



Virginia Commonwealth University
VCU Scholars Compass

Theses and Dissertations

Graduate School

1981

The Relationship Between Type A Coronary-Prone Behavior Pattern, Achievement, and Life Satisfaction

Larraine A. Felland

Follow this and additional works at: <https://scholarscompass.vcu.edu/etd>



Part of the [Psychiatry and Psychology Commons](#)

© The Author


Downloaded from


<https://scholarscompass.vcu.edu/etd/4686>

This Thesis is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.

College of Humanities and Sciences
Virginia Commonwealth University


This is to certify that the thesis prepared by Larraine A. Felland,
entitled The Relationship Between Type A Coronary-Prone Behavior Pattern,
Achievement, and Life Satisfaction, has been approved by her committee
as satisfactory completion of the thesis requirement for the degree of
Master of Science in Psychology.


Lois Huebner, Ph.D.
Director of Thesis


Phyllis Hornbuckle, Ph.D.
Committee Member


Robert Tipton, Ph.D.
Committee Member


Chairman, Department of Psychology


Elske van Panhuys Smith, Ph.D.
Dean, College of Humanities and Sciences

Date

July 30, 1981

Virginia Commonwealth
University Library

The Relationship Between
Type A Coronary-Prone Behavior Pattern, Achievement, and Life Structure

A thesis proposal submitted in partial fulfillment of the
requirements for the degree of Master of Science at
Virginia Commonwealth University

By
Lorraine A. Felland

Director: Lois Huebner, Ph.D.
Assistant Professor of Psychology

Virginia Commonwealth University
Richmond, Virginia
July, 1981

ACKNOWLEDGMENTS

I would like to express my thanks to my committee for their support and guidance in this project. Specifically, I would like to thank Dr. Tipton for his help in origination of the idea and suggestions as the thesis progressed, Dr. Hornbuckle for her statistical expertise, and special thanks to Dr. Huebner for her support, suggestions and interest.

Table of Contents

	Page
List of Tables	v
List of Figures	v
Abstract	vi
Chapter I: Introduction	1
Chapter II: Review of the Literature	4
Definition of Type A Coronary-Prone Behavior Pattern	4
Type A Behavior Pattern and Coronary Heart Disease	6
Measuring Type A Behavior Pattern	14
Type A and Achievement.	17
Life Satisfaction and CHD	20
Measurement of Life Satisfaction	24
Type A and Life Satisfaction	26
Statement of the Problem.	28
Chapter III: Method	31
Participants	31
Participant Selection	31
Instruments	32
Procedures	32
Data Analysis	33

	Page
Chapter IV: Results	34
Correlation between Type A and GPA	34
ANOVE: Type A, GPA, and Satisfaction	35
Chapter V: Discussion	39
Discussion of the Hypotheses	39
Significance for Counseling	45
Summary	45
References Notes	47
References	48
Appendix A. Informed Consent Form	52
Appendix B: Identifying Information	54
Appendix C: Jenkins Activity Survey, Form T	56
Appendix D: Life Satisfaction Survey	63
Vita	66

List of Tables

Table	Page
1. Summary of Analysis of Variance	36
2. Range, Standard Deviations and Means of Type As and Type Bs	37

List of Figures

Figure	Page
1. Computer Generated Regression of Satisfaction on GPA for Type As and Type Bs	38

Abstract

This study examined the relationship between Type A coronary-prone behavior pattern, academic achievement and life satisfaction. The subjects were 87 undergraduates selected for their extreme scores on the Jenkins Activity Survey, Form T. There were 41 Type As and 46 Type Bs. Along with the Jenkins Activity Survey, Form T the participants were administered a life satisfaction survey similar to Soper's (1979) and their official academic gradepoint average was obtained from the Academic Records office. A point-biserial correlation indicated that there was a significant ($p < .05$) relationship between Type A behavior and higher gradepoint averages. No relationship was found between Type A behavior and level of satisfaction as measured by an ANOVA. The ANOVA also indicated that there was no relationship between GPA and satisfaction for the entire group of 87 subjects. When a Pearson product-moment correlation was done with GPA and life satisfaction scores for each group separately, however, a relationship between GPA and satisfaction was found for Type Bs. Type As showed no such relationship.

The various relationships and their possible explanations and indications were discussed in depth. Significance of the results for changing Type A behavior was considered. Problems and suggestions for future research were mentioned briefly.

Chapter I

Introduction

In 1977, one third of all deaths nationwide were the result of Coronary Heart Disease (CHD) (United States National Center for Health Statistics, 1980). Coronary heart disease includes myocardial infarction, (MI), silent infarction and angina pectoris. According to Stone, Cohen and Adler (1979) a myocardial infarction occurs when an area of heart muscle dies because of failure to receive enough oxygen or nutrition. It is caused by a partial or complete occlusion of the artery; usually due to a clot. A silent infarction refers to an Asymptomatic blockage around which adequate bypass circulation has developed. Angina pectoris refers to severe pain about the heart which is the result of oxygen deficiency caused by decreased or inadequate blood supply.

In an effort to understand and prevent CHD, a great deal of research has been done on its etiology over the past century (Osler, 1910; Syme, Human, and Enterline, 1964; Antonovsky, 1968; Ibrahim, Sackett, Kantor, and Winkelstein, 1968; etc.). Among the many factors which have been associated with CHD are smoking, parental history of CHD, and high blood pressure (Rosenman, Brand, Jenkins, Friedman, Straus, and Wurm, 1975). Vineberg (1975) states that alcohol abuse, high levels of cholesterol, obesity, diet and lack of exercise have been associated with CHD also. Two other factors which have also been found to be associated with CHD are the concern of this study. They are Type A coronary-prone behavior pattern and level of life satisfaction.

(Rosenman, et al. 1975; Theorell, Lind, and Floderus, 1975).

Type A coronary-prone behavior pattern is characterized by competitive and aggressive achievement striving and a sense of time urgency along with an underlying feeling of hostility. It has been found to be correlated with CHD in a number of studies (Friedman and Rosenman, 1959; Rosenman and Friedman, 1961; Rosenman, et al., 1964, 1966, 1967, 1979, 1975; and Brand, Rosenman, Sholtz, and Friedman, 1976).

Other Studies (Sales and House, 1971; Theorell and Rahe, 1972 and Romo, Siltanen, Theorell and Rahe, 1974) have connected level of life satisfaction with CHD. These studies show that persons who exhibited a low level of life satisfaction had a higher incidence of coronary disease.

Several of the above studies (Theorell and Rahe, 1972; and Romo, et al., 1973) found that low level of life satisfaction in CHD patients was accompanied by some characteristics of the Type A behavior pattern such as hostility and time urgency. Keegan, Bhiron, Merriman and Shipley, (1979) also reported that Type A subjects showed lower levels of satisfaction with their marriages and with their achievements than Type Bs. These findings suggest that there may also be a positive relationship between Type A coronary-prone behavior pattern and low levels of life satisfaction.

Other research has shown that Type As strive to achieve more, and in many cases do achieve more, than those without Type A characteristics (i.e. Type Bs), (Glass, Snyder, and Hollis, 1974; and Glass, 1977). However, Type As consistently set their goals above the level that they can reach (Snow, 1978). Their very attempt to achieve maximally,

in some cases, foils their achievement (Glass, et al., 1974) and causes frustration. Therefore, this research seems to suggest that there would be little relationship between level of achievement and level of satisfaction for Type As because their unrealistically high goals would rarely allow them the satisfaction of reaching a goal regardless of their level of achievement. (For instance, a person with Type A behavior might achieve a grade point average of 3.80 on a scale of 4.00 yet be dissatisfied because his or her goal was to receive a 4.00.)

The focus of this study, then, will be upon the relationship between Type A coronary-prone behavior pattern, self-reported life satisfaction and academic achievement.

Chapter II

Review of the Literature

Definition of

Type A Coronary-Prone Behavior Pattern

According to Rosenman and Friedman, (1973) Type A behavior pattern can be described as 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 opposing efforts of other things or persons in the same environment. Thus this chronic struggle may consist of attempts to achieve or do more and more in less and less time or of a chronic conflict with one or a group of persons.

A person with Type A behavior pattern "never despairs of losing the struggle". Type A seem to see themselves as the "cheerful warrior" type. Rosenman and Friedman differentiate Type A behavior pattern from anxiety on this basis: the anxious person finds life overwhelming while the person with Type A behavior pattern does not.

Rosenman and Friedman emphasize that Type A is not a defect in personality but is an elicited response pattern which is probably encouraged by rewards given by Western Culture for living rapidly and aggressively. A person in our society who can perform a great many tasks in a short period of time is seen as efficient and is praised. This reinforcement strengthens his or her tendency to work rapidly.

Rosenman and Friedman also suggest that there may be a sociological factor involved with Type A behavior pattern; however, they have found no correlation between job or position and presence or absence of Type A.

In addition to Type A behavior pattern, Rosenman and Friedman also defined Type B behavior pattern. Type B is essentially the absence of Type A responses and characteristics. A person with Type B behavior pattern is not in chronic conflict nor is he or she terribly interested in achieving or doing more in less time (Rosenman and Friedman, 1971). Type Bs are the kind of people who are more involved with the joy which they receive from a particular object or activity than with the rewards they will receive upon completion of the activity or with the monetary value of an object.

