BEHAVIOR PATTERNS AND CORONARY HEART DISEASE

by

Suzanne Lynn Vertuno

A Thesis Submitted to the Faculty of the DEPARTMENT OF NURSING
In Partial Fulfillment of the Requirements For the Degree of
MASTER OF SCIENCE
In the Graduate College
THE UNIVERSITY OF ARIZONA

1973
STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Suzanne Lynn Vincent

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Karen S. Sechrist
Assistant Professor of Nursing

Date: August 17, 1973
ACKNOWLEDGMENTS

The researcher extends appreciation to Mrs. Karen Sechrist for her encouragement and support as thesis director and to Dr. Arlene Putt and Miss Marlys Moeckly, committee members, for their thoughtful suggestions in this study.

The researcher especially thanks the patients who freely gave of their time, in admiration of their courage and desire to help each other.

Finally, to Meyer Friedman, M. D., Mount Zion Hospital, San Francisco, California, whose cooperation and example were invaluable, the researcher extends special gratitude.
TABLE OF CONTENTS

| LIST OF TABLES | vi |
| ABSTRACT | vii |

CHAPTER

I. INTRODUCTION ........................................... 1
   Statement of the Problem .......................... 3
   Significance of the Problem ...................... 4
   Purpose of the Study ................................ 4
   Hypothesis to be Tested ................................ 4
   Theoretical Framework ................................ 4
   General Theory ...................................... 5
   Limitations ........................................ 6
   Assumptions ........................................ 7
   Definitions ......................................... 7
   Type A Behavior Pattern ......................... 8
   Type B Behavior Pattern .......................... 8
   Type X Behavior Pattern .......................... 8
   Coronary Heart Disease (CHD) .................... 9
   Coronary Artery Disease (CAD) .................... 9

II. REVIEW OF THE LITERATURE ............................ 10

III. METHODOLOGY ......................................... 16
   Research Design .................................... 16
   Tool .............................................. 17
   Pilot Study ....................................... 17
   Population and Sample ............................ 17
   Data Collection ................................... 18
   Analysis of the Data .............................. 19

IV. FINDINGS OF THE STUDY ............................... 20

V. DISCUSSION OF THE FINDINGS AND CONCLUSIONS .......... 26
   Recommendations for Further Study............... 27
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI. SUMMARY</td>
<td>29</td>
</tr>
<tr>
<td>APPENDIX A: CRITERIA FOR JUDGING BEHAVIOR PATTERNS</td>
<td>31</td>
</tr>
<tr>
<td>APPENDIX B: PATIENT CONSENT FORM</td>
<td>35</td>
</tr>
<tr>
<td>APPENDIX C: BEHAVIOR PATTERN INTERVIEW</td>
<td>36</td>
</tr>
<tr>
<td>APPENDIX D: SAMPLE PATIENT DATA SHEET</td>
<td>38</td>
</tr>
<tr>
<td>SELECTED BIBLIOGRAPHY</td>
<td>39</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type A Behavior Pattern</td>
<td>21</td>
</tr>
<tr>
<td>2.</td>
<td>Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type B Behavior Pattern</td>
<td>22</td>
</tr>
<tr>
<td>3.</td>
<td>Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type X Behavior Pattern</td>
<td>23</td>
</tr>
<tr>
<td>4.</td>
<td>Relationship of Personal or Family History of CHD to Type A, B, and X Behavior Patterns</td>
<td>25</td>
</tr>
</tbody>
</table>
ABSTRACT

This study focused on the relationship between behavior patterns and coronary heart disease. Thirty subjects were interviewed and classified as Type A, Type B or Type X Behavior according to criteria established by Dr. Meyer Friedman of San Francisco, California. Pertinent medical data was acquired from each subject's hospital record to discern a past history of coronary heart disease. The researcher looked for a correlation between the presence or absence of a past history of coronary heart disease and behavior patterns. Chi-square testing yielded no significant correlation between these factors.
CHAPTER I

INTRODUCTION

As early as the 18th century, emotional factors have been recognized as playing a part in the symptomology of coronary heart disease (CHD) (Friedman and Rosenman 1971). Although both Heberden (1772) and Parry (1799) were well aware of the deleterious effect that emotional upsets might exert upon patients already afflicted with coronary artery disease (CAD), neither they nor any of the earlier students of this disorder appeared to believe that a personality or emotional disturbance played a part in its etiology. Although it is probable that a number of clinicians in the 19th century suspected that some type of personality trait or peculiarity was involved in the pathogenesis of CAD, it was Osler (1910) who first pointed to a way of life as chiefly responsible for angina pectoris and, by inference, CAD.

In the early 1900's, William Osler conducted studies on patients with angina pectoris from which he was able to make a presumptive diagnosis of CHD in various patients, by their appearance and bearing as they walked into his consultation room. He described the angina patient as "the well 'set' man of from 35 to 55 years of age, with military bearing, iron-grey hair, and florid complexion" (Osler 1910, p. 839).

Kemple (1945) presented theories that the CHD patient compulsively strove to achieve goals incorporating power and prestige. He also
noted that these patients lacked subtle adaptive responses and sensitivity to differences in their environment.

Friedman and Rosenman (1971) found that despite the apparent frequent associational relationships between factors such as dietary foodstuffs, serum lipids, cigarette smoking, physical indolence and heredity and CHD, there were enough exceptions to relationships to suggest the possible presence of other etiological factors as well.

