A PSYCHOMETRIC EVALUATION OF THE ASSESSMENT MEASURES OF THE TYPE A BEHAVIOR PATTERN

Mary Esther Norman

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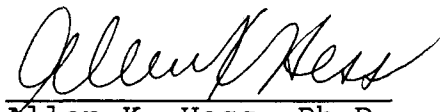

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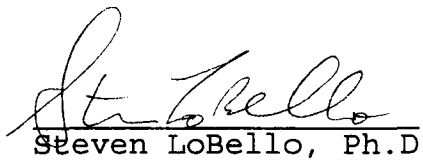

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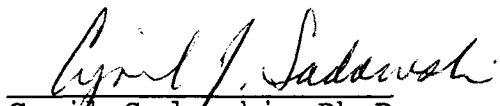

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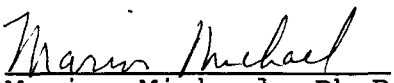

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A PSYCHOMETRIC EVALUATION OF THE ASSESSMENT MEASURES OF THE TYPE A BEHAVIOR PATTERN

Mary Esther Norman

A Thesis

Submitted to

the Graduate Faculty of

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A Psychometric Evaluation of the Assessment Measures of

the Type A Behavior Pattern

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Mary Esther Norman, daughter of John and Genie Norman, was born in San Antonio, Texas on December 13, 1967. In 1968, the family moved to Fort Deposit, Alabama. She graduated from Fort Deposit Academy in 1986. From 1986 to 1990, she attended Samford University in Birmingham, Alabama. Upon completing her B.A. in psychology, she moved to Montgomery, Alabama where she entered the graduate program at Auburn University at Montgomery.

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THESIS ABSTRACT

A Psychometric Evaluation of the Assessment Measures of the Type A Behavior Pattern

Mary Esther Norman

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The present study investigates the common and unique aspects found within three Type A measures which have been found to correlate with coronary heart disease. The Structured Interview, the Jenkins Activity Survey, and the Framingham Type A Scale were administered to 186 college students. A principal factor analysis with varimax rotation found the three measures to contain three factors which are labeled I. Hard-driving and Competitive, II. Time pressure and Impatience, and III. Speed. A number of single item factors were identified. A regression analysis found age ($p<.0008$) to predict Type A Behavior Pattern.

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A PSYCHOMETRIC EVALUATION OF THE ASSESSMENT MEASURES OF THE TYPE A BEHAVIOR PATTERN

Introduction

Cardiovascular disease continues to be the leading cause of death in the United States despite advances in research and practice over the past three decades (Houston, 1988). Coronary Heart Disease (CHD) is a type of cardiovascular disease that is characterized by an inadequate supply of oxygen to the heart. The major forms of CHD are angina pectoris (severe chest pain) and myocardial infarction (MI or heart attack). Coronary atherosclerosis (narrowing of coronary arteries) is considered the common substrate for the different forms of CHD (Houston, 1988). The National Health Interview Survey revealed 15-20% of the United States population has one or more of these heart or vascular diseases (Dembroski, 1986).

Coronary heart disease accounts for the vast majority of deaths from cardiovascular disease affecting approximately 4.8 million people in the United States (Houston, 1988). Forty-five percent of CHD deaths occur prematurely in individuals under the age of 65 (Houston, 1988). Traditional factors such as age, hypertension, high serum cholesterol level, cigarette smoking, (Dembroski,

1986) diabetes, obesity, and low levels of physical activity (Berlin & Colditz, 1990; Powell, Thompson, Caspersen & Kendrick, 1987) were regarded as conferring risk for CHD. In addition to these traditional factors, prior to the 1950's a few clinicians (e.g. Kemple, 1945; Menninger & Menninger, 1936) acknowledged that certain personality or behavioral attributes, such as being hard driving, ambitious, and aggressive, seemed to characterize coronary-prone individuals.

Review of Literature

Not until cardiologists Friedman and Rosenman (1974) began work in the mid 1950's on the Type A Behavior Pattern (TABP) was serious, widespread consideration given to the role that personality and/or behavior factors might play in the manifestation of CHD. TABP gained an amount of scientific credibility as researchers reported associations between the appearance of TABP and prevalence of CHD in retrospective studies (Jenkins, 1971). More scientific credibility was gained when an association between the TABP and the incidence of CHD was found in a prospective study, the Western Collaborative Group Study (Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn & Werthessen, 1964). Researchers also reported finding associations between the TABP and the extent of coronary atherosclerosis (Jenkins, 1976).

Friedman and Rosenman (1974) defined Type A Behavior Pattern as "an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things or other persons" (pg. 4). The overt manifestations of this complex include: a heightened pace

of living; explosive, accelerated speech; impatience with slowness; self-preoccupation; concentrating on more than one activity at a time; dissatisfaction with life; a tendency to challenge and compete; evaluation of the worthiness of one's activities in terms of numbers; and free-floating hostility (Matthews, 1982). The core elements of TABP are extremes of aggressiveness, a sense of time urgency, easily aroused hostility, and competitive achievement striving (Rosenman, 1978).

Even though TABP had been deemed to predict CHD, a meta-analysis by Matthews (1988) of prospective studies showed Type A across all measures and prospective study designs not to be a reliable predictor of CHD incidence. However, in population based studies, Matthews (1988) found Type A behavior and hostility to be reliable predictors of initial CHD events.

Assessment of Type A Behavior Pattern

Three methods for assessment of TABP have been related prospectively to coronary heart disease. These are the Structured Interview (SI; Rosenman & Friedman, 1964), the Jenkins Activity Survey (JAS; Jenkins, Zyzanski, & Rosenman, 1971), and the Framingham Type A Scale (FTAS; Haynes, Levin, Scottch, Feinleib, & Kannel, 1978).

Structured Interview. The earliest assessment method, the SI, was devised by Western Collaborative Group Study (WCGS; Rosenman, et al., 1964). In a factor analysis of the Structured Interview, five factors were identified: competitive drive, past achievement, impatience, non-job related achievement, and speed (Matthews, Glass, Rosenman, & Bortner, 1977). Table 1 shows the aspects of the interview that are loaded with each factor. Yet, when analyzing 62 CHD subjects against 124 CHD-free control subjects, only competitive drive mean scores and impatience mean scores were found to be predictive of CHD (Matthews et al, 1977).

In addition to competitive drive and impatience (Matthews et al., 1977) hostility (Matthews, 1988) was also found to be a reliable predictor of initial CHD events in addition to population-based studies. A further analysis of the 22 year follow-up of the WCGS sample confirmed that hostility assessed at intake into the WCGS was significantly related to subsequent coronary mortality (Carmelli, Swam, and Rosenman, 1988). Hecker, Chesney, and Black (1989) also found hostility to be positively related to CHD risk.