These two initial categories, Type A and Type B, have been divided into four subcategories; A₁ which is a fully developed pattern A; A₂ which is less well developed pattern A (the person exhibits some of the Type A behaviors but not all and not to the extreme of those exhibited by A₁s); B₁ which is the less well developed pattern B in which the person may exhibit some Type A behaviors in a mild degree; and B₂ which is the fully developed pattern B in which the person exhibits none of the Type A behaviors (Friedman and Rosenman, 1971; and Glass, 1977).

Type A Behavior Pattern and Coronary Heart Disease

Friedman and Rosenman (1973), the developers and primary researchers of the Type A coronary-prone behavior pattern theory, report that they became interested in the pattern of behavior which they later named Type A in 1954. They began to suspect that factors other than those traditionally thought to be precursors of CHD such as smoking, obesity, etc. were associated with CHD. Their interest increased when they found research which suggested that the relative immunity of which American women were not caused by a specific sex hormone. (Women of other nations and races were not equally immune to CHD as they would have been if a sex hormone were the cause of freedom from CHD.) Friedman and Rosenman conjectured that white American women were protected from CHD by their lack of exposure to the "socio-economic milieu" to which men were exposed.

Their review of the literature produced several pertinent studies. Rosenman and Friedman report that a study in 1943 by Dunbar showed that CHD patients were hard-driving, goal-directed individuals. They also report that Kemple (1945) found that CHD patients were relentlessly ambitious.

In 1956, Rosenman and Friedman undertook their own study to determine whether this report striving for achievement was connected with CHD in the minds of businessmen and cardiologists. They distributed a survey to 100 businessmen and 75 cardiologists asking them to pick the cause of CHD from a list of ten possible causes. Seventy-five percent of the businessmen and physicians picked "excessive drive -- meeting deadlines" to be a major cause of heart attack.

After conducting this survey Rosenman and Friedman noticed that their own young (under 55 years of age) coronary patients showed this ambitious goal-directedness. Based on observations of their own patients they isolated other traits, such as time urgency, and included them in their emerging definition of Type A behavior.

In 1959, Friedman and Rosenman studied the relationship between Type A behavior pattern and cardiovascular findings. To select the subjects in each group (Type As and Type Bs) they used lay selectors to whom the behavior patterns were explained. Type Bs were matched to Type As as closely as possible on physical and physiological dimensions. A third group of men (Type Cs) were also selected. They exhibited little desire to compete, similar to Type Bs, but exhibited a chronic state of anxiety which Type Bs did not. (Type Cs had all been totally blind for ten years or more.) These three groups were compared by age, height, weight; work, exercise and sleep habits; dietary, drinking and smoking habits; the incidence of parental CHD; serum cholesterol level and speed of blood clotting as well as incidence of CHD.

The findings of this study seem to show that men possessing Type A behavior pattern exhibit higher serum cholesterol, shorter blood clotting time and higher incidence of CHD than did subjects with Type B behavior pattern or those showing anxiety states. There were 23 cases of CHD out of 83 Type A subjects compared to only 3 of 83 Type B subjects and 2 of 46 Type C subjects. Diet, smoking, drinking and exercise habits were comparable across all three groups.

In order to determine whether the higher incidence of CHD was due to the correlated factors of serum cholesterol level and blood clotting time, each of these factors was examined separately. Rosenman and Friedman found that of the 36 men in Group A with a serum cholesterol level exceeding 250 mg. per 100 ml. 10 (26%) showed clinical coronary disease. Of the 14 group B men having a serum cholesterol level over 250 mg. per 100 ml., only 1 showed clinical coronary disease. According to Rosenman and Friedman these results show that higher serum cholesterol is an "accompaniment of overt behavior pattern A rather than a cause of the higher incidence of clinical disease" (CHD). (p. 1292)

Concerning the shorter blood clotting time, Rosenman and Friedman emphasized the fact that while the blood clotting time of the Type A group was "relatively rapid", it was similar to that of the subjects in the Type B group. They suggest that this factor was also an accompaniment of Type A behavior rather than a cause of CHD.

In 1961, Rosenman and Friedman again turned their attention to women who, in our Western Culture, had remained relatively immune to CHD. Some researchers believed that this freedom from CHD was caused by hormonal make-up; however, Rosenman and Friedman suggested that fewer women are placed in situations which elicit Type A behavior pattern and this results in fewer Type A women and, therefore, fewer women with CHD. In this study Rosenman and Friedman again used lay selectors to choose subjects. The lay selectors were to choose apparently healthy women from 30 to 50 years old on the basis of their behavior pattern.

One hundred and six women were selected in the Type A group. Nineteen nuns selected by their Mother Superior were also included to insure incorporation of subjects who did not smoke or drink. One hundred and twelve subjects were selected for group B plus 20 nuns selected again by their Mother Superior. Each woman was interviewed concerning her habits, marital history, parental history of CHD, personal medical history, ingestion of drugs, vocational and avocational activities, responsibilities and time pressures, smoking, dietary, sleep and physical exertion habits.

Rosenman and Friedman found that 97% of Type A women and 36% of Type B women worked outside the home. Sixty-four percent of the Type A women were married and working outside the home compared to only 20% of Type B women. This lends support to Rosenman and Friedman's suggestion that Type A is an elicited behavior and that women have less heart disease because fewer are exposed to situations which elicit it.

They also found that approximately four times as many Type A women, both premenopausal and postmenopausal, showed evidence of CHD as Type B women (24 cases of CHD in Group A; 5 in Group B). Height, weight, diet, ingestion of animal fats and alcohol, smoking, exercise, presence or absence of parental CHD and time for blood coagulation appeared to be the same for subjects with CHD as other subjects.

Rosenman and Friedman state that comparison of a group of women (nuns) who did not smoke or drink yet who showed a higher frequency of heart disease among Type As, confirms their conclusion that smoking and drinking in individuals with Type A behavior pattern are associative

factors and not causative factors of CHD.

Kenigsberg, Zyzanski, Jenkins, Wardwell, and Licciardello (1974) found in a study of Connecticut Hospital patients who were 22 to 64 years old that CHD patients exhibited more Type A behavior and were more hard-driving than noncoronary patients. This study again associates Type Behavior pattern with CHD.

These three studies (Friedman and Rosenman, 1959; Rosenman and Friedman, 1961; and Kenigsberg et al., 1974) seemed to link CHD with Type A behavior pattern; however, the studies did not show that Type A was a precursor of CHD. In 1960, Rosenman et al., began a prospective study called the Western Collaborative Group Study (WCGS) (Rosenman, et al., 1964). They began by seeking assistance from 11 businesses in the San Francisco and Los Angeles areas. They asked that any man aged 39 to 59, free of CHD and serious illness participate in the study. A total population of 3,524 men were studied with each subject serving as his own control. One hundred and thirteen subjects were eliminated because of manifest CHD at the time of intake. The 3,411 men remaining were grouped according to age with 2,416 between 39 and 49 and 955 between 50 and 59. These men were questioned about a number of things including personal health history, parental history, smoking, drinking and dietary habits. They were also classified as Pattern A or B based on an interview technique designed to differentiate between the two patterns.

After two years, Rosenman, et al., (1966) found that as a group, those subjects who had developed CHD had earned less, exercised less, had less often 'never smoked', and exhibited higher serum beta/alpha lipoprotein ratios. These differences were found to be significant at

the .05 level of confidence. More significant ($p < .01$) however, were 1) parental history of CHD; 2) elevated diastolic blood pressure; 3) higher mean serum cholesterol and triglyceride levels; and 4) presence of Type A behavior pattern. Type A behavior pattern was present in 8% of the younger and 75% of the older subjects with CHD. This was much higher than the prevalence of pattern A in the total group at risk. (Approximately 46% of the total group were classified as Type As.)

In 1966, Rosenman, et al., also studied subjects in the WCGS who showed no incidence of CHD in an effort to predict immunity to CHD. They found that in subjects aged 39 to 59 ($n=2,998$) the largest group which evidenced no CHD were those with pattern B₁ and low serum triglyceride level and low serum beta/alpha-lipoprotein ratio. The next largest group was those with pattern B₁ and higher serum beta/alpha-lipoprotein levels.

In 1967, Rosenman, et al., found, in a further analysis of the WCGS population, that there was a significant recurrence ($p < .05$) of myocardial infarction in younger subjects (aged 39-49) with Type A behavior pattern. They also found that Type A behavior was exhibited by 73.9% of subjects whose infarction was fatal on the first attack and by 76.5% of subjects whose infarction was fatal in the first or recurring attacks compared to the total subject pool in which only 48.9% were classified as Type As.

Rosenman, et al. (1967) in a second study, reported that for those subjects of the WCGS who were 39 to 49 years old there was a statistically significant difference ($p < .05$) in frequency of unrecognized MI in those patients with any of the following: parental history of

CHD, higher annual income, fasting serum triglycerides over 150mg./100ml., and Type A behavior pattern. Most cases of unrecognized infarction were associated with Type A behavior pattern independent of Blood pressure, serum lipid or lipoprotein levels or any other factor under study. "The frequency of infarction in Type A subjects was greater than that in Type B subjects whether or not they possessed a parental coronary disease history, and elevated or normal diastolic blood pressure, a higher or lower serum beta/alpha-lipoprotein ratio or were smokers or non-smokers." (p. 780)

In 1969, Caffrey studied monks from 10 Trappist and 17 Benedictine Monasteries across the country. He found that those monks who were rated the highest on the Type A scale had the highest rate of myocardial infarction. Not only do these findings agree with those of Rosenman, et al., they also reflect data collected from a wide geographic area and indicate that Type A behavior pattern is not limited to the Southern California area.

