale scores

derived from adjective selection analysis were determined to

quantitatively appraise these personality traits. These five scale

scores examined were the achievement scale, the aggression scale, the

dominance scale, the succorance scale and the Critical Parent scale.

The subjects included 135 males with some present manifestation

of CHD. All of the subjects had a past medical history of a

myocardial infarction or coronary by-pass surgery.

The Adjective Check List was completed by the subjects and

demographic data were collected by the use of the Demographic Data

Questionnaire. The five scale scores from all of the completed

Adjective Check Lists were compiled and analyzed. The analysis

included comparison of the entire subject population's mean standard

scale scores and a normative population's mean standard scale scores.

The normative population's mean standard scale scores were obtained

from a previous study conducted by Gough and Heilbrun (75). The

comparison of the subject population and the normative population in

terms of the five mean scale scores indicated no significant

differences between the two groups.

The primary diagnoses reported by the subjects were then used to separate the population into subgroups. Six subgroups were identified by primary diagnosis. Mean standard scale scores of each diagnostic group were compared with the normative group's mean standard scale scores. This comparison indicated no significant differences in any of the diagnostic subgroups in comparison to the normative group in terms of the five scale scores. All possible pairs of diagnostic subgroups were compared. The statistical differences between subgroups were not significant.

This investigation was conducted to examine five research hypotheses. The first research hypothesis was that the personality trait of achievement, as assessed by the Adjective Check List, would be significantly greater in male subjects with manifestations of CHD than in the male norm group. Mean standard scale score comparison of the subject population and the normative population indicated no significant difference in the achievement trait.

The second research hypothesis was that the personality trait of aggression, as assessed by the Adjective Check List, would be significantly greater in male subjects with manifestations of CHD than in the male norm group. Mean standard scale score comparison of the subject population and the normative population indicated no significant difference in the aggression trait.

The third research hypothesis was the personality trait of dominance, as assessed by the Adjective Check List, would be

significantly greater in male subjects with manifestations of CHD than

in the male norm group. Mean standard scale score comparisons of the

subject population and the normative population indicated no

significant difference in the dominance trait.

The fourth research hypothesis was that the personality trait of

Critical Parent, as assessed by the Adjective Check List, would be

significantly greater in male subjects with manifestations of CHD than

in the male norm group. Mean standard scale score comparisons of the

population and the normative population indicated no significant

difference in the Critical Parent trait.

The final research hypothesis was that the personality trait of

succorance, as assessed by the Adjective Check List, would be

significantly lower in male subjects with manifestations of CHD than

in the male norm group. Mean standard scale score comparisons of the

subject population and the normative population indicated no

significant difference in the succorance trait.

The general conclusion from this study's results is that no

statistically significant evidence was found to support the research

hypotheses. The personality traits of achievement, aggression,

dominance, succorance and Critical Parent, as assessed by the

Adjectvie Check List, were not significantly different in the subject

population compared with the normative population.

Further study of this population of individuals with CHD

manifestations may reveal other personality traits, which were not

examined by this research, as differentiating this subject group from

the normative population.

In addition the Adjective Check List assesses personality traits. The possibility of specific personality states having long-term health consequences may be addressed in the future. The effect of stress, as cited in the literature, was not a component of this research's design. This stress situation may have a significant influence on the responses to the Adjective Check List.

The goal of future research should be to develop an assessment profile of specific personality traits which could be used to identify at-risk individuals. This predictive appraisal instrument could assist in the identification of individuals in need of primary dietary intervention. Expedient nutrition intervention may contribute to the lowering of the risk of developing CHD. Further research of personality traits with a dietary intervention component could possibly substantiate these theoretical implications.

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Appendix A

COLLEGE OF HUMAN RESOURCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DEPARTMENT OF HUMAN NUTRITION AND FOODS

March 1984

Director
Cardiac Rehabilitation Unit
Rehabilitation Hospital
United States of America

Dear Director:

I am initiating research to develop a screening tool to identify individuals who might be at risk for a cardiac disorder. To accomplish this, I have developed a short (two page) demographic questionnaire to be administered with the Adjective Checklist (ACL), a one page personality inventory. The goal of the research is to identify individuals for whom dietary intervention would be warranted before the cardiac problem actually occurs, in an effort to prevent or reduce the severity of the problem.

Cardiac rehabilitation units across the country are being invited to participate in the study. If you are interested in receiving a sample of the materials, I will send a packet to you upon receipt of your request. The two instruments are self-administering and would require a maximum of 30 minutes to complete. Guidelines for distributing the questionnaires are included in the packet.

Thank you for your consideration in this matter. I look forward to hearing from you.

Sincerely,

Patricia A. M. Hodges, Ed.D., R.D.
Assistant Professor

Appendix B

Explanatory Note to Subjects

To THE PARTICIPANTS:

I would like to thank you in advance for assisting in the collection of information which should be of great research value. It is important that you complete the information at the cardiac rehab site. The two papers are coded to enable us to use the information together, in the event that they become separated before the data is recorded. There is no need for you to place name anywhere on either paper. Directions appear at the top of each form.