The Structured Interview was found to consist of four hostility variables: hostile content, hostile intensity,

Table 1 Structured Interview Factor Analysis

I.	Competitive Drive	Competition at work Explosive voice modulation Potential for hostility Subjects' answers are vigorous Subjects' estimate of his drive level
II.	Past Achievement	Team captain Member of two or more athletic teams in college or high school Worked before finishing high school Other leadership roles in school
III.	Impatience	Irritation at waiting in lines Will not wait for a table in restaurants Always punctual for an appointment
IV.	Non-job Involvement	Non-job time commitments involving more than 4 hours a week Many non-job leadership roles
V.	Speed	Eats fast Immediately leaves dinner table after eating Does the job for a slow worker Watching slow workers makes the subject want to do the job for him

hostile style, and potential for hostility (Dembroski & Costa, 1987; Dembroski, MacDougall, Costa, & Grandits, 1989). Hostile Content ratings are based on the frequency of annoying experiences and feelings of irritation (Engebretson & Matthews, 1992). Hostile Intensity ratings reflect the degree to which the individual experiences anger and annoyance based on reports of subjective experiences of anger and annoyance or displays of anger (Engebretson & Matthews, 1992). Hostile Style ratings reflect the frequency and degree of hostile behavior actually displayed during the interview (Engebretson & Matthews, 1992). Potential for Hostility rating is a clinical judgment of the subject's hostility based on all aspects of hostility observed during the interview.

Jenkins Activity Survey. After the development of the SI, a pencil and paper measure, the Jenkins Activity Survey (JAS; Jenkins, Rosenman, & Friedman, 1967), was constructed to act as a replacement for the SI. Zyzanski and Jenkins (1970) conducted a factor analysis with varimax rotation using the JAS with 707 men from the WCGS. The resulting three varimax rotated (uncorrelated) factors were hard-driving, job-involvement, and speed. The inter-scale correlations (based on 2690 Western Collaborative Group

Study participants) were speed/job involvement r = -0.09, speed/hard driving and competitiveness r = -0.06, and job involvement/hard driving and competitiveness r = -0.02. Table II gives a listing of the JAS items that load for each factor (Zyanski & Jenkins, 1970).

Framingham Type A Behavior Pattern Scale. The third method developed to assess TABP is the Framingham Type A scale (FTAS; Haynes et al., 1978). which was developed during the Framingham study. The ten-item questionnaire was selected from a larger psychosocial questionnaire by a 'panel of experts' as being representative of Type A behavior (Haynes, et al., 1978). Houston, Smith and Zurawski (1986) suggested that 4 items (6, 7, 8, and 9) could be dropped from the original FTAS. In their study of 143 undergraduate subjects two factors were identified: competitive drive and speed/impatience. A later study by Sykes, Haertel, Gostautas and Evans (1992) conducted a separate principal components factor analysis with varimax rotation on the 10 FTAS items. Three factors were identified: Work pressure (time aspect- items 2 and 6; work aspect- items 7 and 8); Hard-driving competitiveness (items 1, 3, and 4); and Impatience (items 5 and 10). Sykes, et al. (1992) also conducted a separate principal components

Table II The Jenkins Activity Survey Factor Analysis

I.	Hard Driving & Competitive	Employed in a job which stirs one into action
		When younger, definitely hard driving and competitive
		Nowadays, still definitely hard driving and competitive
		Rated definitely hard driving and competitive by wife and friends
		Rated too active by wife and friends
		Gives much more effort than the average worker
		Considers himself more responsible than the average worker
		Hurries much more than the average worker
		Considers himself much more precise than the average worker
		Approaches life much more seriously than the average worker
II.	Job Involvement	Employed in a job which steers one into action
		Everyday life filled with challenges to be met
		Frequently sets deadlines for himself at home
		Keeps two jobs moving forward regularly
		Prefers a promotion to an increase in pay
		Income has considerably increased in past 3 years
		Has more responsibility than job of 10 years ago
		Says present job more prestige than job of 10 years ago
		Held an office in an activity group when in school.
III.	Speed & Impatience	Often has trouble finding time for a haircut
		Eats more rapidly than most people
		Often told that eating too fast
		Frequently hurries a speaker to the point
		Frequently puts words into speakers mouth
		Often inattentive to lengthy comments

factor analysis with varimax rotation on the shorter version of the FTAS. Even though Houston et al., (1985) had identified two factors, Sykes et al., (1992) factor analysis yielded conflicting results. Two factors were identified as being hard-driving competitiveness and impatience, but item 2 (usually pressed for time) was found to load on factor I in the German sample, factor II in the Lithuanian sample and on both factors in the Northern Ireland sample.

Even though the FTAS has not been employed as widely as the SI and the JAS, it has been found to predict angina-related CHD in men and women in 8 year (Haynes, Feinleib & Kannel, 1980), 10 year (Haynes & Feinleib, 1982), 14 year (Eaker & Castelli, 1988), and 20 year (Eaker, Abbott & Kannel, 1989) periods.

A Comparison of the JAS and the SI

Bortner and Rosenman (1967) found the original form of the JAS and the SI to measure independent aspects of TABP. A correlation of 0.02 was obtained when the test battery measures were correlated with the overall ratings based on the JAS. When the regression scores, excluding the JAS, were compared with the interview ratings the agreement rate on the classification of individuals was 66%. When the overall JAS ratings were compared with the interview ratings

the agreement rate was 62%. Even after revising the JAS a meta-analysis (Matthews, 1982) found the JAS and the Structured Interview to show only the slightest margin of overlap. Therefore TABP is considered to be more than a unidimensional construct (Sykes, Haertel, Gostautas, and Evans, 1992).

Type A Behavior Pattern Vs. Coronary Prone Behavior

Originally, the concept of Type A behavior pattern was considered to be a global term (Friedman & Rosenman, 1974). Yet, the Structured Interview, the Jenkins Activity Survey, and the Framingham Type A Scale have not been found to assess the same aspects of TABP. Booth-Kewley and Friedman (1987) attributed this to the conceptual confusion surrounding the TABP. After coining TABP, researchers began to use Coronary Prone Behavior (CPB) to mean TABP (Jenkins, Rosenman & Friedman, 1977; Jenkins, Zyzanski, Ryan, Flessas & Tannenbaum, 1977). In order to reduce this confusion, Booth-Kewley and Friedman (1987) suggest that TABP and coronary-prone behavior not be seen as synonymous concepts. Coronary prone behavior by definition is behavior that leads to CHD. The relationship between TABP and CHD is an empirical issue. Therefore, only certain aspects associated with TABP are predictive of CHD (Booth-Kewley & Friedman,

1987). Studies also show evidence that only certain elements of TABP are unhealthy (Hansson, Hogan, Johnson & Schroeder, 1983; Matthews, Glass, Rosenman & Bortner, 1977).