We, of course, already knew that such relative protection could not be due to any specific sex hormone because if this were so, then such a hormone should provide similar protection to females of all races and countries—a protection, however, which is not afforded the Italian female, the Mexican female, or to either the African or American Black female (Friedman and Rosenman 1971, p. 301).

In 1956 Friedman and Rosenman established a set of emotional traits that preceded CHD, which they described as Type A Behavior Pattern.

Type A Behavior Pattern is a particular action-emotion complex which is exhibited or possessed by an individual who is engaged in a relatively chronic and excessive struggle to obtain a usually unlimited number of things from his environment in the shortest period of time or against the opposing efforts of other things or persons in this same environment (Friedman and Rosenman 1971, p. 302).

Type B Behavior Pattern represents the converse of Type A Behavior Pattern in that the subject does not exhibit a conflict with either time or other persons. Type X Behavior Pattern represents subjects exhibiting components of both Type A and Type B Behavior Patterns (Friedman and Rosenman 1971, p. 303).

Friedman and Rosenman felt that modern contemporary Western environment has encouraged the increasing prevalence of Type A Behavior Pattern because it appears to offer special rewards to those who can
think, perform, communicate, and in general, live more rapidly and aggressively than their peers. They believe that this pattern does not result completely from possible defects in an individual's personality, but that it emerges only when certain challenges or conditions of the milieu arise which elicit a particular response or complex of responses in certain susceptible individuals (Friedman and Rosenman 1971).

This inclusion of the milieu as a necessary part of the behavior pattern implies that it is conceivable that if the challenges or conflicts of the milieu were severe enough, any subject, regardless of his basic personality might react to these phenomena, that Type A Behavior Pattern emerges. This same concept also implies that if the challenges or conflicts of the milieu were removed, it is quite possible that an already present Type A Behavior Pattern might disappear. Also, there may be a sociological as well as an intrinsic psychological component making up Type A Behavior Pattern.

Statement of the Problem

This study involved the investigation of behavior patterns and their association with coronary heart disease. The research attempted to answer the following question: Are patients with a Type A Behavior Pattern more likely to have had coronary heart disease than are those with a Type B Behavior Pattern when their behavior pattern was measured by questionnaire, observed by general appearance, and implied by voice tone?
Significance of the Problem

The problem this research sought to solve was significant to nursing because the answer would affect the preventive role with which nursing is concerned. The problem is significant to the patient, because it is possible to alter the behavior pattern in order to prevent CHD from occurring or recurring. Finally, it is significant because as the complex pressures of western society increase, so does the occurrence of coronary heart disease.

Purpose of the Study

The purpose of this study was to further knowledge about coronary prone individuals and the significance of behaviors and prevention. Similar studies on CHD have shown some sort of predictive value which in turn leads to preventive measures.

Hypothesis to be Tested

The following hypothesis was tested in this study: Type A Behavior Pattern, as defined by Friedman and Rosenman (1971), will occur significantly more frequently in the presence of a history of CHD than will Type B Behavior or Type X Behavior.

Theoretical Framework

The general framework within which the research was conducted was a theory of behavior patterns and their relation with CHD based on the studies of Dr. Meyer Friedman of Mount Zion Hospital in San Francisco, California. In the following sections this general theory is defined and applied to the specific research situation.
General Theory

Sir William Osler (1910, p. 839) first described the angina type person:

It is not the delicate, neurotic person who is prone to angina, but the robust, the vigorous in mind and body, the keen and ambitious man, the indicator of whose engine is always at full speed ahead.

In accordance with Osler's ideas, Drs. Friedman and Rosenman began studying reactions to stress and devised a principle through their observations that there are Types A and B Behavior Patterns into which persons can be categorized according to their susceptibility for coronary heart disease.

Type A Behavior Pattern is characterized primarily by excessive drive, aggressiveness, ambition, involvement in competitive activities, frequent vocational deadlines, pressure for vocational productivity, an enhanced sense of time urgency and restless motor mannerisms and staccato style of verbal response. The converse, low coronary-risk behavior pattern, called Type B, is characterized by "the relative absence of this interplay of psychological traits and situational pressures" (Jenkins, Rosenman and Friedman 1967).

The presence of behavior pattern A can be detected in an individual by subjecting him to a personal interview in which the following behaviors are sought: (1) general appearance; (2) motor activities; (3) degree of drive and ambition; (4) degree of past and present competitive, aggressive, and hostile feelings; (5) degree of sense of time urgency; and (6) intrinsic psychiatric traits (see Appendix A).
Russek and Zohman (1971, p. 77), in studies relating heart disease to other factors, state:

Coronary incidence has been essentially restricted to populations with higher socioeconomic standards. Primitive groups today still exhibit only minimal basic coronary atherosclerosis and still enjoy almost total freedom from symptomatic CHD. Since occlusive CHD is thus an accompaniment of civilization, its recent increase must be largely attributable to the environmental changes associated with the processes of civilization. Coronary atherosclerosis doubtlessly results from the complex interaction of multiple factors, and any influence that enhances the rate of intimal damage and hyperplastic repair or the intimal deposition of lipid and thrombotic material may accordingly accelerate atherogenesis and the advent of clinical CHD.