DEMOGRAPHIC DATA QUESTIONNAIRE

CODE NO. _____

Directions:
Indicate your response to each question on the space to the left of the number. Where a choice of responses is given, insert the letter of the answer which best describes you.

_____ 1. Age

_____ 2. Sex

_____ 3. Race

_____ 4. Civilian

_____ 5. Military   If military, status: _____active; _____ retired; _____ dependent
Rank: _____

_____ 6. Primary Medical diagnosis (problem) _____

_____ 7. Secondary Medical diagnosis (problem), if any _____

_____ 8. Are you currently taking any prescribed medication? If yes, specify quantity and
frequency of dose _____

_____ 9. How long (in months) has primary diagnosis been known?

_____ 10. How long (in months) has secondary diagnosis been known?

_____ 11. Weight

_____ 12. Height

13. Hometown and state _____

_____ 14. Highest grade completed in school:
     a. Below 8th grade   h. two years of college
     b. 8th grade   i. three years of college
     c. 9th grade   j. graduated with bachelor degree
     d. 10th grade   k. Master's degree
     e. 11th grade   l. Doctoral degree
     f. High school graduate   m. Other (specify)_____
     g. one year of college

_____ 15. Do you live   a. alone   c. with more than one other
                 b. with one other (spouse,   d. other (specify)_____
                      roommate, friend, etc.)

Appendix C (continued)

_____16. How would you assess your normal daily activity level?
      a. very light   b. light   c. moderate
      d. moderately heavy   e. heavy

_____17. Do you smoke
      a. not at all   b. cigarettes   c. cigars
      d. pipe   e. other (specify) _____

_____18. Did you smoke before your condition was diagnosed
      a. not at all   b. cigarettes   c. cigars
      d. pipe   e. other (specify) _____

_____19. Do you consume alcohol? (Include wine, beer, or any beverage with any alcoholic content)
      a. Not at all   b. 1 to 5 times per week   c. 6 to 10 times per wk
      d. More than 10 times per week

_____20. Did you consume alcohol before your present condition was diagnosed
      a. Not at all   b. 1 to 5 times per week   c. 6 to 10 times per wk
      d. more than 10 times per week

_____21. Did you exercise before your condition was diagnosed
                            (Specify exercise and length of time)
      a. Rarely; no regular program   b. Once per week _____

      c. Twice per week _____

      d. Three times per week _____

      e. Four or more times per week_____

_____22. Do you exercise since your condition has been diagnosed
                            (Specify exercise and length of time)
      a. Rarely; no regular program   b. Once per week_____

      c. Twice per week _____

      d. Three times per week _____

      e. Four or more times per week _____

_____23. Have any of your relatives been diagnosed with the same condition?

      24. If the answer to 23 is yes, specify relationship to you._____

_____

Thank you!

Appendix D

ADAIR - COLLINS ANSWER SHEET
THE ADJECTIVE CHECK LIST
Copyright 1952 by Harrison G. Gough, Ph. D.
University of California, Berkeley

DIRECTIONS: This answer sheet contains a list of 300 adjectives. Please read them quickly and check en in the space below each one as you consider to be self-descriptive. Do not worry about duplications, contradictions and so forth. Work quickly and do not spend too much time on any one adjective. Try to be frank and fill the space for the adjective which describe you as you really are, not as you would like to be.

Appendix D (continued)

Profile Recording Sheet for the Adjective Check List

Name _____ Date _____

Age _____ Sex _____ Other information _____

Standard Scores

	0	10	20	30	40	50	60	70	80	90	100

Modus operandi scales

1. No. Ckd (number of adjectives checked) ____
2. Fav (number of favorable adjectives) ____
3. Unfav (number of unfavorable adjectives) ____
4. Com (communality) ____

Need scales

5. Ach (achievement) ____
6. Dom (dominance) ____
7. End (endurance) ____
8. Ord (order) ____
9. Int (intraception) ____
10. Nur (nurturance) ____
11. Aff (affiliation) ____
12. Het (heterosexuality) ____
13. Exh (exhibition) ____
14. Aut (autonomy) ____
15. Agg (aggression) ____
16. Cha (change) ____
17. Suc (succorance) ____
18. Aba (abasement) ____
19. Def (deference) ____

Topical scales

20. Crs (counseling readiness scale) ____
21. S-Cn (self-control) ____
22. S-Cfd (self-confidence) ____
23. P-Adj (personal adjustment) ____
24. Iss (ideal self scale) ____
25. Cps (creative personality scale) ____
26. Mls (military leadership scale) ____
27. Mas (masculine attributes scale) ____
28. Fem (feminine attributes scale) ____

Transactional Analysis scales

29. CP (critical parent) ____
30. NP (nurturing parent) ____
31. A (adult) ____
32. FC (free child) ____
33. AC (adapted child) ____

Origence-Intellectence scales

34. A-1 (high O low I) ____
35. A-2 (high O high I) ____
36. A-3 (low O low I) ____
37. A-4 (low O high I) ____

	0	10	20	30	40	50	60	70	80	90	100

Standard Scores

Appendix E

GUIDELINES FOR ADMINISTERING QUESTIONNAIRES

1. Each demographic data sheet is coded to an Adjective Checklist (ACL). Patients are requested to complete both forms. Time required to complete the two instruments is approximately 25 to 30 minutes.