After discussing the confusion surrounding the usage of TABP and CPB, the fact still remains that the SI, the JAS, and the FTAS do measure different aspects of TABP (Matthews, 1982). The JAS and the FTAS were developed as measures to replace the SI. If this had been achieved then the SI, the JAS, and the FTAS would have high concurrent validity. This does not appear to be the case. Therefore if a complete assessment of TABP is to be obtained, the three measures must be administered together.

In order to determine which area of the SI, the JAS, and the FTAS are similar and which are unique Kerlinger (1986) suggests the statistical technique factor analysis. Factor analysis will locate and identify unities or properties which underlie the SI, the JAS, and the FTAS. In addition to determining the unique and common components, the distinction should also be made between high and low risk subjects.

Statement of Problem

Coronary heart disease (CHD) continues to affect millions of people every year (Houston, 1988). Even though traditional medical risk factors have been found to contribute to the onset of CHD, Rosenman and Friedman (1974) suggested that personality or behavioral attributes play a role in the manifestation of CHD. The Type A Behavior Pattern (TABP) was coined to describe such a personality or behavioral attributes (Friedman & Rosenman, 1974). Researchers began using the terms TABP and coronary prone behavior (CPB) interchangeably (Booth-Kewley & Friedman, 1987). Despite synonymous usage, Bortner & Rosenman (1967), Matthews (1982), and Sykes, et al. (1992) have found TABP assessment methods to measure different aspects of TABP necessitating a distinction between TABP and CPB. After reviewing the evidence presented by Booth-Kewley & Friedman (1987), Matthews, Krantz, Dembroski, MacDougall (1982), Matthews (1982/1988), and Bortner & Rosenman (1967) it seems that the three most generally used measures of TABP are only modestly correlated. Therefore, the SI, JAS, and FTAS seem not to have high convergent validity and their concurrent validity varies depending on the criterion.

The SI, the JAS, and the FTAS have been determined through the use of factor analysis to contain various factors. The SI was found to have five factors: competitive drive, past achievement, impatience, non-job related achievement, and speed. In addition to these five factors the SI was also found to contain four hostility variables: hostile content, hostile intensity, hostile style, and potential for hostility (Dembroski & Costa, 1987). The JAS was found to contain three factors: hard driving, job involvement, and speed. Lastly, the FTAS was found to contain three factors: work pressure, hard-driving competitiveness, and impatience.

The focus of this project is to determine the degree to which the three measures of TABP articulate, that is, to what degree do they share variance and have unique variances. Secondly, to what degree do these measures distinguish between higher and lower risk subjects. The former question will be addressed using factor analysis, while the latter will be addressed by multiple regression techniques.

Hypotheses

Hypothesis I: There will be common factors and unique factors from the items on the three measures.

Hypothesis II: The derived scales from the items will predict standing on risk factors associated with CHD.

Method

Subjects

The subjects were 201 undergraduate students who volunteered for this study and received extra credit for the 1994 Fall and Winter quarter psychology classes at Auburn University at Montgomery. Fifteen subjects were excluded from the final analysis because of incomplete information (ie. either a question had no response marked or had more than one response marked). The remaining sample consisted of 186 subjects with 73 males and 113 females. The mean age was 21.8 years and a standard deviation of 5.43.

Instruments

Structured Interview. The Structured Interview is composed of 25 questions which ask the subjects about their manner of responding to various situations which should elicit impatience, hostility, and competitiveness from Type A subjects (Rosenman, 1978). The SI was revised for use with student populations (Scherwitz, Berton, & Leventhal, 1977). The revised items for this study are found in Table 1.

The SI scoring procedure is divided into two categories: stylistics and content. Each stylistic dimension is scored on a 1 to 5 scale. The dimensions are

titled loud and explosive speech, rapid and accelerated speech, response latency, hostility, and competition for control of interview. A score of one is given when the stylistic type is weak or absent. To receive a score of three an average stylistic response is required. Lastly, a score of five is received for extreme responses. The content category of the SI is also answered on a 1 to 5 score scale. The score assignment is the same as it is with the stylistics category.

The SI has a test-retest reliability ranging from .64 to .84 depending on the training of the interviewer (Caffrey, 1969; Jenkins, Rosenman & Friedman, 1968; Matthew, Glass, Rosenman & Bortner, 1977).

Jenkins Activity Survey. The Jenkins Activity Survey is a 50-question self-report measure with a test-retest correlation ranging from .60 to .70 across 1 to 4 year time intervals (Haynes, Levine, Scotch, Feinleib & Kannel, 1978). Form B of the JAS is designed for use with college students. Some of the questions have been rephrased to make them more applicable to college students (Jenkins, Rosenman, Zyzanski, 1972). Values obtained on scoring of the JAS-B are expressed as standardized scores with a mean of 0 and standard deviation of 10. Subjects receiving scores greater

than 0.0 are identified as Type A's, and subjects with scores less than 0.0 as Type B's (Corse, Manuck, Cantwell, Giordani & Matthews, 1982). In addition to the overall Type A behavior, scores for the three components, speed & impatience, job involvement, and hard driving competitiveness are yielded (Matthews, 1982).

Framingham Type A Scale. The Framingham Type A scale is a 10-item self-report measure. Individual items are scored in the standard manner used in the Framingham Study (Haynes, Levine, Scotch, Feinleib, & Kannel, 1978) with the range of scores being between 0 and 1.00. The Framingham Type A scale has an internal consistency reliability of .70 (Haynes, Levine, Scotch, Feinleib & Kannel, 1978).

Procedure

The testing procedure consisted of two components, the Structured Interview, and the pencil and paper measures. Before administration of the instruments, each subject read and signed a consent form (see Appendix A). Demographic information was collected from each subject (see Appendix B).

The Structured Interview was conducted by an interviewer trained according to the procedures set forth by Rosenman (1978). The interviewer reviewed the interview

procedure after every 3 interviews to control for rater drift. Each interview was audio-tape recorded. After all interviews were conducted, each was evaluated according to the guidelines established by Rosenman and Friedman (1974) by two raters independently. Correlation between the raters was r = .87. In order to increase reliability, the two interview scores were averaged to yield a single interview score.

The next component of the procedure involved administration of the pencil and paper measures. After the SI has been completed the two paper and pencil measures were administered. Each subject was given the JAS form B and the Framingham Type A scale. The order of test administration varied with each subject.

Results

The results will be reported in the following order. The characteristics of the subject sample on the various independent and dependent measures will be reported in terms of means, standard deviations, and correlations. Then the factor analyses that bear upon the first hypothesis concerning the factor structure of the Type A measures will be presented. Finally, regression analyses and canonical correlation analyses of the derived factors on CHD risk factors will be portrayed.

Sample Characteristics on the Type A Measures

The means and standard deviations for the items from the SI, the JAS, and the FTAS are listed in Table 3.