As part of the four and a half year follow-up of the WCGS, Rosenman, et al., (1970) found again that increased incidence of CHD was associated with parental history of CHD, elevated blood pressure, higher serum levels of cholesterol and triglyceride, higher levels of beta-lipoproteins and Type A behavior. They found that the association of Type A behavior pattern was not ascribable to an association with other risk factors as determined by bivariate analysis.

The final follow-up study of the WCGS after 8 1/2 years (Rosenman, et al., 1975) has shown results which are nearly identical to the earlier follow-ups. The incidence of CHD was again significantly

associated with 1) parental history of CHD, 2) cigarette smoking, 3) Type A behavior pattern, 4) systolic and diastolic blood pressure, 5) serum levels of cholesterol and triglycerides and the beta/alpha lipoprotein ratio. In this study, Rosenman, et al., used the Mantel-Haenszel procedure, a kind of multivariate analysis, to analyze the association between these factors and CHD. They found that the predictive relationship of the Type A behavior pattern to CHD could not be explained away by other risk factors, just as they had four years earlier in 1970.

In 1976, Brand, Rosenman, Sholtz, and Friedman analyzed data from the WCGS and the Framingham, Massachusetts study. They found that the predicted individual CHD risk based on the WCGS data was highly correlated with predicted risk levels using a Framingham study equation for the same risk factors. They reported that various statistical analyses undertaken in the study such as Pearson product-moment correlations and multivariate analyses indicated that substantial risk of CHD is associated with the Type A behavior pattern, and that Type A behavior does not diminish as a risk factor in older men.

Based on these retrospective and prospective studies it seems safe to say that Type A coronary-prone behavior pattern is a precursor of CHD and possibly a causal factor. As Irving A. Wright said at the 169th annual meeting of the Medical Society of the State of New York General Session in 1975 (Wright, 1975), "These (Type A and B) life patterns must now be accepted by all who treat cardiovascular disease."

Measuring Type A Behavior Pattern

In the earliest studies of Type A behavior pattern, (Friedman and Rosenman, 1959; and Rosenman and Friedman, 1961) the subject selectors were lay people to whom the behavior pattern had been described. These selectors were either the prospective subjects' colleagues or superiors. They were effective at differentiating between the two behavior types with only minimal training. This method of differentiation was not deemed appropriate for the Western Collaborative Group Study, however, because it was not sufficiently standardized. For the WCGS, Rosenman and Friedman (1964) developed a "standardized stress interview". For this stress interview, the interviewers are usually graduate students, nurses or others who have had experience observing people. They undergo a period of training in order to learn to differentiate Type As from Type Bs. In the interview, the interviewer asks the subject approximately 25 questions concerning his ambitions, his level of competitiveness and his sense of time urgency. Subjects are then classified on the basis of their overt actions during the interview and the content of their answers.

Another method of assessing Type A behavior pattern is an objective self-administered questionnaire called the Jenkins Activity Survey (Jenkins, Rosenman and Friedman, 1967; Jenkins, Rosenman and Friedman, 1968; Zyzanski, and Jenkins, 1970; Jenkins, Zyzanski and Rosenman, 1971; and Jenkins, Rosenman and Zyzanski, 1974). This scale consists of 44 items. The Type A/B pattern is based on 21 of the 44 items and results in a continuous rating scale which runs from 0 to 21. Those scoring high on the scale are Type As while those scoring low are classified

as Type Bs. The JAS includes such questions as "Has your spouse or some friend ever told you that you eat too fast?: A response of "Yes, often" is classified as a Type A response. "Yes, once or twice" or "No, no one has told me this." are Type B responses. Most of these questions are based on items from the "standardized stress interview".

Several studies have assessed the predictive validity of the JAS, with positive results. Jenkins (1971) found that 83 coronary patients chosen from the WCGS scored significantly higher on the A scale of the JAS than a sample of 524 non-coronary men. In 1974, Jenkins, et al., found that the JAS predicted manifestation of CHD in a previously healthy group of subjects ($p=0.01$ by a one tailed probability test).

Based on an interval of 1 year, the test-retest reliability of the Adult JAS was .66 (Jenkins, et al., 1971). Ninety percent of the 2,750 men who took the survey had less than a 10 point difference in their JAS scores after four years.

Results of the JAS also agree with results of the stress interviews 73% of the time (Jenkins, 1971). Extreme JAS scores agree with assessments made in stress interviews 88-91% of the time. While the JAS misclassifies too many subjects to be used in clinical settings, it is often the instrument of choice in experimental studies because it is an objective instrument that is easily administered to large groups.

Glass (1977) has modified the JAS to make it appropriate for college students. This required minor changes in only 5 items. Instead of dealing with work and job, the questions deal with school and homework. Glass reports that the median score on the JAS Form T for college students is between 7 and 8, where 21 is the most extreme A score

and 0 is the most extreme B score. This version of the JAS was the most appropriate for use in this study.

Type A and Achievement

One of the defined traits of pattern A behavior is high levels of achievement striving. This has been shown in a number of studies. In one such study (Burman, Pennebaker, and Glass, 1973) Type As attempted more complex arithmetic problems than Type Bs when told there was no time limit on completion of the items. However, when told there would be a 5 minute time limit there was no difference between Type A and B. This seems to show that Type As work at a near capacity level regardless of presence or absence of a deadline.

Snow (1978) found that Type As consistently set higher goals for themselves than do Type Bs. In a study involving 5 puzzles, Type As set higher goals for themselves initially and did not modify these goals to a level which they could achieve as the Type Bs did.

Carver, et al., (1976) when studying suppression of fatigue on a treadmill test, found that Type As expended greater effort than did Type Bs. Carver suggests that Type A behavior pattern is a coping style that facilitates the attainment of goals and rewards. He also suggests that fatigue suppression is instrumental in achieving these goals.

This explanation of fatigue suppression fits well with Matthews, Glass, Rosenman, and Bortners' (1977) findings. They analyzed the standard interview used to assess the Type A coronary-prone behavior pattern in order to identify a subset of factors related to heart disease. Only two factors were found to be associated with subsequent CHD. They were Competitive Drive and Impatience.

In 1978, Matthews and Saal found that Type A behavior pattern subjects in general received scores on the Thematic Apperception Test which were unrelated to achievement, power and affiliation motives. However, extreme Type As (A_1) scored higher on achievement motivation. Similarly, Burman, et al., (1975) found that Type A college students scored higher than Type Bs on the n-Ach (need for achievement) scale of the Edwards Personal Preference Schedule ($p < .01$). Based on Heckhausen's (1967) findings that those with higher motivation achieve more, it seems logical to assume that extreme Type As will achieve more than A_2 s and all Type Bs.

There is some evidence to support this assumption. Burman, et al., (1975) reported that college students with Type A behavior pattern showed a higher average school rank than those with Type B behavior pattern ($p = .05$). They also showed a similar difference for Scholastic Aptitude Test Scores. Glass (1977) reports that Type As remembered more verbal and pictorial items than Type Bs on a test of immediate recall ($p < .02$). (Standard measures of IQ are not related to Type A behavior pattern. Glass, 1977) Glass also reports that Type A college students earned reliably more academic honors than Type Bs.

This all-out urge for achievement may not always be helpful in gaining desired goals, however. In a task which involved differential reinforcement of low rates of responding, Type As did more poorly than Type Bs (Glass, 1974). On a DRL task the subject must wait during a fixed time interval before responding. Premature responding resets the time relationship and the subject must wait longer before responding in order to be rewarded. As mentioned earlier, Type As' scores were significantly lower than those of Type Bs ($p < .05$). Those subjects with

Type A behavior pattern performed more poorly because they did not wait long enough after previous reinforcement to respond.

Life Satisfaction and CHD

Life satisfaction has been studied in regard to its association with CHD. A number of studies indicate that low levels of life satisfaction are related to coronary heart disease. Liljefors and Rahe (1970) found a positive curvilinear relationship between life dissatisfaction as measured by interview and severity of CHD in their subjects. This correlation was found to be significant at the .025 level of confidence. In this study Liljefors and Rahe used monozygotic twins to eliminate biological differences between groups. He noted, however, that there were more behavioral similarities among those in the coronary group than between these subjects and their twins.

Sales and House (1971) examined three studies. The first of the three studies was done with random samples of 3 scientific groups, biologists, chemists and physicists (N=4000) and a nation-wide sample of 3000 working class men. Percentage of job dissatisfaction for each occupational type was estimated from the percent of individuals within each group that answered no to the following question: "If you had your life to live over would you like to wind up in the same line of work as you are in now?" The second study used 207 lawyers and 68 professors from the Detroit area as its subject pool. The third study used a national cross-section of working men - 127 managers, 55 sales workers and 46 clerical employees. Each occupational group in these three studies was assigned an appropriate census classification. National statistics on Heart disease mortality rate for each of these classifications were compared with satisfaction levels. Sales and House found job satisfaction*

*Job satisfaction and life satisfaction have been found to be closely related (Gallivan, 1980)

to have a strong negative correlation with rate of death from heart disease regardless of social status as determined by census classification.

In 1972, Theorell and Rahe did a study in which 62 middle-aged Swedish male survivors of their initial myocardial infarction were compared with 109 Swedish male subjects who were free from CHD. The Post-MI group indicated that they worked more hours overtime, got less satisfaction from their jobs and felt greater hostility when slowed down when compared with non-coronary subjects.