Friedman found in other studies that the adrenal gland might be involved in the syndrome relating to behavior pattern A. He found that individuals exhibiting pattern A excreted far more norepinephrine during their working day than individuals with pattern B. He stated that he was uncertain as to the relevance of the pathogenesis of this increased discharge of norepinephrine (Friedman 1964).

The results of our own studies would appear to indicate clearly that the personality and behavior pattern of an individual is significantly and independently related to his prospective candidacy for CHD. These results also indicate that clinical assessment of an individual's behavior pattern not only helps to define coronary-proneness but also considerably enhances the individual predictive specificity of other more widely-used risk attributes (Russek and Zohman 1971, p. 81).

**Limitations**

In testing the stated hypothesis, this study was restricted by the following factors:

1. The study was a field experiment with limitations on the control of variables.
2. The study sample was composed of 30 patients who were seen in the medical out-patient clinic of one general hospital in one urban community who met the sample criteria and who agreed to participate in the study.

3. The patients were under the care of one of two physicians who were in charge of the out-patient department.

4. The patient's response to the questionnaire and to the researcher could have been affected by factors other than those considered in the study.

Assumptions

In the application of the above theoretical framework to this research, the following general assumptions were made:

1. Behavior patterns can be elicited through questionnaire, observations, and listening to voice tone.

2. Type A and B behaviors can be so categorized as separate and distinct behavioral patterns.

3. Type X behavior is not a distinct and separate behavior pattern but a combination of behaviors.

4. Appearance and motor activities indicate behavior patterns.

Definitions

For the purposes of this study, the following definitions of terms were used.
Type A Behavior Pattern

A method of response characterized by aggressiveness, ambition, drive, competitiveness and a profound sense of time urgency. Speech is usually rapid, forceful, often explosive and accompanied by sudden gestures such as fist clenching and facial grimaces.

The man with pattern type A appears to be excessively driven to achieve and willingly committed to getting things done, while struggling against the inflexible factor of time itself and the competing and obstructing influences of other persons and things (Russek and Zohman 1971, p. 80).

Pattern type A, therefore, is an interplay of certain personality (endogenous) and environmental (exogenous) factors.

Type B Behavior Pattern

Type B pattern is the inverse of type A pattern. Type B pattern is mainly exhibited in that this person is not in any chronic conflict with either time or other persons. Type B pattern is exhibited by a tranquil, relatively slow-thinking and slow-moving behavior.

Type X Behavior Pattern

In some instances an interviewee will not meet the specific criteria for Type A or Type B Behavior Pattern; therefore, the subject will be categorized as Type X. Friedman and Rosenman (1971) refer to Type X as a subject who exhibits a combination of Type A and Type B Behavior Patterns.
Coronary Heart Disease (CHD)

Coronary heart disease is a generalized term encompassing a broad range of clinical heart diseases due to lesions of the coronary arteries (Friedberg 1966, p. 643).

Coronary Artery Disease (CAD)

Coronary artery disease is another term for coronary heart disease used in the literature.
CHAPTER II

REVIEW OF THE LITERATURE

Perhaps Menninger and Menninger (1936) were the first psychiatrists to interest themselves in the study of the personality of subjects already suffering from CAD. They studied at least three such patients and concluded that such patients sometimes exhibited strongly aggressive tendencies which usually were successfully repressed, and that they also strongly identified with their respective fathers. In addition to this portrayal of some coronary patients as aggressive individuals, the authors pointed out that cardiologists, when dealing with emotional disorders, often failed to discriminate and understand various specific kinds of emotional disorders.

Dunbar (1943) examined a large number of coronary patients. She found them, as a group, to be hard-driving, goal-directed individuals, equipped with a monodirective personality seeking its refuge in work.

Arlow (1945), although not entirely agreeing with Dunbar, concluded that his coronary patients exhibited a specific type of character development. He stressed the inner insecurity of his patients, their belief that they were shams, and, most important of all, the failure of their realistic achievements to annul these inner feelings; hence the patients' incessant need to acquire new successes.
Kemple (1945, p. 86) in a summary of the "coronary personality" states:

Although in our serial admissions, the number of patients with coronary occlusion is small, they manifest a persistent pattern of aggressiveness and drive to dominate which distinguishes them from patients in the other group. They are usually very ambitious and strive compulsively to achieve goals incorporating power and prestige. Limitation of the introversive experiences of creative thought and imaginative reflection increases their dependence upon achievements in the external day to day values of inner living--although they try to keep their strong aggressive impulses under control, they manage to justify to themselves a good deal of outwardly expressed hostility.

Kemple also noted that his coronary patients lacked subtle adaptive responses and sensitivity to nuances in their environment.

These personality traits of aggressiveness and drive to dominate, to achieve goals, which Dunbar (1943), Arlow (1945), and Kemple (1945) described, were exemplified by the findings of Gertler and White (1954) in their study of 100 coronary patients. Their findings included the fact that their coronary patients overtly exhibited hard-driving, goal-directed activity and the desire to be important and to have power over other beings or the environment. These researchers attributed and correlated these traits with the mesomorphy itself as if matter held sway over the mind.