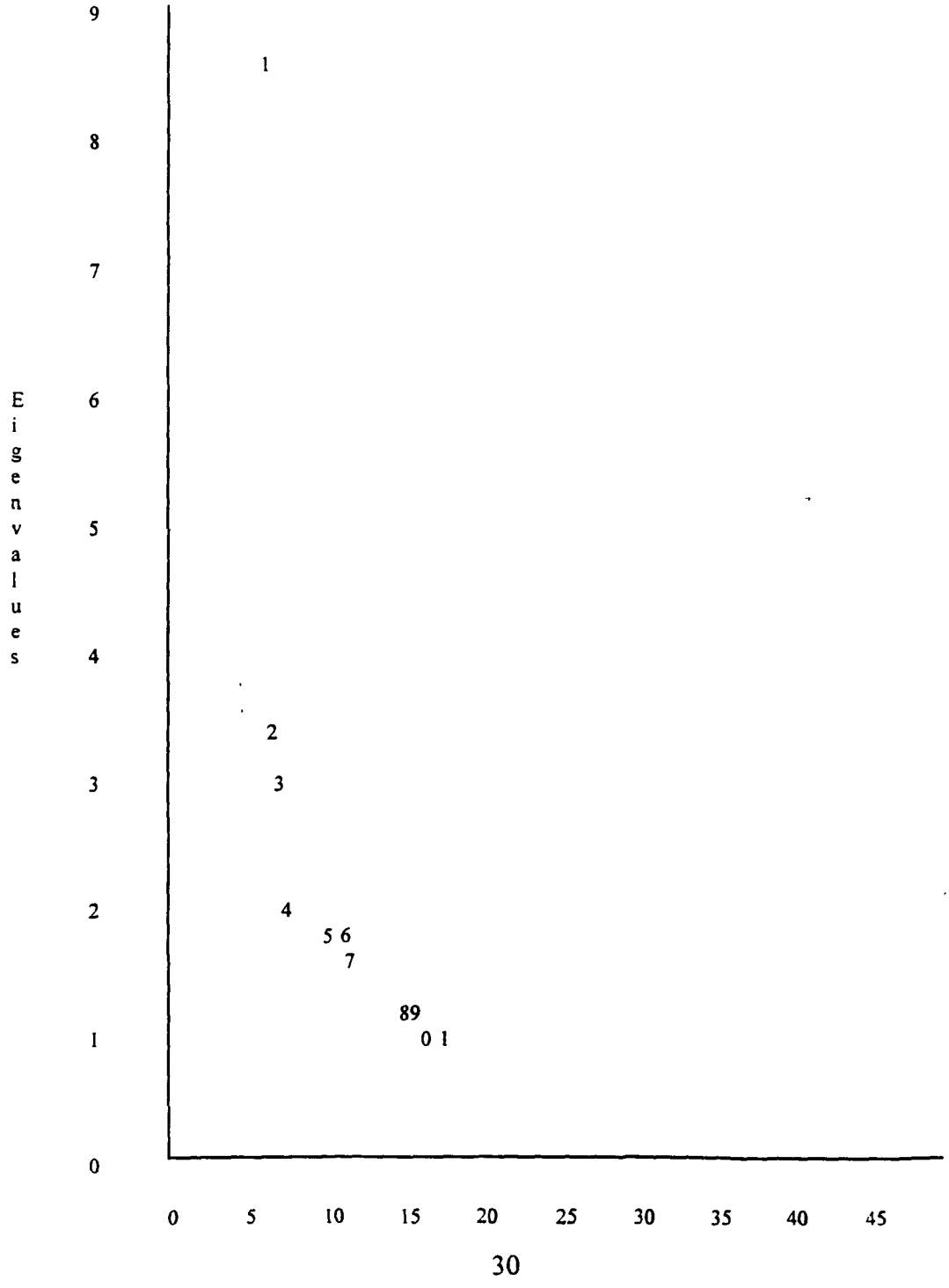
Total Item Factor Analysis

Principal factor analysis with varimax rotation of the items from all three Type A measures (31 from the SI, 21 from the JAS, and 10 from the FTAS) revealed eleven factors with eigenvalues greater than 1.0; however, the scree test (Figure 1) suggested a three-factor solution (Van de Geer, 1971). The first factor with eigenvalue = 8.49 accounted for 26% of the variance. The second factor with eigenvalue = 3.50 accounted for 10% of the variance. The third factor with eigenvalue = 3.01 accounted for 9.2% of the variance.

Table 3 Means & Stadard Deviation of the SI, JAS, & FTAS

Measure	Item Number	Mean	Standard Deviation
SI	1	2.59	.894
	2	2.63	.733
	3	3.08	.717
	4	1.54	.879
	5	1.49	.697
	6	2.32	1.46
	7	4.06	1.38
	8	3.03	1.74
	9	3.13	1.89
	10	3.30	1.77
	11	3.34	1.09
	12	3.14	1.04
	13	2.88	1.70
	14	3.36	1.46
	15	2.91	1.31
	16	3.67	1.64
	17	3.49	1.08
	18	3.05	1.61
	19	2.49	1.47
	20	2.49	1.29
	21	3.55	1.73
	22	3.52	1.47
	23	3.02	1.87
	24	3.67	1.65
	25	2.62	1.78
	26	4.03	1.35
	27	3.49	1.55
	28	3.69	.849
	29	3.75	.842
	30	2.76	1.51
	31	3.03	1.31
JAS	1	.495	.501
	2	.457	.499
	3	.538	.500
	4	.210	.408
	5	.360	.481
	6	.220	.416
	7	.215	.412
	8	.543	.499
	9	.570	.496
	10	.565	.497
	11	.328	.471
	12	.430	.496
	13	.548	.499
	14	.070	.256
	15	.333	.473
	16	.226	.419
	17	.097	.296
	18	.661	.475
	19	.388	.488
	20	.323	.469
	21	.317	.467
FTAS	1	2.91	.920
	2	2.83	.925
	3	2.17	.966
	4	3.18	.844
	5	2.53	1.20
	6	.559	.498
	7	.478	.501
	8	.430	.496
	9	.505	.501
	10	.538	.500

Figure 1 Scree Plot of Eigenvalues



The cut off criteria for the factor loading is .30. No item with a factor loading below .30 is listed among the items that comprise the factor (Comrey, 1973).