Romo, et al. (1973) studied 229 men from three countries (Finland, Sweden, and America) who had survived a myocardial infarction. They asked the men fourteen questions about work behavior, time urgency, and life satisfaction. Six of the fourteen questions showed high "subscription" rate by persons in all samples. These were questions about the amount of responsibility at work and overtime work, time urgency, hostility when slowed down by others, dissatisfaction with level of education and dissatisfaction with achievement of life goals.

Theorell, et al., (1975) studied a group of 6,579 subjects aged 41 to 61 via questionnaire to determine whether a relationship existed between CHD and several factors. The subjects were administered a life-change scale and questions regarding work, family and personal factors as well as education, income, marital status and occupation. After a fifteen month follow-up period, 32 of the men involved had developed CHD. Among the factors which seemed to predispose development of MI was dissatisfactions with work and family life.

A number of factors correlate with dissatisfaction with life; among these is status incongruence (Robinson and Shaver, 1973; and Jenkins, 1971).

Robinson and Shaver reported that those with high education and low paying jobs were the most dissatisfied, while those with low education and high paying jobs were the most satisfied.

Several studies have linked status incongruence with CHD. Bruhn, Wolf, Lynn, Bird, and Chandler (1968) reported status incongruence as a possible cause of CHD in their study in Nazareth, Pennsylvania. Thirty-eight percent of the population of Nazareth (n=1,549) volunteered to participate in their study. Of these, 80 were CHD patients or showed some signs of CHD. These were compared with the remaining 1,469 which were free of CHD. The status incongruence found in the CHD patients was accompanied by frustration and family problems. Lee and Schneider (1958) found a higher incidence of CHD in non-executives than in executives. They studied 1,083 executives and 1,203 non-executives. The executives included corporate officers, members of boards of directors and general managers. The non-executive group consisted of stenographers, clerks, supervisors and assistant supervisors. Lee and Schneider attributed the higher level of CHD in non-executives to the non-executives failure to live up to the demands of the environment. Pell and D'Alonzo (1961) found that executives had the lowest incidence rate of CHD while the highest rate of CHD was in the lowest salaried group. The executives included managers, directors, and other executives while the lowest salaried group consisted of clerical workers. Shekelle (1969) also found that incongruities in social status are linked with CHD. These incongruities were determined to be present when the subject's class origin was different from his present social class, when his education level was lower than his wife's, or when his education level was lower

than his job level. These data seem to suggest that when a person does not live up to societies demands or achieve his or her own goals, he or she becomes frustrated and dissatisfied and also risks a higher incidence of CHD.

The findings of most of these studies must be accepted with caution due to the fact that most of them are retrospective studies. The impact of CHD upon subjects lives may be such that dissatisfaction appears after the subjects become aware that they have CHD. However, one of these studies (that by Theorell, et al., in 1975) suggests that this is not the case. In this study satisfaction was measured prior to the development of CHD and it suggests that dissatisfaction with life precedes CHD.

Measurement of Life Satisfaction

Most of the studies concerning life satisfaction which have been mentioned previously (Theorell and Rahe, 1972; Romo, et al., 1973; Theorell, et al. 1975) have measured satisfaction by a single question or a series of questions to which a self-reported answer was given. Robinson and Shaver (1973) report that this is a typical method of measuring life satisfaction. They say that satisfaction is often measured by only one global question, such as "Are you satisfied with your life overall as it is now?" Other measures of satisfaction use a series of questions concerning satisfaction with various facets of life. These are called faceted measures. Evans (1969) found that faceted and facet-free (a single global question measure) measures of satisfaction yield highly correlated results and suggests that the decision of which form to use be left to the discretion of the user.

The test-retest reliability coefficients of satisfaction measures range from .59 to .70 over time periods which range from one month to six months (Robinson and Shaver, 1973). After a two year interval a correlation of .67 with the original results was found.

Robinson and Shaver also report that there are relatively insignificant differences between men and women in level of satisfaction, although they found that married people were more satisfied than single people. They also found that blacks tended to be somewhat less satisfied with their lives than whites, although this did not show up in every survey.

The particular survey used in this study is a faceted scale. It focuses on areas of life similar to those examined by Soper (1979)* in his study of life satisfaction of faculty members. The facets employed in Soper's scale included the following areas: profession, professional achievement, marital status, marriage, children, interpersonal relations in general, health, health of family, economic situation, religious beliefs, participation in community activities, leisure activities, personal values, amount of success in reaching goals, amount of happiness experienced, and life in general. Modifications were made for students: profession was changed to major, professional achievement was changed to academic achievement and the question concerning children was dropped. Response alternatives are arranged on a 1 to 5 scales from "Not Satisfied" to "Very Satisfied" with three intermediate levels. Numerical answers to the 15 questions are averaged to give an overall life satisfaction score. This score, thus, takes into account many areas of life rather than relying on one global question.

*No reliability or validity data is available for this particular test.

Type A and Life Satisfaction

While no study has focused specifically on the relationship of life satisfaction and Type A coronary-prone behavior pattern, a number of studies present relevant data,

Theorell and Rahe (1972) found in their study of CHD that not only were their post-MI subjects less satisfied, they were also more hostile when slowed down, and they worked more hours overtime than the non-coronary subjects. These two traits are both characteristics of the Type A behavior pattern.

Romo, et al., (1973) found a pattern similar to that found by Theorell and Rahe. Low levels of life satisfaction went hand in hand with time urgency, hostility and much overtime work, again traits that characterize Type A behavior pattern. Hostility and time urgency were also found to be factors in MI, along with dissatisfaction with work and family life in Theorell's (1975) prospective study.

Keegan, et al. (1979) did a study involving 60 male patients taken from a cardiologist's practice. They found, as expected, that there were significantly more Type A subjects in the group found to have CHD than in the group free of CHD. While there were few differences between the Type A and Non-type A (Type B) subjects on the Minnesota Multiphasic Personality Inventory, the Type A subjects did seem to be more self-aware, more self-critical and more dissatisfied. The Type A subjects also reported dissatisfaction in their marriages and with their achievements and life goals.

These studies plus the fact that Type A subjects have been shown to set their goals higher than they can reach (Snow, 1978) point toward a close relationship between Type A coronary-prone behavior pattern and dissatisfaction with life. It may be that dissatisfaction with family life and level of achievement encourage Type As to constantly try to achieve more and this perhaps is the root of the Type A coronary-prone behavior pattern.

Statement of the Problem

A review of the literature concerning Type A coronary-prone behavior indicates that little research has been done on the relationship between Type A behavior and life satisfaction. Keegan, et al., (1979) reports that Type As are more dissatisfied with their marriages and their achievements than Type Bs, and several studies (Romo, et al, 1973; Theorell, et al., 1975) which link low levels of life satisfaction to CHD also report that the subjects showed traits which are characteristic of Type A behavior such as time urgency and hostility when slowed down. The fact that dissatisfaction has been found in conjunction with other traits of Type A behavior suggests that dissatisfaction with life may be a factor or trait in Type A behavior pattern. These data suggest that Type As will be less satisfied with their lives than Type Bs will. Thus the first focus of this study will be the relationship between Type A coronary-prone behavior and life satisfaction.

The review of the literature also shows that there are conflicting data concerning whether or not people with Type A coronary-prone behavior pattern achieve more than those with Type B. Glass (1974) reports that when Type As are forced to wait in order to attain a goal (a DRL procedure) they do not perform as well as Type Bs and that Type A and B subjects achieve equally when a time limit is placed on a task. However, he also reports that when a time limit is not present, Type As do achieve more.

Glass also discusses situations outside the laboratory in which Type As achieve more. For instance, he found that Type As have higher Scholastic Aptitude Test scores, higher class rank and receive more academic honors than Type Bs. These results suggest that achievement and Type A coronary-prone behavior may be positively related; that is, when a subject exhibits Type A behavior rather than Type B behavior, he or she will achieve more academically. The relationship of achievement and Type A coronary-prone behavior will be the second focus of this study.

Based on the definition of Type A behavior as a pattern in which the individual is constantly striving to achieve and gain more (Rosenman, et al., 1973), it is not surprising that Snow (1978) found that Type As consistently set their goals higher than they can reach. Type Bs, on the other hand, modified their goals to levels which they could reach.

Because Type As strive to achieve a level above which they can reach, Type Bs may actually be more satisfied with their level of achievement than Type As. This may be the case even when Type Bs achieve less. This suggests that for Type A students there is no relationship between academic achievement and their satisfaction with life. The relationship of satisfaction and achievement is the third focus of this study.

The three foci of this study - 1) the relationship between Type A behavior and life satisfaction, 2) the relationship between Type A behavior and achievement and 3) the relationship between achievement and satisfaction - can be transformed into hypotheses.

The Hypotheses of this study are as follows:

HYPOTHESIS ONE: Type A coronary-prone behavior is negatively related to life satisfaction.

HYPOTHESIS TWO: Type A coronary-prone behavior pattern is positively related to academic achievement.

HYPOTHESIS THREE: Life satisfaction is not related to academic achievement for participants who exhibit Type A coronary-prone behavior pattern.

Chapter III

Method

Participants: The total participant pool was comprised of 216 undergraduate volunteers from freshman and sophomore level psychology, political science, history, and English classes at Virginia Commonwealth University. Their mean age was 22; their mean school attainment level was sophomore, and their mean overall grade point average was 2.63. This grade point average is representative of Arts and Sciences students at VCU. (Dobbie, 1981, Personal Communication.)