It is important to note that no psychiatrist or psychologist prior to 1955 took the milieu of Western society into consideration when studying coronary patients. It is interesting to note that the distinguished historian, Arnold Toynbee (1961, p. 603) sensed the presence of "something" when he wrote:
At the earliest moment at which we catch our first glimpse of Man on Earth we find him not only on the move but already moving at an accelerating pace. This crescendo of acceleration is continuing today. In our generation it is perhaps the most difficult and dangerous of all the problems of the human race.

Beginning in 1955 a new approach to the problem of emotional stress and CAD was begun in which not just the intrinsic personalities of subjects were studied but, perhaps most important, the behavior patterns resulting from exposure of such personalities to various milieus.

Since 1956 Friedman and Rosenman have concerned themselves with those behavior patterns and their possible relationship to the etiology and pathogenesis of coronary artery disease. Similar studies have been done by other researchers regarding the relationships of this interaction between personality and environment and coronary artery disease. These researchers are Russek (1959, 1962), Russek and Zohman (1958), Hammarsten et al. (1957), and McCabe et al. (1959).

It also should be mentioned that Stewart (1950) strongly suspected that the new forms of socioeconomic stress which contemporary Western society had generated probably played a very large role in the mounting incidence of CAD. He recognized the probability that because this society seemed to offer unlimited opportunities to relatively unlimited numbers of individuals if they strove hard and fast enough, it promoted the development of a new type of individual stress which was totally different from the ancient varieties of group stress such as war, famine, pestilence, and flood. These latter group stresses, Stewart pointed out because they appear to the individual to be outside his control, not only inflict very little emotional trauma upon him as a person, but also
actually tend to obliterate any other emotional tensions or stresses which he might have been harboring.

Friedman and Rosenman (1971) have designated as behavior pattern A a characteristic action-emotion complex which is 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 this same environment. This struggle has been encouraged by the contemporary Western environment because, unlike any previously known milieu, it appears to offer special rewards and opportunities to those who can think, perform, communicate, move, live, and even play more rapidly and aggressively than their fellow man.

If an individual with behavior pattern A were forced to display or wear a heraldic emblem consonant with his personality, a most appropriate symbol might well be a clenched fist holding a stopwatch (Rosenman and Friedman 1971, p. 88).

Almost everyone in our society wishes to succeed and everyone also is obliged to meet at least some deadlines. How then do these individuals differ from subjects exhibiting pattern A? They differ from the latter not in kind but in degree, "just as the blood pressure of the normotensive individual is not zero, but neither is it as high as that of the hypertensive patient" (Friedman 1969, p. 85).

As might be expected also, there are degrees in the intensity of behavior pattern A exhibited by various individuals. This is also true because the pattern represents the interaction that occurs when particular personality facets of an afflicted individual are challenged or aroused
by a specific milieu. The results of this interaction, therefore the pattern itself, may not occur or be exhibited by him if he happens to be in an environment that carries no challenge for him. For example, a usually hard-driving, time-conscious, aggressive, competitive editor of a metropolitan newspaper, if hospitalized because of even a minor illness, may shed all these traits and even present a facade of tranquility and passivity (Friedman and Rosenman 1971).

If type A behavior pattern bears a causal relationship to the pathogenesis of CHD, then one might expect that persons possessed with this pattern possibly would exhibit the biochemical derangement which are found if not in all, at least in the majority of patients already ill with CHD (Friedman and Rosenman 1971, p. 307).

Friedman, Rosenman and Carrol (1958) did studies on the serum cholesterol of subjects exhibiting Type A and Type B Behavior Patterns. They studied the average serum cholesterol of accountants twice monthly for approximately six months beginning in the first month of the year. The average serum cholesterol rose on April 15 (income tax deadline) and returned to normal in subsequent weeks. They also found that the average serum cholesterol of the Type A men who chronically exhibited behavior pattern A was significantly higher than that of the type B behavior pattern men.

When comparing plasma triglycerides, free fatty acids and serum lipoproteins in subjects exhibiting Type A behavior pattern with Type B behavior pattern, Friedman (1964), Friedman, Byers and Rosenman (1964), and Friedman, Rosenman and Byers (1968) found that type A behavior pattern subjects had a significantly greater fasting and higher post-prandial serum triglyceride than that of Type B behavior pattern.
Type A subjects did not have any abnormality in their plasma free fatty acids either before or after the ingestion of a fat-rich meal. However, Friedman found that type A subjects had an elevation of their serum lipoproteins.

Friedman, St. George, Byers and Rosenman (1960) found that the urinary excretion of norepinephrine (and total catecholamines) and 3-methoxy-4-hydroxy-mandelic acid was significantly increased during the daytime working period of Type A subjects. Nestel, Verghess and Lovell (1967) found in his studies of patients with angina pectoris that they excreted more catecholamine which they suggested might be due to the personality rather than the CHD of their patients.

These results present the possibility that this increased release of norepinephrine, which appears to be as characteristic of most fully developed Type A subjects as their relative hypercholesterolemia, may be more precipatory than the latter phenomenon in the pathogenesis of CHD (Friedman and Rosenman 1971).
CHAPTER III

METHODOLOGY

This chapter describes the research design, the tool, the population and sample, the method of data collection, and the analysis of the data.