Factor I. The first factor (Table 4) is comprised of 18 items (Comrey, 1973). Of these 18, two items were from the FTAS (questions 1 and 4), ten items were from the JAS (questions 8, 9, 10, 11, 15, 16, 17, 20, and 21), and six items were from the SI (questions 8, 9, 10, 11, 14, 16). Each item deals with being hard-driving or competitive. For example, questions one and four from the FTAS asks about being hard-driving and competitive and having a strong need to excel, respectively. This same theme is also found in items from the JAS and the SI (JAS question 8-- Do most people consider you to be definitely hard-driving and competitive; JAS question 15-- Do you set deadlines or quotas for yourself; SI question 5-- Would you describe yourself as a hard-driving, ambitious type of person in accomplishing the things you want; SI question 14-- Is there a lot of competition in school). Due to the nature of these items, factor one seems best described by the label "Hard-driving and Competitive."

Table 4 Items Comprising Factor 1

Test	Item	Loading
FTAS		
1	Hard-driving/Competitive	.761
4	Strong need to excel	.654
JAS		
1	Problems/ challenges in life	.338
8	Hard-driving/Competitive when younger	.747
9	Hard-driving/Competitive now	.759
10	Spouse says hard-driving/Competitive	.741
11	Spouse says too active	.390
15	Set quotas for self	.460
16	Keep two jobs moving forward	.341
17	Take less than allotted vacation	.310
20	More responsible than others	.339
21	More serious than others	.426
SI		
8	Hard-driving/Competitive	.770
9	Spouse says hard-driving/competitive	.713
10	Drive harder to accomplish than others	.436
11	Complete assignments early	.330
14	Enjoys competition in school	.355
26	Anxious to finish tasks	.358

Factor II. The second factor (Table 5) is comprised of fifteen items. Of these fifteen, seven items were from the FTAS (questions 2, 3, 6, 7, 8, 9, 10), two items were from the JAS (questions 5 and 6), and six items were from the SI (questions 16, 18, 21, 27, 28, 31). The items found on this second factor seem to represent a sense of pressure related to time that lends itself to impatience. This sense of pressure is exemplified by the FTAS items 2 (Describe self as usually pressed for time) and 6 (At the end of the day often feel very pressed for time) and SI item 16 (Do you feel like time is passing too rapidly for you to accomplish all you want to in one day?). As a result of this pressure seems to by a sense of impatience which is seen in FTAS item 10 (Do you get upset if you have to wait for something?), JAS items 5 and 6 (Do you frequently feel like hurrying others? and Do you put words in others' mouths?), and SI items 18, 21, and 28 (Do you resent waiting for an appointment? If you see someone doing a job rather slowly...does it make you restless to watch? When in your car, and there is a car in your lane going far too slowly, what do you do about it?).

Table 5 Items Comprising Factor III

Test		Items	Loading
FTAS			
	2	Pressed for time	.589
	3	Bossy or dominating	.339
	6	After work pressed for time	.561
	7	After work thinking about work	.371
	8	After work feel stretched	.335
	9	After work feel dissatisfied	.415
	10	Upset while waiting	.548
JAS			
	5	Frequently feel like hurrying others	.466
	6	Put words in others' mouths	.465
SI			
	16	Time passing too rapidly	.424
	18	Resent waiting	.361
	21	Restless watching someone slow	.509
	27	Hurry in most activities	.441
	28	Impatient with slow drivers	.436
	31	Impatient waiting in lines	.511

Due to the nature of the items in factor II, the factor is best described by the label "Time pressure and Impatience."

Factor III. The third factor (Table 6) is comprised of eight items. Of the eight items, one item was from the FTAS (question 5), three items were from the JAS (questions 3, 4, and 19), and four items were from the SI (questions 1, 2, 23, and 24). The items seem to represent speed in the areas of eating, walking, and talking. A quickness in eating is seen in the FTAS item 5 (Eating too quickly), the JAS items 3 and 4 (Are you the first on finished eating? Does your spouse say you eat too fast?), and SI item 23 (Do you eat rapidly?). These items had loadings above a .5 which suggests that they are merely the same question. Speed related to talking and walking is only found in SI items 2 and 24 of the SI (Rapid and accelerated speech. Do you walk rapidly?); yet, these two items have loadings less than .5 which suggest that each may be tapping a different aspect of the factor. In addition, JAS item 19 (Do others look to you for leadership?) and SI item 1 (Loud and explosive speech) also have loadings less than .5. Due to the nature of the majority of the items in factor III, the label "Speed" is given.

Table 6 Items Comprising Factor III

Test		Items	Loading
FTAS			
	5	Eats too quickly	.863
JAS			
	3	First one finished eating	.801
	4	Spouse says eat too fast	.613
	19	Chosen as group leader	.334
SI			
	1	Loud and explosive speech	.343
	2	Rapid and accelerated speech	.329
	23	Eat rapidly	.835
	24	Walk rapidly	.436

Unique Aspects. Twenty-one items were found not to load on either of the three factors and are therefore considered to represent unique variance (Table 7). Fifteen items are from the SI and six from the JAS. All items from the FTAS were found to load on one of the three factors.

Regressions

The three factors were regressed on the CHD risk factors: systolic blood pressure, diastolic blood pressure, exercise, smoking, personal health, family health, and age (Table 8). Of the seven dependent variables the only one that was significantly related to the Type A factors was age (R^2=.0874, F = 5.811, p < .0008).

Canonical Correlation Analysis

The three factors were analyzed using canonical correlations against the CHD risk factors: systolic blood pressure, diastolic blood pressure, exercise, smoking, personal health, family health, and age. No significant correlation was found (Table 9).

Table 7 Items that did not load on any of the factors

Test		Question
JAS		
	2	Act immediately under pressure
	7	Never late
	12	More energy than most people
	14	Daily job deadlines
	18	Bring work home
SI		
	3	Response latency
	4	Hostile intent
	5	Competing for control of interview
	6	Dissatisfied with school work
	7	Feels college carries heavy responsibility
	12	Does not allow children to win on purpose
	13	Plays to win with people own age
	15	Competitive in various areas
	17	Shows anger
	19	Vocal about having to wait
	20	Irritated about an aspect of college
	22	Take over jobs of others
	25	Leave quickly after eating
	29	Punctual for appointments
	30	Will not wait for a table at restaurants

Table 8 Regression Analysis of Cardiac Risk and TABP

Source	DF	Sum of Squares	Mean Squares	F	Prob>F
Systolic					
Model	3	40.085	13.36	0.09	N.S.
Error	182	26768	147		
C Total	185	26808			
Diastolic					
Model	3	321.05	107.1	0.86	N.S.
Error	182	22584	124.1		
C Total	185	22905			
Exercise					
Model	3	0.3169	0.105	0.77	N.S.
Error	182	24.844	0.136		
C Total	185	25.161			
Smoking					
Model	3	1.0293	0.3431	1.56	N.S.
Error	182	39.986	0.2197		
C Total	185	41.016			
Personal Health					
Model	3	0.52175	0.1739	1.36	N.S.
Error	182	23.2632	0.1278		
C Total	185	23.7849			
Mother's Health					
Model	3	0.21279	0.0709	0.78	N.S.
Error	182	16.4108	0.0902		
C Total	185	16.6236			
Father's Health					
Model	3	0.06716	0.0223	0.17	N.S.
Error	182	23.7177	0.13032		
C Total	185	23.7849			
Family History on Father's Side					
Model	3	0.53531	0.1784	0.81	N.S.
Error	182	39.7496	0.21840		
C Total	185	40.2849			
Family History on Mother's Side					
Model	3	1.37710	0.4590	2.14	N.S.
Error	182	38.9078	0.21378		
C Total	185	40.2849			
Age					
Model	3	476.1421	158.71	5.81	p<.0008
Error	182	4971.003	27.3132		
C Total	185	5447.145			

Table 9 Canonical Correlation Analysis of Cardiac Risk and the Three Factors

Likelihood Ratio	Approximate F	DF	Num DF	Prob>F
0.807	1.16	33	507	N.S.
0.933	0.61	20	346	N.S.
0.979	0.42	9	174	N.S.