Participant Selection: Participants used in the study were selected from the total participant pool on the basis of their scores on the Jenkins Activity Survey, Form T for Students. In order to compare only extreme Type A's (A_1 s) with extreme Type B's (B_2 s), subjects who scored less than 13 or greater than 5 were eliminated. The 87 remaining subjects had a mean age of 22.5, a mean grade point average of 2.75 and a mean credit attainment equivalent to sophomores. Forty-one of these 87 were Type A's (A_1 s) and 46 were Type B's (B_2 s). The Type A's (A_1 s) mean score on the JAS was 14.30 while the Type B's (B_2 s) mean score was 3.72.

Of these 87 subjects, 56 were females and 31 were males. Of the 56 females, 25 were Type A's and 31 were Type B's. Sixteen of the 31 males were Type A's and 15 were Type B's.

Sixty-four of the 87 subjects were white and 20 were black. Three did not specify their race. Of the 64 white participants, 37 were Type

A's and 27 were Type B's. The number of Type A's among the black participants was 4 while Type B's numbered 16. All three unspecified students were Type B's.

Instruments: Instruments administered included the Jenkins Activity Survey, Form T for students (Glass, 1977) and a life satisfaction scale similar to that used by Soper (1979). Soper's (1979) life satisfaction scale was modified to make it suitable for use with students. (See Appendix C). Reliability coefficients for these instruments have been discussed in a previous section. (See pages 13 and 17). A consent form allowing the experimenter access to the participants' official cumulative gradepoint average and assuring the subjects of confidentiality was also signed by each subject.

Procedures: Participants were drawn from classes which were accessible to the experimenter. They were also selected to fill several requirements. In order to insure comparability of curriculum and gradepoint averages, all of the classes were in the School of Arts and Sciences. In order to insure a wide range of gradepoint averages, all of the classes were either freshman or sophomore level classes. (Those students with low GPA's tend to withdraw from school after several years which produces a truncated range (Dobbie, 1981, Personal Communication).)

The above instruments were distributed in the aforementioned classes with a request to return the instruments to the instructor of the class or to the experimenter at the next class period if the students wished to participate.

No mention was made of Type A behavior in the description of the study which was instead termed a "study of stress and achievement". The students were assured that all material would be kept confidential and used only for research purposes. The cumulative gradepoint average of each of the subjects was obtained from the Office of Academic Records and used as a measure of achievement. All material from this department was returned to the Academic Records department where it was shredded.

By way of debriefing, the volunteers were given an address where the experimenter could be reached to answer their questions, and copies of the final paper will be sent to those who requested it.

Data Analysis: In order to test Hypotheses One and Three, a 2x2 ANOVA was performed using 2 levels of JAS scores (A_1 s and B_2 s) and 2 levels of GPA (High and Low) as the independent variables and using life satisfaction scores as the dependent variable.

In order to test Hypothesis Two, classifications resulting from the Jenkins Activity Survey, Form T and cumulative gradepoint averages were analyzed by means of a point-biserial correlation to determine the relationship between these two variables.

Chapter IV

Results

Correlation between Type A and GPA: Analysis of the JAS, Form T results and the cumulative gradepoint averages for the 87 extreme (i.e., A₁s and B₂s only) participants yielded a point-biserial coefficient of .28 ($p < .05$). An identical analysis using the entire group of 216 participants yielded a point-biserial coefficient of .22 ($p < .01$). This indicates that Type A's received higher cumulative GPA's than did Type B's. While these results are significant and therefore show that Type A behavior and GPA are related, the results indicate that less than 9% of the variance is accounted for by this relationship. This indicates that other factors are also involved in GPA attainment.

In order to determine whether these results were confounded by other variables such as sex and race, several post-hoc analyses were done. A Chi-square test ($\chi^2 = 11.51$, $p < .05$) showed that significantly fewer black students than white students exhibited Type A behavior. The possibility of the relationship between Type A behavior and GPA being confounded by race was eliminated, however, when a point-biserial correlation between race and GPA showed no significant relationship. A Chi-square test of sex and Type A behavior also yielded no significant results and thus eliminated sex as a possible confounding variable. These results seem to show that white college students are significantly more prone to Type A behavior than black college students. It also suggests that college women are as prone to Type A behavior as college men.

ANOVA: Type A, GPA and Satisfaction: The means and standard deviations of the three variables (Type A/B, GPA and life satisfaction) were computed followed by a 2 (GPA) x 2 (Type A/B behavior) ANOVA using life satisfaction scores of the 87 extreme group participants as the dependent variable. The GPA's were divided into a "High" group and a "Low" group using the median (2.6) as a dividing point. This ANOVA yielded no significant F values (See Table 1). However, the effect of GPA on satisfaction approached significance ($p < .07$).

A Pearson Product-Moment correlation between GPA and satisfaction using the extreme group of 87 yielded an r of .28 which was significant at the .01 level. An identical test done with the entire subject pool of 216 subjects yielded an r of .10 which was not significant. Because one of the main focuses of the study was Type A behavior, a Pearson Product-moment correlation was done with the Type A group and Type B group separately. A significant relationship was found between GPA and satisfaction in the Type B group ($r = .29$, $p < .05$) but not in the Type A group. This relationship occurred despite the similar range of scores on the life satisfaction scale and GPA for the two groups. (See Table 2) A comparison between Type As and Type Bs can be seen in Diagram 1. Again, while the correlations are significant only a small part of the variance in satisfaction is explained by GPA.

To determine whether these results were confounded by either race or sex, point-biserial correlations between sex and satisfaction, and between race and satisfaction were done. Neither of these yielded significant results.

Table 1
Summary of Analysis of Variance

Source	SS*	df	F
Treatment	1.71	3	1.38
Type	.39	1	.94
G P A	1.32	1	3.19
Type *G P A	.00	1	.01
Error	34.71	84	
Total	36.42	87	

*All numbers in this column were rounded to two decimal points.
Type *GPA was .004 before being rounded off.

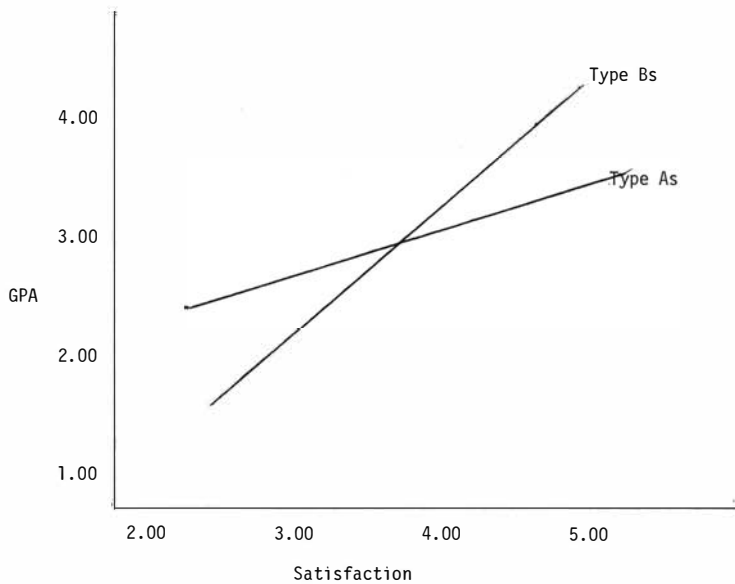
Table 2

Range, Standard Deviations and Means
of Type As and Type Bs.

		Mean	S.D.	Range
Type A	GPA	2.96	.76	0.00 - 4.00
	Satisfaction	3.72	.63	2.00 - 4.73
Type B	GPA	2.57	.56	1.16 - 4.00
	Satisfaction	3.58	.65	2.00 - 5.00

Diagram 1

Computer Generated Regression of Satisfaction
on GPA for Type As and Type Bs



Chapter V

Discussion

Three main hypotheses were examined in this study. The first hypothesis examined the relationship between Type A behavior and life satisfaction. It was predicted that Type As would be less satisfied with their lives than Type Bs would be. This hypothesis was not supported. The analysis of variance showed no difference in satisfaction between participants manifesting Type A and Type B behavior. This indicates that the Type As report being as satisfied with their lives as Type Bs. It also indicates that Type As' striving for achievement most likely does not spring from significantly greater dissatisfaction with their lives.

There are several possible explanations for these results. First of all the life satisfaction survey may not have been a valid measure of life satisfaction since no validity data were available for the survey used. The validity of other similar surveys has been supported (Robinson and Shaver, 1973) however, which would indicate that this survey is most likely valid. According to Gallivan (1980) the only valid way to measure a subjective construct such as satisfaction is via a self-report survey such as the one used here.

Secondly, it is possible that the dissatisfaction which has been measured in other studies (Liljefors, et al., 1970; Sales and House, 1971; Theorell and Rahe, 1972; Romo, et al., 1973) is simply an effect of CHD since all of these studies were done using participants who had previously been diagnosed as having CHD. While there may be a relationship

between Type A behavior and dissatisfaction with life after the onset of CHD (Type As may be more dissatisfied with a restricted lifestyle.) there seems to be no relationship between life satisfaction and Type A behavior for participants in this study. These results may also indicate there is no relationship for Type A subjects who do not have CHD.