Research Design

This descriptive study focused on the categorization of subjects into Type A, Type B and Type X Behavior Patterns and their relationship to the history or presence of CHD based on responses, both overt and covert, to a questionnaire administered by the researcher during a taped interview. The study was conducted in the medical out-patient clinic in a general hospital located in a Southwestern urban community. The responses, verbal and nonverbal, of each subject were analyzed and then each subject was categorized as exhibiting either Type A or Type B behavior pattern according to criteria in Appendix A. Those subjects not meeting the criteria for a specific Type A or Type B Behavior Pattern were placed in a Type X Behavior Pattern category.

Permission to conduct the study was sought and obtained from the physician in charge of the medical out-patient clinic before data collection was begun. Written permission was obtained from each subject prior to the interview (see Appendix B).
The tool used in the study was a questionnaire designed and validated by Dr. Meyer Friedman and Dr. R. H. Rosenman of Mount Zion Hospital in San Francisco, California, who gave their permission for its use (see Appendix C). The interview questions elicit, in part, angry and aggressive feelings, both past and present, as well as the degree of drive and ambition throughout the subject's working life, and his sense of time urgency. The sample patient data sheet provided pertinent information necessary to substantiate the categorization of Types A, B, and X Behavior Patterns in which the subjects were placed (see Appendix D). This data sheet included past history of any heart disease in the subject or his family, blood pressure, weight, age, sex, marital status, occupation, smoking history and any other contributing diseases.

Pilot Study

A pilot study was conducted using five subjects to enable the interviewer to ask the questions from the questionnaire using no voice inflection which might influence the responses of the interviewee. Each interview was taped and then listened to by the interviewer for the sole purpose of voice inflection of the interviewer. These subjects were not part of the study population.

Population and Sample

The population for the study was composed of 30 patients chosen randomly who met the following criteria by being:

1. A patient being seen in the medical out-patient clinic.
2. Under the care of one of the physicians who consented to have patients included in the study.

3. Literate in English and willing to participate in the study. Written permission was obtained from each subject after given a simple description of the purpose of the study. Each subject was assured that all information would be held in strict confidence and that they had the right to refuse to participate in the study.

Data Collection

All intake interviews were tape-recorded and the following behavior patterns were observed, according to criteria in Appendix B: general appearance and certain characteristic motor activities (brisk body movement, fist clenching in ordinary conversation, explosive and hurried speech patterns, upper chest breathing, and lack of total body relaxation), voice tone and the types of responses to the questions on the questionnaire. After the interview had been taped, the researcher listened to the tape and categorized the interviewee as exhibiting either Type A, Type B, or Type X Behavior Pattern, again using criteria listed in Appendix A. No information about the subject except name and hospital number was known to the researcher until after the subject had been categorized in order to insure against bias. The data was collected daily for a period of approximately two weeks at which time the sample size of 30 subjects had been acquired.
Analysis of the Data

The data collected for each patient was recorded on tape and on the patient data sheets, shown in Appendix D. Data was analyzed utilizing the chi-square test which determines the relationship between the variables, Type A, Type B, and Type X Behavior Patterns and CHD. This was used because the central tendencies of two or more groups may be compared by use of chi-square in situations where use of the analysis of variance would lead to violations of assumptions. The expected frequency for chi-square analysis were assumed to be equal since an equal number of cases with and without CHD would be expected to be found.
CHAPTER IV

FINDINGS OF THE STUDY

This chapter presents the findings and the statistical analysis of the data. The final sample in this study included 30 ill people with a variety of medical problems being seen in the medical out-patient clinic of one hospital in a Southwestern metropolitan city. Of this 30, eight patients were women and 22 were men. All but nine of the 30 were actively employed.

The interviews administered to the patients were tape-recorded and categorized according to criteria listed in Appendix A. Each subject was then categorized as exhibiting Type A, Type B, or Type X Behavior Pattern. The age, sex, work status, and personal or family history of CHD for persons demonstrating Type A Behavior Pattern are listed in Table 1.

Six of the 30 patients or 20 percent exhibited Type A Behavior Pattern. Fourteen or 40 percent exhibited Type B Behavior Pattern and ten or 33 percent exhibited Type X Behavior Pattern. Eight or 26 percent of the patients were women and 22 or 73 percent of the total were men. Of the six patients with Type A Behavior Pattern, two or 30 percent were women and four or 70 percent were men. In Type B Behavior Pattern, four or 28.50 percent were women and ten or 71.50 percent were men. Two or 20 percent of Type X Behavior Pattern were women and eight or 80 percent were men.
Table 1. Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type A Behavior Pattern.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>Sex</th>
<th>Age</th>
<th>Personal History of CHD</th>
<th>Family History of CHD</th>
<th>Work Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Male</td>
<td>39</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
<td>In the home</td>
</tr>
<tr>
<td>6</td>
<td>Female</td>
<td>40</td>
<td>Yes</td>
<td>No</td>
<td>In the home</td>
</tr>
<tr>
<td>20</td>
<td>Male</td>
<td>58</td>
<td>Yes</td>
<td>Yes</td>
<td>Retired</td>
</tr>
<tr>
<td>25</td>
<td>Male</td>
<td>60</td>
<td>Yes</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>29</td>
<td>Male</td>
<td>47</td>
<td>Yes</td>
<td>No</td>
<td>Employed</td>
</tr>
</tbody>
</table>

One hundred percent of the persons exhibiting Type A Behavior Pattern had a history of CHD. Of these six patients, three or 50 percent had a family history of CHD, five or 83 percent had a personal history of CHD, and two or 33 percent had both a family and personal history of CHD. Age range of these patients with Type A Behavior Pattern was 39 to 66 years.