Discussion

The leading cause of death in the United States is cardiovascular disease (Houston, 1988). Friedman and Rosenman (1974) popularized the concept that human behavior may augment the traditional risk factors that lead to heart disease. In order to measure behavioral contributions to heart disease, a number of tests were developed in the 1970's. These focused on a set of items based on clinical observations that implicated time pressure, impatience, hostility, aggressiveness, and competitive achievement striving (Rosenman, 1978).

In a meta-analysis, Matthews (1988) found the TABP not to be a reliable predictor of coronary heart disease. Booth-Kewley & Friedman (1987) stated that only certain aspects of TABP are predictive of CHD. In light of this information, Matthews (1988) determined that the different TABP measures might be tapping various aspects of TABP. Research had not determined the degree to which the three major measures tap the same domain, or the extent that they overlap yet have unique variance, or the degree to which the measures do not correspond to each. The present study focuses on three TABP measures, which have been related to coronary heart disease, the SI (Rosenman et al., 1975), the

JAS (Jenkins et al.,), and the FTAS (Haynes, Feinleib & Kannel, 1980) to determine the degree of shared variance and unique variance among the three measures. Since the TABP measures were designed to distinguish the high risk subjects from the low risk subjects, analyses were conducted to determine the degree to which each distinguishes between high and low risk subjects. The following is an analysis of the common and unique variance, the low risk versus high risk findings, and general conclusions.

Common Variance

The present study, via factor analysis, found three areas of commonality between the SI, the JAS, and the FTAS. There were twenty-one unique areas among the SI and the JAS. The preponderance of variance (26%) was found in the first factor, Hard-driving and Competitive. Two other factors were also found to contribute a small amount of variance, Time pressure and Impatience (10%) and Speed (9.2%).

Factor I: Hard-driving and Competitive. The identification of Hard-driving and Competitive factor as the basic component of the item factor analysis is supported in various research. Individual factor analysis of the SI (Matthews et al., 1977), the JAS (Zyzanski & Jenkins, 1970),

and the FTAS (Sykes et al., 1992) depict a Hard-driving and Competitive factor.

The present study found eighteen items to comprise the Hard-driving and Competitive factor, six from the SI, 10 from the JAS, and two from the FTAS. Only two of the SI items (SI 10 and 14) were found to depict the Hard-driving and Competitive in past research (Matthews et al., 1977). Matthews et al. (1977) also found other SI items (1, 2, 4, 13, 16, and 17) to load on the Hard-driving and Competitive factor, yet these items were not found to contribute to factor one in the present study. This discrepancy could be due in part to not only the difference in training of the interviewer and the two raters, but also to the loosely stated scoring criteria of the SI.

The present study also found three items (SI 8-- Hard-driving and competitive, 9-- Spouse says hard-driving and competitive, and 11-- Completes assignments early) as representative of factor I, yet other studies did not (Matthews et al., 1977). This is particularly surprising because each of these items would surely seem to depict some aspect of the Hard-driving and Competitive factor by factor analysis because the face validity is so apparent as it is

with virtually all the items on the SI, the JAS, and the FTAS inventories.

In addition to the SI items that compose the Hard-driving and Competitive factor, the present study also found 10 JAS items to depict factor I. Six of these JAS items (JAS 8, 9, 10, 11, 20 and 21) are consistent with research (Zyzanski & Jenkins, 1970). However, the other four items (JAS 1-- Problems/ challenges in life, 15-- Set quotas for self, 16-- Keep two jobs moving forward, and 17-- Take less than allotted vacation) found to depict factor I in the present study are not consistent with Zyzanski & Jenkins (1970).

FTAS items (FTAS 1, 3, and 4) were also found to depict the Hard-driving and Competitive factor. Only FTAS items 1 (Hard-driving and competitive) and 4 (Strong need to excel) are consistent with the findings of Sykes, et al. (1992). In the present study, FTAS item 3 (Bossy and Dominating) was found to load on Factor II, Time pressure and Impatience. However, Sykes et al. (1992) has shown this item to load on the factor labelled Hard-driving and Competitive.

Factor II: Time pressure and Impatience. Factor II, Time pressure and Impatience was found to depict the second factor yielded from the present analysis. Unlike the Hard-

driving and Competitive factor which is consistent with Matthews et al. (1977), Zyzanski & Jenkins (1970), and Sykes et al. (1992), this second factor seems to concur partially with the literature. The present study found fifteen items to load on the Time pressure and Impatience factor: 6 from the SI, 2 from the JAS, and 7 from the FTAS. Comparing the results from the present study with Matthews et al. (1977) little similarity is found. Of the six items from the SI that comprise Factor II, only one item (SI 31-- Impatient waiting in lines) was found by Matthews et al. (1977). Among the other SI items that were found in the present study to comprise Factor II, two items (SI 16-- Time passing too rapidly and SI 21-- Restless watching someone slow) were found by Matthews et al. (1977) to load on the Hard-driving and Competitive factor and the Speed factor respectively.

In addition to the SI items that compose Factor II, two JAS items (JAS 5 and 6) were also found to comprise the Time pressure and Impatience factor. Yet, Zyzanski & Jenkins (1970) found JAS 5 and 6 to load on the Speed factor.

The previously stated discrepancies found between Matthews et al. (1977), Zyzanski & Jenkins (1970), and the present study do not appear to occur when examining the FTAS items that comprise the Time pressure and Impatience factor.

Since Factor II of the present study seems to depict both time pressure and impatience, it is plausible that items which Sykes et al. (1992) found to load on the Work pressure factor and the Impatience factor should be found to load on Factor II of the present study. This in fact is the case. Six of the seven FTAS items (FTAS 2, 6, 7, 8, 9, and 10) were that comprise the Time pressure and Impatience factor found in the present study were consistent with Sykes et al. (1992). Only FTAS item 3 was not consistent with Sykes et al. (1992). According to Sykes et al., (1992) FTAS item 3 should load on the factor labeled hard-driving and competitive.