Theorell, et al. (1975) did, however, find dissatisfaction among the participants in their study prior to onset of VCHD. The subjects of this study were 9097 members of a construction building workers trade union (not necessarily Type As). The findings were based on a questionnaire which measured satisfaction by asking two questions: one concerning satisfaction with work and one concerning satisfaction with home life.

There are several possible reasons for the discrepancy in satisfaction levels between Theorell, et al's. (1975) study and this one. First of all Theorell et al's. subjects were between 41 and 61 years old while the participants of this study had an average age of 22.5. This difference in age of subjects may be a potent factor. Robinson and Shaver (1973) report a number of studies which show that satisfaction decreases after age 30. The students in this study were just beginning their lives while the subjects of Theorell et al's. study were nearing retirement age and the end of their "productivity".

Another possible cause of the discrepancy in satisfaction between the two studies is the method which was used to determine satisfaction. Theorell et al's. (1975) study focused on only two areas of life while this study spread the focus across 15 areas. Dissatisfaction with only one area in Theorell et al's. study would have weighted the results in

that direction. In this study, however, the participants would have to be dissatisfied with a number of areas of their lives in order to sway the results to the dissatisfied end of the scale.

A third difference in the two studies which may account for the different results is the social status of the subjects. The subjects in Theorells study were blue collar workers who had only high school or trade school educations. The subjects in this study were college students. According to Robinson and Shaver (1973) persons with lower social status as determined by education and occupation consistently report less satisfaction than those with higher status. Thus the lower social status of Theorells subjects may have been a confounding factor in that study.

The second hypothesis examined the relationship between Type A behavior and academic achievement. It was predicted that participants whose scores on the Jenkins Activity Survey, Form T indicated that they possessed well developed Type A behavior and would achieve a higher cumulative gradepoint average than those with well developed Type B behavior. The results of a point-biserial correlation support this hypothesis. Type As did have higher cumulative gradepoint averages than Type Bs, as predicted.

These results tend to discount the theory that Type As' achievement striving actually hinders their achievement. Instead, the data give support to Glass' (1977) theory that Type A behavior is a way of attaining desired goals. Rosenman and Friedman's (1973) suggestion that Western Culture reward Type A behavior is also vouched for by these results; those with Type A behavior receive higher GPAs, and along with higher GPAs comes praise and honors as well as access to graduate school and good jobs. These rewards in turn increase the tendency to

develop Type A behavior.

The third hypothesis examined the relationship between achievement and satisfaction. It was predicted that achievement would have no effect on satisfaction due to the inaccessability of the goals which Type As set for themselves. The analysis of variance indicated that the relationship between GPA and satisfaction neared significance for the extreme group of 87 (Type As and Bs combined). However, when the two groups, Type As and Type Bs, were examined separately, there was a significant relationship between the two variables in the Type B group, although no such relationship appeared in the Type A group, as expected. This shows that the academic achievement level of Type As is not a factor in their level of satisfaction. These findings support hypothesis three.

Robinson and Shaver (1973) report that, in general, students who receive higher grades are more satisfied. This is not the case with Type A students in this study, however. This seems to indicate that some factor of the Type A behavior pattern inhibits this relationship. It is possible that this is caused by the Type A inability to achieve the extremely high goals that they set.

The fact that Type and race were highly related in this study was perplexing. The results showed that white college students in this study were more prone to Type A behavior than Black college students who participated. Government statistics, however, show that blacks have more heart disease than white. White males have 294.0 deaths per 100,000 due to CHD; white females have 137.2 deaths per 100,000 due to CHD; black males have 322.4 deaths per 100,000 due to CHD; and black females have

204.2 deaths per 100,000 due to CHD (United States National Center for Health Statistics, 1980). In view of these statistics, the results of this study seem incongruent. Sparacino (1979), however reports similar findings in other studies.

In this study, very few (4) blacks showed Type A(A₁) behavior, yet the death rate from CHD for blacks is higher than for whites. This raises several questions. For instance, is the Jenkins Activity Survey, which was used in this study to determine whether a participant possessed Type A behavior, measuring Type A behavior in black students? It may be that Type A behavior is exhibited by blacks in a way which the JAS does not consider.

A second question might be raised in connection with CHD in blacks as a whole. Is it possible that Type A behavior pattern is not a factor in heart disease among blacks? Is it possible that heart disease among blacks is more closely related to other factors such as diet, heredity, or quality of health care? The United States National Center for Health Statistics (1980) posits these variables as factors which contributed to the higher death rate due to CHD among blacks. Future studies may wish to examine more closely the relationship between race and Type A behavior and CHD.

The fact that college men and women were equally as prone to Type A behavior in this study helps to corroborate Rosenman and Friedman's (1961) idea that Type A behavior is an elicited behavior pattern which is brought out equally as often in men and women when they are in similar environments and placed under similar demands. This seems to indicate that the rate Type A behavior pattern in women will increase as the

number of women in the work force increases. The WCGS (Rosenman, et al. 1975) showed that Type A behavior is an independent factor in CHD. This suggests that as more women exhibit Type A behavior, women will become more susceptible to heart disease. This is supported by the U.S. Bureau of Census (1980) which reported that from 1960 to 1979 the percentage of women who were employed rose from 23.2 to 43.5. In a similar period (1950-1978) deaths from heart disease among women increased from 289.7 to 295.7 per 100,000.

Sex of the participant had no effect on the level of satisfaction reported. This indicates that the men and women in this study are equally satisfied with the lives they are leading. These data correspond to that reported by Robinson and Shaver (1973) concerning satisfaction and sex of respondent. Based on a review of the literature, they found no relationship between these two variables

Significance for Counseling

The relationship between Type A behavior pattern and CHD is supported by considerable research (Rosenman and Friedman, 1959; Rosenman and Friedman, 1961; Rosenman, et al., 1964, 1966, 1967, 1970, 1975; and Brand, et al., 1976.) These data suggest that modification of this factor (Type A behavior) may result in many health benefits.

The importance of this particular study for counselors who are attempting to modify Type A behavior involves their Type A clients' motivation. This study has shown that Type As achieve more than Type Bs and that Type As are as satisfied with their lives as the average person. Because of this arrangement of circumstances, Type As may not be highly motivated to actually change their behavior. Carver (1976) and Glass (1977) suggest that Type A behavior is a method of coping with the world. If this is true, as this study seems to show, Type As may view any intervention as a threat to their coping strategy and resist vehemently.

Summary

Of the three hypotheses examined in this study only that concerning Type A behavior and academic achievement was directly supported by the data. It was found that Type A behavior is positively related to academic achievement. This seems to show that Type A behavior expedites the attainment of academic goals.

There was no relationship between Type A behavior and satisfaction. This indicates that dissatisfaction with life is most likely neither a cause nor a facet of Type A behavior.

Type B's showed a significant positive relationship between academic achievement and satisfaction which Type As did not. This seems to indicate that some facet of Type A behavior inhibits this relationship, possibly Type As constant achievement striving,

Because Type As achieve more and are just as satisfied as Type Bs, they will have little motivation to change their behavior although a change could be beneficial to their health.

Reference Notes

Dobbie, W. Personal Communication, June 17, 1981.

Gallivan, G.M. The influence of occupational prestige and gender on the relationship between job and life satisfaction. Unpublished manuscript, August, 1981, VCU.

REFERENCES

- Antonovsky, A. Social class and the major cardiovascular diseases, Journal of Chronic Diseases, 1968, 21, 65-106.
- Brand, R.J., Rosenman, R.H., Sholtz, R.I., & Friedman, M. Multivariate prediction of coronary heart disease in the Western Collaborative Group Study compared to the findings of the Framingham Study. Circulation, 53(2), 348-355.
- Bruhn, J.G., Wolf, S., Lynn, T.N., Bird, H.B. & Chandler, B. Social aspects of coronary heart disease in a Pennsylvania German community. Social Science and Medicine, 1968, 2, 201-212.
- Burman, M.A., Pennebaker, J.W., & Glass, D.C. Time consciousness, achievement striving and Type A coronary-prone behavior pattern. Journal of Abnormal Psychology, 1975, 84(1), 76-79.
- Caffrey, B. Behavior patterns and personality characteristics related to prevalence rates of coronary heart disease in American monks. Journal of Chronic Disease, 1969, 22, 93-103.
- Carver, C.S., Coleman, A.E. & Glass, D.C. The coronary-prone behavior pattern and the suppression of fatigue on a treadmill test. Journal of Personality and Social Psychology, 1976, 33, (4), 460-466.
- Dunbar, H.F. Psychosomatic Diagnosis. Paul B. Hoeber Inc., New York, 1943. as cited in Friedman, M. & Rosenman, R.H. Type A behavior pattern: Its association with coronary heart disease. Annual of Clinical Research, 1971, 3, 300-312.
- Evans, M.G. Conceptual and operational problems in the measurement of various aspects of job satisfaction. Journal of Applied Psychology, 1969, 53(2), 93-101.
- Friedman, M. & Rosenman, R.H. Association of specific overt behavior pattern with blood and cardiovascular findings. JAMA, 1959, Mar. 21, 1286-1296.
- Friedman, M. & Rosenman, R.H. Type A behavior pattern: Its association with coronary heart disease. Annual of Clinical Research, 1971, 3, 300-312.
- Glass, D.C., Snyder, M.L., & Hollis, J.F. Time urgency and Type A coronary-prone behavior pattern. Journal of Applied Social Psychology, 1974, 4(2), 125-140.
- Glass, D.C. Stress, behavior patterns and coronary disease. American Scientist, 1977, Mar.-Apr., 117-185.