The age, sex, work status, and personal or family history of CHD for persons demonstrating Type B Behavior Pattern are listed in Table 2.

In the Type B Behavior Pattern category five or 36 percent of the total 14 patients had a history of CHD, and nine or 64 percent did not have a history of CHD. Three or 21.40 percent had a personal history of CHD, three or 21.40 percent had a family history of CHD, and one or
Table 2. Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type B Behavior Pattern.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>Sex</th>
<th>Age</th>
<th>Personal History of CHD</th>
<th>Family History of CHD</th>
<th>Work Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Male</td>
<td>49</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>9</td>
<td>Female</td>
<td>43</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>10</td>
<td>Male</td>
<td>40</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>11</td>
<td>Male</td>
<td>62</td>
<td>No</td>
<td>No</td>
<td>Retired</td>
</tr>
<tr>
<td>13</td>
<td>Male</td>
<td>75</td>
<td>Yes</td>
<td>No</td>
<td>Retired</td>
</tr>
<tr>
<td>14</td>
<td>Male</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>16</td>
<td>Female</td>
<td>30</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>17</td>
<td>Male</td>
<td>62</td>
<td>Yes</td>
<td>Yes</td>
<td>Retired</td>
</tr>
<tr>
<td>19</td>
<td>Male</td>
<td>70</td>
<td>No</td>
<td>Yes</td>
<td>Retired</td>
</tr>
<tr>
<td>21</td>
<td>Female</td>
<td>26</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>22</td>
<td>Male</td>
<td>65</td>
<td>No</td>
<td>No</td>
<td>Retired</td>
</tr>
<tr>
<td>23</td>
<td>Female</td>
<td>52</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>27</td>
<td>Male</td>
<td>57</td>
<td>No</td>
<td>No</td>
<td>Retired</td>
</tr>
<tr>
<td>30</td>
<td>Male</td>
<td>79</td>
<td>Yes</td>
<td>No</td>
<td>Retired</td>
</tr>
</tbody>
</table>

7.14 percent had both a family and personal history of CHD. The age range of these patients was 26 to 79 years.

The age, sex, work status, and personal or family history of CHD for persons demonstrating Type X Behavior Pattern are listed in Table 3.
Table 3. Age, Sex, Work Status, and Personal or Family History of CHD for Persons Demonstrating Type X Behavior Pattern.

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>Sex</th>
<th>Age</th>
<th>Personal History of CHD</th>
<th>Family History of CHD</th>
<th>Work Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>20</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>4</td>
<td>Female</td>
<td>78</td>
<td>Yes</td>
<td>No</td>
<td>In the home</td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>38</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>8</td>
<td>Male</td>
<td>37</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>12</td>
<td>Male</td>
<td>55</td>
<td>No</td>
<td>No</td>
<td>Retired</td>
</tr>
<tr>
<td>15</td>
<td>Male</td>
<td>55</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
<tr>
<td>18</td>
<td>Male</td>
<td>49</td>
<td>Yes</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>24</td>
<td>Male</td>
<td>27</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>26</td>
<td>Male</td>
<td>68</td>
<td>No</td>
<td>Yes</td>
<td>Employed</td>
</tr>
<tr>
<td>28</td>
<td>Male</td>
<td>29</td>
<td>No</td>
<td>No</td>
<td>Employed</td>
</tr>
</tbody>
</table>

Of the ten patients exhibiting Type X Behavior Pattern, six or 60 percent had a history of CHD. Of these six patients, two or 20 percent had a personal history of CHD, five or 50 percent had a family history of CHD, and one or ten percent had both a personal and family history of CHD. The age range of these patients was 20 to 78 years.

The number of retired persons exhibiting Type A Behavior was one or 16.60 percent and this patient had a history of both personal and family history of CHD. Of those patients exhibiting Type B Behavior Pattern, seven or 50 percent were retired and of those three or 21 percent
had no history of CHD, three or 21 percent had a personal history of CHD, two or 14 percent had a family history of CHD, and one or 7 percent had a history of both personal and family history of CHD. There was one patient or 11 percent with a history of CHD exhibiting Type X Behavior Pattern and this patient did not have a personal or family history of CHD.

The smoking history, cholesterol and triglyceride levels were incomplete, therefore no statistical testing could be done.

An attempt was made to find correlation between behavior patterns and history of CHD. The group was dichotomized according to presence or absence of a history of CHD. The three independent variables, Types A, B, and X Behavior Patterns, were correlated with the dependent variables, presence or absence of a history of CHD, using the chi-square test for correlation of non-parametric data. In all cases, cell frequencies were small. The chi-square obtained for each independent variable computed against presence or absence of a history of CHD is listed in Table 4. The formula used was $X^2 = \frac{(o-e)^2}{e}$ (Young and Veldman 1965, p. 333). In order to have significance the value of chi-square must be equal to or larger than the tabled value of chi-square at the .05 level which was 11.07. The chi-square obtained from the data was 8.80 which is less than the tabled chi-square value, therefore there is no significant correlation.
Table 4. Relationship of Personal or Family History of CHD to Type A, B, and X Behavior Patterns.