2. In the event a patient cannot read or is unable for any reason to physically complete the forms himself/herself, a staff member is requested to complete the forms with the patient's responses.

3. If the staff member is required to read the adjectives to the patient, this should be done in as non-judgmental manner as possible (i.e., no facial expressions at certain adjectives, same tone of voice for each word, etc.). No definitions of words should be given. This action would invalidate the results.

4. Questionnaires must be completed without any family or friend present. The purpose of this research is to examine the patient's perception, and any outside influence in selecting adjectives will negate the purpose of this study.

IT IS ESSENTIAL THAT THE TWO INSTRUMENTS BE COMPLETED AT THE CARDIAC REHAB SITE AND NOT TAKEN ELSEWHERE TO BE COMPLETED.

Thank you for your assistance.

Appendix F

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DEPARTMENT OF HUMAN NUTRITION AND FOODS

March 1984

Director
Cardiac Rehabilitation Unit
Rehabilitation Hospital
P. O. Box USA

Dear Director:

I was delighted to receive your request for a sample packet
of materials for the study to identify a screening tool for
individuals who might be at risk for a cardiac disorder. The
packet is enclosed. It includes:

    a. a sample note to participants,

    b.· one demographic questionnaire,

    c. one sample Adjective Checklist, and

    d. guidelines for administering the questionnaire.

If a screening tool is developed from this research, those
individuals identified as being potentially at risk could be
advised of dietary modifications which may reduce the severity or
the likelihood of occurrence of a cardiac problem. It is my
intention to use the same instruments to look at other popula-
tions with medical disorders which have a dietary component in
the treatment.

After reviewing this material, please let me know how many
packets you wish to receive. I look forward to hearing from you.

Sincerely,

Patricia A. M. Hodges, Ed.D., R.D.
Assistant Professor

Appendix G

Adjective Composition of the Five Adjective Check List's
Raw Scale Scores [a]

1. Achievement Scale: Ach

Indicative items (n=25): active, aggressive, alert, ambitious, assertive, capable, confident, conscientious, determined, dominant, efficient, energetic, enterprising, enthusiastic, forceful, independent, industrious, initiative, intelligent, opportunistic, persevering, persistent, planful, resourceful, thorough.

Contraindicative items (n=13): apathetic, careless, distractible, easy going, indifferent, irresponsible, lazy, leisurely, quitting, rattlebrained, shiftless, slipshod, unambitious.

2. Dominance Scale: Dom

Indicative items (n=19): active, aggressive, alert, ambitious, argumentative, assertive, confident, demanding, determined, dominant, enterprising, forceful, opinionated, outgoing, outspoken, resourceful, responsible, self-confident, strong.

Contraindicative items (n=21): apathetic, dependent, dreamy, fearful, inhibited, irresponsible, lazy, meek, mild, reserved, retiring, self-pitying, shy, silent, spineless, submissive, timid, unambitious, unassuming, weak, withdrawn.

[a]Adapted from Gough and Heilbrun, 1980 (75).

Appendix G (continued)

3. Aggression Scale: Agg

Indicative items (n=21): aggressive, argumentative, arrogant, assertive, autocratic, cynical, dominant, excitable, forceful, headstrong, hostile, impatient, irritable, opinionated, outspoken, quarrelsome, rebellious, sarcastic, touchy, unkind, vindictive.

Contraindicative items (n=23): apathetic, calm, good-natured, inhibited, mannerly, meek, mild, obliging, patient, peaceable, praising, quiet, relaxed, reserved, retiring, shy, silent, submissive, sympathetic, timid, understanding, unemotional, withdawn.

4. Succorance Scale: Suc

Indicative items (n=21): appreciative, complaining, demanding, dependent, dissatisfied, emotional, fearful, immature, infantile, meek, nervous, self-centered, self-pitying, self-seeking, selfish, spineless, submissive, trusting, weak, whiny, worrying.

Contraindicative items (n=11): aloof, confident, dominant, independent, indifferent, individualistic, mature, quarrelsome, self-confident, strong, tough.

Appendix G (continued)

5. Critical Parent Scale: CP

Indicative items (n=35): aggressive, ambitious, argumentative, assertive, bossy, charming, complicated, demanding, dissatisfied, dominant, fearful, forceful, frank, hard-headed, impatient, inhibited, irritable, loud, methodical, noisy, opinionated, outspoken, persevering, persistent, prejudiced, progressive, realistic, resentful, self-confident, self-controlled, selfish, serious, stubborn, suspicious, tense.

Contraindicative items (n=9): calm, easy going, forgiving, kind, mild, relaxed, soft-hearted, tolerant, trusting.

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