- Glass, D.C. Behavior Patterns, Stress and Coronary Disease. New Jersey: Lawrence Erlbaum Associates, 1977.
- Heckhausen, H. The Anatomy of Achievement Motivation. New York: Academic Press, 1967.
- Ibrahim, M.A., Sackett, D.L., Kantor, S., & Winkelstein, W. Psychological patterns and coronary heart disease: an appraisal of the determination of etiology by means of a stochastic process. Journal of Chronic Disease, 1967, 20, 931-940.
- Jenkins, D.C., Rosenman, R.H., & Friedman, M. Development of an objective psychological test for the determination of the coronary-prone behavior pattern in employed men. Journal of Chronic Disease, 1967, 20, 371-379.
- Jenkins, C.D., Rosenman, R.H., & Friedman, M. Replicability of rating of the coronary-prone behavior pattern. British Journal of Preventive and Social Medicine, 1968, 22, 16-22.
- Jenkins, D.C. Psychologic and social precursors of coronary disease. New England Journal of Medicine, 1971, 284 (6), 307-317.
- Jenkins, D.C., Zyzanski, S.J., & Rosenman, R.H. Progress toward validation of a computer-scored test for the Type A coronary-prone behavior pattern. Psychosomatic Medicine, 1971, 33 (3), 193-202.
- Jenkins, D.C., Rosenman, R.H. & Zyzanski, S.J. Predictions of clinical coronary heart disease by a test for the coronary-prone behavior pattern. New England Journal of Medicine, 1974, 290 (23), 1271-1275.
- Keegan, D.L., Bhiron, N.S., Merriman, J.E., & Shipley, C. Type A behavior pattern, relationship to coronary heart disease, personality and life adjustment. Canadian Journal of Psychiatry, 1979, 24, 224-230.
- Kempe, C. Rorschach method and psychosomatic diagnosis. Personality traits of patients with rheumatic disease, hypertensive cardiovascular disease, coronary occlusion and fracture. Psychomatic Medicine, 7, 85, 1945 as cited in Friedman, M. & Rosenman, R.H. Type A behavior pattern: Its association with coronary heart disease. Annual of Clinical Research, 1971, 3, 300-312.
- Kenigsberg, D., Zyzanski, S.J., Jenkins, D.C., Wardwell, W.I., & Licciardello, A.T. The coronary-prone behavior pattern in hospitalized patients with and without coronary heart disease. Psychosomatic Medicine, 1974, 36 (4), 344-351.
- Lee, R.E., & Schneider, R.F. Hypertension and arteriosclerosis in executive and non-executive personnel, The Journal of the American Medical Association, 1958, 167 (12), 1447-1450.

- Liljefors, I. & Rahe, R.H. An identical twin study of psychosocial factors in coronary heart disease in Sweden, Psychosomatic Medicine, 1970, 32 (5), 332-342.
- Matthews, K.A., Glass, D.C., Rosenman, R.H. & Bortner, R.W. Competitive drive, pattern A and Coronary heart disease; a further analysis of some data from the Western Collaborative Group Study, Journal of Chronic Disease, 1977, 30, 489-498.
- Matthews, K.A., & Saal, F.E. Relationship of the Type A coronary-prone behavior pattern to achievement, power, and affiliation motives. Psychosomatic Medicine, 1978, 40 (8), 631-636.
- Osler, W. The Lumleian lectures on angina pectoris, Lancet, 1910, 1, 839-844.
- Pell, S., & D'Alonzo, C.A. A three year study of myocardial infarction in a large employed population, JAMA, 1961, 175 (6), 463-470.
- Robinson, J.P., & Shaver, P.R. Measures of Social Psychological Attitudes (Revised ed.) Ann Arbor: Survey Research Center, University of Michigan, Institute for Social Research, 1973.
- Romo, M., Sultanen, P., Theorell, T., & Rahe, R.H. Work behavior, time urgency and life dissatisfaction in subjects with myocardial infarctions: a cross-cultural study, Journal of Psychosomatic Research, 1974, 18, 1-8.
- Rosenman, R.H., & Friedman, M. Association of specific behavior pattern in women with blood and cardiovascular findings. Circulation, 1961, 24, 1173-1184.
- Rosenman, R.H., Friedman, M., Straus, R., Wurm, M., Kositchek, R., Hahn, W., & Werthessen, N.T. A predictive study of coronary heart disease. JAMA, 1964, 189 (1), 103-110.
- Rosenman, R.H., Friedman, M., Straus, R., Wurm, M., Jenkins, D., & Messinger, H. Coronary heart disease in the Western Collaborative Group Study: A follow-up experience of 2 years. JAMA, 1966, 195, (2), 130-136.
- Rosenman, R.H., Friedman, M., Jenkins, C.D., Straus, R., Wurm, N., & Kositchek, R. Recurring and fatal myocardial infarction in the Western Collaborative Group Study. American Journal of Cardiology, 1967, 19 (6), 771-782.
- Rosenman, R.H., Friedman, M., Straus, R., Jenkins, C.D., Zyzanski, S.J., & Wurm, M. Coronary heart disease in the Western Collaborative Group Study: a follow-up experience of 4 1/2 years, Journal of Chronic Disease, 1970, 23, 173-190.

- Rosenman, R.H. & Friedman, M. Neurogenic factors in pathogenesis of coronary heart disease. Medical Clinics of North America, 1974, 58 (2), 269-279.
- Rosenman, R.H., Brand, R.J., Jenkins, C.D., Friedman, M., Straus, R., & Wurm, M. Coronary heart disease in the Western Collaborative Group Study: final follow-up experience of 8 1/2 years. JAMA, 1975, 233 (8), 872-877.
- Sales, S.M., & House, J. Job dissatisfaction as a possible risk factor in coronary heart disease. Journal of Chronic Disease, 1971, 23, 861-873.
- Shekelle, R.B., Ostfield, A.M., & Oglesby, P. Social status and incidence of coronary heart disease. Journal of Chronic Disease, 1969, 22, 381-394.
- Snow, B. Level of aspiration in coronary prone and non-coronary prone adults. Personality and social Psychology Bulletin, 1978, 4 (3), 416-419.
- Soper, W.B. Preliminary study of ratings of satisfaction by male university faculty. Perceptual and Motor Skills, 1979, 48, 425-426.
- Stone, G.C., Cohen, F., & Adler, N.E. Health Psychology, San Francisco: Jossey-Bass Publishers, 1979, 100-104.
- Syme, S.L., Human, M.M., & Enterline, P.E. Some social and cultural factors associated with the occurrence of coronary heart disease. Journal of Chronic Disease, 1964, 17, 277-289.
- Theorell, T., & Rahe, R.H. Behavior and life satisfaction characteristics of Swedish subjects with myocardial infarction. Journal of Chronic Disease, 1972, 25, 139-147.
- Theorell, T., Lind, E., & Floderus, B. The relationship of disturbing life changes and emotions to the early development of myocardial infarction and other serious illnesses. International Journal of Epidemiology, 1975, 4 (4), 281-293.
- United States Bureau of the Census, Statistical Abstract of the United States: 1980 (101st Edition) Washington, D.C., 1980. p. 80.
- United States National Center for Health Statistics Health: United States, Washington Government Printing Office, 1980, 207-210.
- Vineberg, A. How to Live with Your Heart, Montreal: Optimum Publishing Company Limited, 1975, 61-151.
- Wright, I.S. Cardiovascular diseases: role of psychogenic and behavior patterns in development and aggravation. New York State Journal of Medicine, 1975, Oct. 2128-2132.
- Zyzanski, S.J., & Jenkins, C.D. Basic dimensions within the coronary-prone behavior pattern. Journal of Chronic Disease, 1970, 22, 781-785.

APPENDICES

Appendix A
Informed Consent Form

Dear Student,

We are conducting a study concerning stress and achievement. The study will attempt to determine what kind of a relationship there is between these two concepts.

In this study you will be asked to fill out several questionnaires and to allow the experimenter to obtain your official cumulative gradepoint average from the Academic Records department. After this data is obtained, it will be coded by number so that no subject can be identified. All information collected will be kept confidential, and all participant lists and data records will be destroyed at the conclusion of the study.

Serving as a subject in this study will most likely be interesting and entertaining for you. If you decide that you do not wish to participate at any time, you will be allowed to stop without any penalty. When we are finished collecting the questionnaires, we will be glad to answer any questions you may have about the study. If you would like, we will send you a copy of the final paper when the study is over.

If you agree to participate in this study and to allow the experimenter access to your official gradepoint average, please sign at the bottom of this letter.

Thank you for your help.

Sincerely,

Larraine A. Felland
Master's Candidate, Department of Psychology
Virginia Commonwealth University

Student Signature: _____

Witness: _____

Date: _____

SSN: _____

Appendix B
Identifying Information

Demographic Information

Name: _____

Social Security Number: _____

Address: _____

Age: _____ Sex: (Check One) ☐ Male ☐ Female

Date of Birth: _____ Race: _____

Major: _____

Department: _____

☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Graduate

In order to avoid mix ups should the questionnaire become separated, please place your Social Security number on each page on the line marked SSN. Thank you.

Appendix C
Jenkins Activity Survey
Form T

SSN: _____

THE JENKINS ACTIVITY SURVEY
FORM T

Medical research is trying to track down the causes of several diseases which are attacking increasing numbers of people. Thus survey is part of such a research effort.