<table>
<thead>
<tr>
<th>Type</th>
<th>Personal or Family History of CHD</th>
<th>No Personal or Family History of CHD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>X</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Totals</td>
<td>17</td>
<td>13</td>
<td>30</td>
</tr>
</tbody>
</table>

NOTE: df = 5
\[X^2 = 8.80\]
CHAPTER V

DISCUSSION OF THE FINDINGS AND CONCLUSIONS

Interviews with 30 patients yielded no significant correlation between the presence or absence of a history of CHD and behavior patterns. The following discussion presents possible explanations for the findings.

Friedman and Rosenman (1971) presented the concept that behavior patterns represent the interaction that occurs when particular personality facets of an afflicted individual are challenged or aroused by a specific milieu. The results of this interaction, therefore the pattern itself, may not occur or be exhibited by him if he happens to be in an environment that carries no challenge for him. It is therefore, possible, that the insignificant findings of this study were due to this interaction or lack of interaction by persons involved in the study. The sample consisted of 30 patients, many of whom had chronic medical problems. The presence of these medical problems may have been influencing factors to the interaction with the life style of the sample.

The geographical location in which this study was conducted may also be a misrepresentation of the "typical" milieu referred to by Dr. Friedman in his studies of western society. Many persons migrate to this geographical location due to ill health and at times, a change in life style due to a change in work status from employed to retired.
Friedman and Rosenman (1971) also presented concepts that if the challenges or conflicts of the milieu were severe enough, any subject, regardless of his basic personality might react to these phenomena, a Type A Behavior Pattern will emerge. This concept also implies a converse response that if the challenges or conflicts of the milieu were removed, it is possible that an already present Type A Behavior Pattern might disappear. It is, therefore, quite possible that the general ill health status of the patients used in this study represented those persons to whom the challenges or conflicts of the milieu were removed by either their health status or a change in their occupational status from employed to retired. A change in geographical location also may have been another impetus to a change in life style by either of the above reasons.

Recommendations for Further Study

The researcher suggests the following topics for further study.

1. Investigate the behavior patterns of well persons actively employed.

2. Investigate the relationships between two geographical locations, behavior patterns and CHD.

3. Investigate the relationship between occupations, retired or actively employed, and the behavior patterns in their relation to CHD.

4. Replication of this study in a different setting using a larger and more heterogeneous sample.
5. Replication of this study using patients with known CHD and their spouses.

6. Replication of this study by two researchers.
CHAPTER VI

SUMMARY

Behavior patterns and coronary heart disease have been shown to be related in previous research. Using a previously developed tool, the researcher attempted to find if behavior patterns were significantly associated with the presence of a history of CHD.

Thirty patients being seen in a medical out-patient clinic in one hospital in a Southwestern metropolitan city answered, on a tape-recorder, a questionnaire designed and used with permission by Dr. Meyer Friedman in San Francisco, California. Using the chi-square test, the variables of a history of CHD and the presence of behavior patterns Types A, B, and X (discerned by questionnaire and criteria) were analyzed for significant association. Six patients exhibited Type A Behavior Pattern, 14 patients exhibited Type B Behavior Pattern, and nine patients exhibited Type X Behavior Pattern.

The findings of chi-square were found to be insignificant. Data obtained from medical records of the patients was incomplete relating to smoking history and cholesterol and triglyceride levels. There was also no significant relationship between blood pressure and the presence or absence of a history of CHD and behavior patterns.

In conclusion an insignificant association between a past history of CHD and behavior patterns was found. These findings were not
consistent with the findings of other research probably due to the general health status of the sample used in this study. It is suggested that the sample population affected the results due to their being only an ill population. These conclusions lead to implications for further study using a larger and more heterogeneous sample.
APPENDIX A

CRITERIA FOR JUDGING BEHAVIOR PATTERNS

I. TYPE A

A. General Appearance

1. Appearance of a brisk self-confidence.
2. Decisiveness in manner in which the subject moves, speaks, sits.
3. Jaw muscles frequently semitensed, not relaxed.
4. May exhibit motor tic (e.g., rapidly pulls back angle of mouth as if clenching his teeth).

B. Motor Activities (May be exhibited in question 16.)

1. Executes motor activities in a brisk manner.
2. Uses hands in a forceful manner while speaking of something of interest to self.
3. Clenches fists, pounds desk.
4. Speech has inflection in pattern, not monotone.
5. Emphasizes various words or sentences as "battering rams" in attempts to communicate.
7. Exhibits upper chest breathing.
8. Sighs, usually at or toward the end of the expiratory phase of respiration.

C. Degree of Drive and Ambition (questions 3, 5)

1. Wife or close friend has told the interviewee "to slow down" or "take it easy."
2. Usually dissatisfied or impatient with present or past pace of economic advancement.

D. Degree of Past and Present Competitive, Aggressive, and Hostile Feelings (questions 6, 7, 8, 9, 10, 11, 12, and 15)

1. Always plays to win regardless of with whom he plays.
2. Readily admits he loves to compete.
3. Wishes respect far more than affection from associates.
4. Will usually pass cars who are driving in his lane, but too slowly to suit him.
5. Expresses negative feelings in respect to persons whom he believes needlessly delay his activities.