Factor III: Speed. Even though the label Speed is used to describe factors in various studies, the Speed factor in the present study seems to differ slightly from past studies in that it deals with rapid eating, walking, and speaking as well as loud and accelerated speech and leadership. Of the eight items loading on this factor, 4 items (SI 23, JAS 3 and 4, and FTAS 5) deal with rapid eating as either reported by others (JAS 4-- Spouse says eat too fast) or as self-reported (SI 23-- Do you eat rapidly?). Matthews et al. (1977) found SI item 23 and Zyzanski & Jenkins (1970) found JAS items 3 and 4 to depict Speed.

Characteristically, SI items 1 (Loud and explosive speech) and 2 (Rapid and accelerated speech) load on the factor labelled "hard-driving and competitive (Matthews et al., 1977); however, this is not the case for the present study. SI item 2 would seem to depict some aspect of speed because it measures rapid speech, therefore, its loading on Factor III is understandable. Unfortunately the loading of SI items 1 and 19 (Loud and explosive speech; Do others look to you for leadership?) is not so easily explained. Why would items dealing with leadership and loud speech load on a factor which seems to depict Speed? One suggestion is that Factor III is depicting an aspect of TABP that deals with leaders who are loud and quick in their mannerisms which is not displayed in the hard-driving and competitive realm of Factor I.

Of the three common areas of the TABP being tapped by the SI, the JAS, and the FTAS, research seems to be consistent regarding the Hard-driving and Competitive factor (Matthews et al., 1977; Zyzanski & Jenkins, 1970; and Sykes et al., 1992). However, results are only partially consistent in regard to the Time pressure and Impatience factor and the Speed factor (Matthews et al., 1977; Zyzanski & Jenkins, 1970; and Sykes et al., 1992). This discrepancy

is not surprising and is somewhat expected since the scree plot (Figure 1) displays such a drastic decline from factor I to factors II and III, indicating that factors II and III are less pertinent.

A possible explanation for the disparate results may be found by examining the subjects that compose the samples of each study (Matthew et al., 1977; Zyzanski & Jenkins, 1970; and Sykes et al., 1992). Matthews et al. (1977) and Zyzanski & Jenkins (1970) used employed male subjects from the ages 39-59. Sykes et al. (1992) used employed and unemployed male and female subjects from the ages 25-64. The sample group of the present study consisted of college male and female subjects from the ages 17-48. Given the age differences as well as the life status differences, the lack of conformance is not surprising. In fact some level of nonconformance is even expected since total conformance between studies or even samples within the same laboratory would be unrealistic.

Unique Variance

Twenty-one items were found to represent unique variance. However this does not necessarily indicate that each of these twenty-one items represents unique aspects of TABP. If several of the items had formed a factor then

perhaps an identifiable aspect could be defined. Because no such factor was found in the present study, the experimenter cannot clearly present any items from the SI, the JAS, or the FTAS as representing interpretable variance. Furthermore, the fact that all twenty-one items originated from the SI and JAS while none originated from the FTAS leads the experimenter to believe that the SI and JAS are representing areas which are not consistent with the concept of TABP.

Regression Analysis of Cardiac Risk and TABP

Of the risk factors that were examined, only age was found to predict TABP. This finding could be explained by examining the sample group for this study. Unlike most CHD studies, the present study was conducted in a university setting with students. The younger students typically do not have the same life responsibilities as the older students (i.e. spouse, children, household, and job). Because the older student has more responsibility, he or she may have a lifestyle characterized by Type A behaviors. An other possible explanation is that older nontraditional students are more likely to "buck the system" and are therefore more prone to Type A behavior by definition.

Canonical Correlation Analysis

When the three factors were correlated against the CHD risk factors, no significant relationship was found. This seems to be consistent with the other findings in the present study.

Conclusions

The present study has found that the Structured Interview, the Jenkins Activity Survey, and the Framingham Type A Scale measure a Hard-driving and Competitive aspect, a Time pressure and Impatience aspect, and a Speed aspect of the Type A Behavior Pattern. No other aspects were found.

In addition to the three factors found in this study, the researcher had also expected to find some trace of the hostility component within the Structured Interview as depicted in research (Dembroski & Costa, 1987; Dembroski, MacDougall, Costa, & Grandits, 1989; and Engebretson & Matthews, 1992). Unfortunately, no such hostility component was found. The absence of this hostility aspect could be attributed to the loose and confusing scoring criteria of the SI. The scoring instructions for the SI entails nothing more than a subjective 1 to 5 point scale with little to no set guidelines for point assignment.

The Type A behavior pattern construct faces a problem from the standpoint of basic item development. It seems that the early work upon which the TABP measures were based consisted of aggregated clinical hunches rather than systematic item development that thoroughly sampled the TABP content domain. In addition, the empirical sidetracks could have been avoided if theoretical framework had first been developed.

In order to improve the measurement as well as the construct validity of TABP a more theoretically sound measure of TABP should be constructed. Bryant and Yarnold (1995) suggest that the framework of the Big Five factor structure of personality could provide a matrix of interrelated conceptual domains. This would not only guide item construction but also improve conceptual clarity and provide a better understanding of the multiple dimensions of the Type A Behavior Pattern.

Even though this study did not find any significant relationships between high risk factor and TABP other than age, the fact remains that some aspects of TABP have been found to be predictive of CHD (Booth-Kewley & Friedman, 1987). Thus further work should be conducted to develop a more definitive Type A behavior measure.

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Appendix A

DEMOGRAPHIC INFORMATION subject no._____

bp _____

hr _____

Name _____

Date _____ Weight _____ Height _____

Major _____ Gender _____ Classification_____

Birth date _____ Grade Point _____

Number of hours taking this quarter _____

Job either on campus or off campus _____

Number of hours work per week _____

Day student or night student _____

Live on campus or off campus _____

With whom do you live: parents, etc _____

Are you married yes or no _____

How long have you been married _____

How many children do you have _____

What are the ages of your children _____

Do you wear a watch _____ Is it fast, slow, or correct _____

What type of physical activity do you participate in _____

_____

How many times a week do you exercise _____

Approximate number of hours of sleep a night _____

Do you smoke/have you smoked _____ For how long _____

What do you smoke _____ Average smoke per day _____

Average per week_____

How much alcohol do you drink in a typical week _____

Approximate number of drinks per day- tea, coffee,or colas _____

Are you on any type of medication _____

Do you have any health problems _____

Has your mother had any type of heart problems _____

If yes, then what type, ie. heart attack, etc. _____

Has your father had any type of heart problems _____

If yes, then what type, ie. heart attack, etc._____

Have any members of your father's family had any type of heart problems.
If yes, then what type _____

_____

Have any members of your mother's family had any type of heart problems.
If yes, then what type _____

_____

Appendix B

Statement of Informed Consent

You are being invited to participate in an experiment which is being conducted in order to determine the unique and common components of three Type A measures.