Please answer the questions on the following pages by marking the answers that are true for you. Each person is different, so there are no "right" or "wrong" answers. Of course, all you tell us is strictly confidential to be seen only by the research team. Do not ask anyone else about how to reply to the items. It is your personal opinion that we want.

Your assistance will be greatly appreciated.

For each of the following items, please circle the number of the ONE best answer:

1. Do you ever have trouble finding time to get your hair cut or styled?
1. Never 2. Occasionally 3. Almost Always
2. Does college "stir you into action"?
1. Less often than most college students
2. About average
3. More often than most college students
3. Is your everyday life filled mostly by:
1. Problems needing solution
2. Challenges needing to be met
3. A rather predictable routine of events
4. Not enough things to keep me interested or busy
4. Some people live a calm, predictable life. Others find themselves often facing unexpected changes, frequent interruptions, inconveniences or "things going wrong". How often are you faced with these minor (or major) annoyances or frustrations?
1. Several times a day
2. About once a day
3. A few times a week
4. Once a week
5. Once a month or less
5. When you are under pressure or stress, do you usually:
1. Do something about it immediately
2. Plan carefully before taking any action

SSN: _____

6. Ordinarily, how rapidly do you eat?
 1. I'm usually the first one finished
 2. I eat a little faster than average
 3. I eat at about the same speed as most people
 4. I eat more slowly than most people
7. Has your spouse or some friend ever told you that you eat too fast?
 1. Yes, often
 2. Yes, once or twice
 3. No, no one has told me this
8. How often do you find yourself doing more than one thing at a time, such as working while eating, reading while dressing, figuring out problems while driving?
 1. I do two things at once whenever practical
 2. I do this only when I'm short of time.
 3. I rarely or never do more than one thing at a time.

For each of the following items, please circle the number on the ONE best answer:

9. When you listen to someone talking, and this person takes too long to come to the point, do you feel like hurrying him along?
 1. Frequently
 2. Occasionally
 3. Almost never
10. How often do you actually "put words in his mouth" in order to speed things up?
 1. Frequently
 2. Occasionally
 3. Almost never
11. If you tell your spouse or a friend that you will meet them somewhere at a definite time, how often do you arrive late?
 1. Once in a while
 2. Occasionally
 3. Rarely or never
12. Do you find yourself hurrying to get places even when there is plenty of time?
 1. Often
 2. Occasionally
 3. Rarely or never
13. Suppose you are to meet someone at a public place (street corner, building lobby, restaurant) and the other person is already 10 minutes late, will you:
 1. Sit and wait?
 2. Walk about while waiting?
 3. Usually carry some reading matter or writing paper so you can get something done while waiting?

SSN; _____

14. When you have to "wait in line", such as at a restaurant, a store, or the postoffice, do you:
1. Accept it calmly?
 2. Feel impatient but do not show it?
 3. Feel so impatient that someone watching could tell you were restless?
 4. refuse to wait in line, and find ways to avoid such delays?
15. When you play games with young children about 10 years old, how often do you purposely let them win?
1. Most of the time
 3. Only occasionally
 2. Half the time
 4. Never
16. Do most people consider you to be:
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably more relaxed and easy going?
 4. Definitely relaxed and easy going?
17. Nowadays, do you consider yourself to be
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably relaxed and easy going?
 4. Definitely relaxed and easy going?
18. How would your spouse (or closest friend) rate you?
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably relaxed and easy going?
 4. Definitely relaxed and easy going?

For each of the following items, please circle the number of the ONE best answer:

19. How would your spouse (or best friend) rate your general level of activity:
1. Too slow. Should be more active.
 2. About average, If busy much of the time.
 3. Too active. Needs to slow down.
20. Would people who know you well agree that you take work too seriously?
1. Definitely yes
 3. Probably no
 2. Probably yes
 4. Definitely no
21. Would people who know you well agree that you tend to get irritated

SSN; _____

easily?

- | | |
|-------------------|------------------|
| 1. Definitely yes | 3. Probably no |
| 2. Probably yes | 4. Definitely no |

22. Would people who know you well agree that you have less energy than most people?

- | | |
|-------------------|------------------|
| 1. Definitely yes | 3. Probably no |
| 2. Probably yes | 4. Definitely no |

23. Would people who know you well agree that you tend to do most things in a hurry?

- | | |
|-------------------|------------------|
| 1. Definitely yes | 3. Probably no |
| 2. Probably yes | 4. Definitely no |

24. Would people who know you well agree that you enjoy a "contest" (competition) and try hard to win?

- | | |
|-------------------|------------------|
| 1. Definitely yes | 3. Probably no |
| 2. Probably yes | 4. Definitely no |

25. Would people who know you well agree that you get a lot of fun out of your life?

- | | |
|-------------------|------------------|
| 1. Definitely yes | 3. Probably no |
| 2. Probably yes | 4. Definitely no |

26. How was your "temper" when you were younger?

- | | |
|------------------------------|-----------------------------|
| 1. Fiery and hard to control | 3. No problem |
| 2. Strong, but controllable | 4. I almost never get angry |

27. How is your temper nowadays?

- | | |
|------------------------------|-----------------------------|
| 1. Fiery and hard to control | 3. No problem |
| 2. Strong, but controllable | 4. I almost never get angry |

28. When you are in the midst of studying and someone interrupts you, how do you usually feel inside?

1. I feel okay because I work better after an occasional break.
2. I feel only mildly annoyed.
3. I really feel irritated because most such interruptions are unnecessary.

29. How often are there deadlines in your courses? (If deadlines occur irregularly, please circle the closest answer below)

- | | |
|------------------------|------------|
| 1. Daily or more often | 3. Monthly |
| 2. Weekly | 4. Never |

30. Do these deadlines usually

1. Carry minor pressure because of their routine nature?
2. Carry considerable pressure, since delay would upset things a great deal?

(Remember, the answers on these questionnaires are confidential information and will not be revealed to officials of your university)

31. Do you ever set deadlines or quotas for yourself in courses or other things?

1. No
2. Yes, but only occasionally
3. Yes, once per week or more often

32. When you have to work against a deadline, is the quality of your work

- | | |
|-----------|---------------------------------|
| 1. Better | 3. The same |
| 2. Worse | 4. Pressure makes no difference |

33. In school do you ever keep two projects moving forward at the same time by shifting back and forth rapidly from one to the other?

1. No, never
2. Yes, but only in emergencies
3. Yes, regularly

34. Do you maintain a regular study schedule during vacations such as Thanksgiving, Christmas and Easter?

1. Yes
2. No
3. Sometimes

35. How often do you bring your work home with you at night or study materials related to your courses?

1. Rarely or never
2. Once a week or less often
3. More than once a week

36. How often do you go to the university when it is officially closed (such at nights or weekends)? If this is not possible, circle here:

1. Rarely or never
2. Occasionally (less than once a week)
3. Once a week or more

SSN: _____

37. When you find yourself getting tired while studying, do you usually
1. Slow down for a while until your strength comes back
 2. Keep pushing yourself at the same pace in spite of the tiredness
38. When you are in a group, do the other people tend to look to you to provide leadership?
1. Rarely
 2. About as often as they look to others
 3. More often than they look to others
39. Do you make yourself written lists of "things to do" to help you remember what needs to be done?
1. Never
 2. Occasionally
 3. Frequently

In each of the following questions, please compare yourself with the average student at your university. Please circle the most accurate description:

40. In amount of effort put forth, I give
1. Much more effort
 3. A little more effort
 2. Much less effort
 4. A little less effort
41. In a sense of responsibility, I am
1. Much more responsible
 3. A little less responsible
 2. A little more responsible
 4. Much less responsible
42. I find it necessary to hurry
1. Much more of the time
 3. A little less of the time
 2. A little more of the time
 4. Much less of the time
43. In being precise (careful about detail), I am
1. Much more precise
 3. A little less precise
 2. A little more precise
 4. Much less precise
44. I approach life in general
1. Much more seriously
 3. A little less seriously
 2. A little more seriously
 4. Much less seriously

Appendix D
Life Satisfaction Survey

SSN: _____

Directions: Circle the Number which most appropriately answers the question for you. There are no "right" or "wrong" answers.

1. Are you satisfied with your chosen major?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

2. Are you satisfied with your present academic achievement?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

3. Are you satisfied with your current Marital Status?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

4. Are you satisfied with your marriage?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

5. Are you satisfied with your other interpersonal relations in general?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

6. Are you satisfied with your health?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

7. Are you satisfied with the health of your family?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

8. Are you satisfied with your economic situation?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

9. Are you satisfied with your religious beliefs?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

10. Are you satisfied with your participation in community and/or school activities?

Yes, very. Somewhat. No.
5 ----- 4 ----- 3 ----- 2 ----- 1

SSN: _____

11. Are you satisfied with your leisure activities?

Yes, very.		Somewhat.		No.
5 -----	4 -----	3 -----	2 -----	1

12. Are you satisfied with your personal values?

Yes, very.		Somewhat.		No.
5 -----	4 -----	3 -----	2 -----	1

13. Are you satisfied with the amount of success you have had in reaching your goals?

Yes, very.		Somewhat.		No.
5 -----	4 -----	3 -----	2 -----	1

14. Are you satisfied with the amount of happiness you experience?

Yes, very.		Somewhat.		No.
5 -----	4 -----	3 -----	2 -----	1

15. Are you satisfied with your life in general?

Yes, very.		Somewhat.		No.
5 -----	4 -----	3 -----	2 -----	1

Vita