E. Degree of Sense of Time Urgency (questions 4, 13, 14, 15, 17, 18, 19)

1. Is always punctual.
2. Will never wait if he can possibly avoid it.
3. Will answer a question whose answer is obvious before the question is completed.
4. Hurried speech.

F. "Intrinsic" Psychiatric Traits

1. Monodirective in thoughts and actions.

II. TYPE B

A. General Appearance

1. Brisk self-confidence is not readily apparent.
2. Manner in which the subject moves, speaks, and sits is not decisive.
3. Relaxed jaw muscles.
4. Exhibits no motor tics.
B. Motor Activities

1. Executes motor activities in a slow relaxed manner.
2. Uses hands in a relaxed manner or not at all when speaking of something of interest to self.
3. Speech has a weak, tremulous or monotonous tone.
4. Quality of voice is soft, not explosive.
5. Does not usually sigh.

C. Degree of Drive and Ambition (questions 3, 5)

1. Has not been told by wife or close friend to "slow down" or "take it easy."
2. Is satisfied and patient with present or past pace of economic advancement.

D. Degree of Past and Present Competitive, Aggressive, and Hostile Feelings (questions 6, 7, 8, 9, 10, 11, 12, and 15)

1. Usually plays for enjoyment regardless of with whom he plays.
2. Does not always engage in activities or work because of the competition.
3. Wishes affection as well as respect from associates.
4. Will not usually pass cars who are driving too slowly in his lane to suit him.
5. Has no definite feeling or displays some impatience in respect to persons whom he believes needlessly delay his activities (response is usually passive and not hostile).

E. Degree of Sense of Time Urgency (questions 4, 13, 14, 15, 17, 18, 19)

1. Is not always punctual.
2. Will wait if he has to (for example, for a table in a restaurant).
3. Will wait until a question is completed before giving the answer.
4. Relaxed, casual speech.
F. "Intrinsic" Psychiatric Traits

1. Not monodirective in thoughts and actions.

2. Flexible and adaptive to changes in environment.

(Derived from Friedman 1969)
An investigational study is being conducted by Suzanne Vertuno, R.N., in relation to personality and illness under the direction of the Graduate Faculty, The University of Arizona, College of Nursing. The purpose of this study is to assist nurses in improving the care of patients by a better understanding of the personality of a patient.

If you agree to participate in this study, you will be asked questions from a questionnaire and your answers will be tape-recorded so that your answers can be analyzed at a later date. The interview will require about twenty minutes of your time.

All information will be kept confidential and your name will not be identified.

Your doctor has already given his permission for you to participate in this study.

I consent to participate in this study, as described above.

Signature________________________

Date__________________
APPENDIX C

BEHAVIOR PATTERN INTERVIEW

Before asking the following questions I want to tell you that your answers will be kept in strict confidence. Most of our questions concern themselves with your superficial habits. Many of the questions may seem silly to you--maybe they are!

1. May I ask your age?

2. What is your occupation?
   a. How long in this job?

3. Are you satisfied with your job?
   a. Why not?

4. Does your job carry heavy responsibility?
   a. Does it make you feel rushed or under pressure?

5. Would you describe yourself as hard driving and ambitious, in the sense that you wish to get things done in as quick a manner as possible, OR do you think you do things in a relatively easy going sort of way?
   a. Would your wife agree with you? She's never asked you to slow down?

6. Do people around you know when you are angry or upset?
   a. Do you show it?

7. Do you think you drive harder to accomplish things than most of your associates?

8. When you used to or now play competitive games like cards or checkers with your children, did you always let them win purposely?
   a. Why?
9. When you play any game with persons of your own age, do you play mainly to win?

10. If a car in your lane is going too slow for you, what do you do about it?

11. Do you feel any competition in your job?
   a. Do you enjoy it?
   b. Are you competitive off the job in things like golf?

12. How often are there deadlines in your work?

13. Most people get up during weekdays before 9:00 A.M., what time do you usually, uh, uh?

14. If you make a date with someone at 2:00 P.M. for example, will you be there?
   a. If that person keeps you waiting, will you resent it?
   b. Will that person know that you are annoyed?

15. If you see someone doing a job rather slowly and you could do it faster, do you become impatient watching him?
   a. Might you step in to do it yourself?

16. What irritates you most about your work or associates?

17. Do you eat rapidly? Do you walk rapidly? After you've finished eating, do you like to sit around the table and chat or do you like to get up and get going?

18. When you go out in the evening to a restaurant and you find 10 or more people waiting for a table, will you wait?
   a. Do you get impatient easily?
   b. Do you always feel anxious to get going and finish whatever you have to do?

19. Do you often have the impression that time is passing too fast for the things you'd like to get done?
   a. Do you think you hurry in doing most things?

* What I mean is--at the end of the day do you feel you have accomplished all that you had planned for that particular day?
APPENDIX D

SAMPLE PATIENT DATA SHEET

Name__________________________________________________________
Hospital Number_______________________________________________
Age___________________________________________________________
Sex____________________________________________________________
Marital Status___________________________________________________
Occupation_______________________________________________________
Previous History of CHD__________________________________________
Smoking History__________________________________________________
Weight___________________________________________________________
Other Contributing Diseases_______________________________________
Blood Pressure___________________________________________________
Results of Laboratory Tests:

Cholesterol_______________________________________________________
Triglycerides______________________________________________________
SELECTED BIBLIOGRAPHY