The administration of the two pen and paper measures and the interview will usually take anywhere from forty minutes to an hour and can be accomplished in one session. Each interview will be audio recorded. The procedures involve no risk to your health safety. However, you have the right to terminate your participation in the experiment at any time without penalty. As a result of your participation you will have a better understanding of the work of psychologists in clinical settings. (If you are an introductory psychology student, your instructor may award extra credit for your participation.)

The results of these measures will remain confidential, as will all test forms. Your identity will not be included on the materials.

YOU ARE MAKING A DECISION ABOUT WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE, HAVING READ THE INFORMATION PROVIDED ABOVE.

_____ _____

Signature of Volunteer Date

If you would like more information regarding the purpose and results of this study, please provide your mailing address in the space provided below.

_____

_____

_____

_____

Appendix C

Structured Interview Form

Introduction: Most of the questions are concerned with your superficial habits and none of them will embarrass you. I would appreciate it if you would answer the questions to the best of your ability. Your answers will be kept in the strictest confidence. (Begin taping; emphasize italicized words)

Your code number is _____

1. May I ask your age, *please*?

2. What is your student classification?

   A. How long have you been at this college?

3. Are you *satisfied* with your school work thus far? (Why not?)

4. Do you feel that college carries *heavy* responsibility?

   A. Is there any time when you feel particularly *rushed* or under *pressure*?

   B. When you are under *pressure* does it bother you?

5. Would you describe yourself as a *hard-driving, ambitious* type of person in accomplishing the things you want, getting things done as *quickly* as possible, or would you describe yourself as a relatively *relaxed* and *easy-going person*?

   A. Do you have a boyfriend/girlfriend? (Close friend?)

   B. How would he/she describe you.... as *hard-driving* and *ambitious* or as relaxed and easy-going?

   C. Has he/she ever asked you to slow down in your work? *Never*? How would he/she put it.....in *his/her own* words?

6. When you get *angry* or *upset*, do people around you know it? How do you show it?

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

8. Do you complete homework assignments before they are due? How often?

9. Do you know any children between the ages of 6 and 8? Do you ever play competitive games with them, like cards, checkers, Monopoly?

   A. Did you *always* allow them to *win* on *purpose*?

   B. *Why*? (*Why not*?)

10. When you play games with people your own age, do you play for the fun of it, or are you really in there to *win*?

11. Is there a lot of *competition* in school? Do you enjoy this?

    A. Are you competitive in other areas...sports for example?

12. When you are in your automobile, and there is a car in your lane going *far too slowly* for you, what do you do about it? Would you *mutter* and *complain* to yourself? Would any one riding with you know that you were *annoyed*?

13. Most people who go to school have to get up fairly early in the morning.. in your particular case... what...time...do you...ordinarily...get up?

14. If you make a *date* with someone for, oh, two o'clock in the afternoon, for example, would you be *there* on *time*?

    A. If you are kept waiting, do you *resent* it?

    B. Would you *say* anything about it?

15. If you see someone doing a job rather *slowly* and you *know* that you could do it faster and better yourself, does it make you *restless* to watch?

    A. Would you be tempted to *step in and do it* yourself?

16. What *irritates* you most about this college, or the students here?

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 eight or ten people *waiting ahead of you* for a table, will you wait? What will you do while you are waiting?

19. How do you feel about waiting in lines: *bank lines, supermarket lines, cafeteria lines, post office lines...*?

20. Do you *always* feel anxious to *get going* and *finish* whatever you have to do?

21. Do you have the feeling that *time* is passing too *rapidly* for you to *accomplish* all the things you'd like to *get done* in one day?

    A. Do you *often* feel a sense of *time urgency*? *Time pressure*?

22. Do you *hurry* in doing most things?

All right, that completes the interview. Thank you very much.

Appendix D

THE JENKINS ACTIVITY SURVEY
form T

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 a 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

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 ever 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.

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. Rarely 3. I am never late.

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?

14. When you have to "wait in line," such as at a restaurant, a store, or the post office, 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 2. Half the time
    3. Only occasionally 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 more 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 more relaxed and easy going?
    4. Definitely relaxed and easy going?

18. How would your spouse (or close 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?

19. How would your spouse (or best friend) rate your general level of activity?

    1. Too slow. Should be more active.
    2. About average. Is busy much of the time.
    3. Too active. Needs to slow down.

20. Would people who know you well agree that you take your work too seriously?

    1. Definitely Yes 2. Probably Yes
    3. Probably No 4. Definitely No

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

    1. Definitely Yes 2. Probably Yes
    3. Probably No 4. Definitely No

22. Would people who know you well agree that you tend to get irritated easily?

    1. Definitely Yes 2. Probably Yes
    3. Probably No 4. Definitely No

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

    1. Definitely Yes 2. Probably Yes
    3. Probably No 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 2. Probably Yes
    3. Probably No 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 2. Probably Yes
    3. Probably No 4. Definitely No

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

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

27. How is your "temper" nowadays?

    1. Fiery and hard to control
    2. Strong, but controllable
    3. No problem
    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 O.K. 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 2. Weekly
3. Monthly 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?

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 2. Worse
3. The same (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 as nights or weekends)? If this is not possible circle here: 0

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

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

Much more effort	A little more effort	A little less effort	Much less effort

41. In sense of responsibility, I am

Much more responsible	A little more responsible	A little less responsible	Much less responsible

42. I find it necessary to hurry.

Much more of the time	A little more of the time	A little less of the time	Much less of the time

43. In being precise (careful about detail), I am

Much more precise	A little more precise	A little less precise	Much less precise

44. I approach life in general

Much more seriously	A little more seriously	A little less seriously	Much less seriously

Thank you for your cooperation!

Appendix E

FRAMINGHAM QUESTIONNAIRE

Number _____

This questionnaire contains 10 statements. Please read each item carefully and circle the one answer that best describes you.

VW = very well
FW = fairly well
SW = somewhat well
NA = not at all

Traits and qualities which describe you

Being hard-driving and competitive	VW	FW	SW	NA
Usually pressed for time	VW	FW	SW	NA
Being bossy or dominating	VW	FW	SW	NA
Having a strong need to excel in most things	VW	FW	SW	NA
Eating too quickly	VW	FW	SW	NA

Circle yes or no to the following questions.

Feelings at the end of an average day of work

Often felt very pressed for time	Yes	No
Work stayed with you so that you were thinking about it after working hours	Yes	No
Work often stretched you to the very limits of your energy and capacity	Yes	No
Often felt uncertain, uncomfortable, or dissatisfied with how well you were doing	Yes	No

Do you get upset when you have to wait for something?	Yes	No