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I am submitting herewith a dissertation written by Allan S. Philp entitled "An Examination of the Relationships Among the Type A Behavior Pattern, Hostility, and Locus of Control Beliefs." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

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AN EXAMINATION OF THE RELATIONSHIPS AMONG
THE TYPE A BEHAVIOR PATTERN, HOSTILITY, AND
LOCUS OF CONTROL BELIEFS

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ABSTRACT

The Type A behavior pattern (TABP) has been found to have a statistically significant relationship to coronary heart disease (CHD) risk. As evidence linking TABP to CHD has accumulated, the hostility component of TABP has emerged in research studies as the characteristic which seems to have the most predictive power for CHD risk. The Type A syndrome is less well researched and understood, however, from the perspective of the motivation for the behavior. One explanation for the evolution and maintenance of TABP suggests that a network of beliefs about people and the world is responsible for the behavior pattern. At present, there is no psychometrically sound instrument for measuring the specific beliefs thought to be associated with TABP; however, the Rotter Internal-External Scale, a well-established instrument for measuring locus of control, has been factor analyzed and appears to include beliefs which parallel TABP beliefs concerning people and the nature of the world.

The purpose of this study was to examine the relationships among TABP, hostility, and Rotter locus of control (LOC) beliefs to provide new knowledge concerning the motivation for CHD risk behavior. It was hypothesized that Types A and B people would differ in their beliefs, with Type As inclined more toward externality and beliefs that the world is difficult, unjust, and unpredictable. It was also hypothesized that Types A and B subjects would differ in their levels of hostility with Type As having higher hostility and anger-in than Type Bs. A third hypothesis was that hostile

and non-hostile people would differ in their beliefs, with hostile people expected to score more in the direction of externality.

Subjects in the study were men (N=72) and women (N=19) between the ages of 25 and 52 who were either full-time members of the Air National Guard or employed in civilian occupations with weekend Guard duty once a month. Each subject completed a demographic questionnaire, the Jenkins Activity Survey, the Rotter Internal-External Scale, and the Buss-Durkee Hostility Inventory. Pearson product-moment correlations, independent samples t-tests, and multiple regression analysis were used in the data analysis.

The results of the study did not confirm the prediction that Type As would be more inclined toward beliefs that the world is difficult, unjust, and unpredictable. Likewise, hypothesis testing did not support the idea that Type As would have higher levels of hostility than Type Bs. The prediction that hostile subjects would score more in the direction of external locus of control and beliefs that the world is difficult and predictable was supported. In addition, externality was found to be more strongly related to the anger-in dimension of hostility than anger-out.

While the results of this study did not confirm a relationship between locus of control beliefs and the global TABP, the results did reveal a relationship between the hostility component of TABP and a network of beliefs about people and the nature of the world. This information has implications for identification and treatment of people who display hostility, the TABP component which appears to be the critical element of association with CHD.

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CHAPTER I

INTRODUCTION

Coronary heart disease (CHD) is a leading cause of death in the United States and has been the target of extensive research to identify possible causes. Attempts to explain the nature of this disease have typically focused on the relationship between CHD and traditional risk factors such as age, gender, obesity, physical inactivity, high concentrations of cholesterol, cigarette smoking, elevated blood pressure, and family history of heart disease (Brand, Rosenman, Sholtz, & Friedman, 1976). However, whether considered singly or in combination, the traditional risk factors account for less than half of the CHD incidents in middle-aged men, the population at highest risk for premature CHD in the United States (Jenkins, 1971). The implication of this apparent incongruity is that there are more complex associations among these factors than are readily apparent. Consequently, researchers in recent years have turned to examination of psychological and behavioral variables in an effort to isolate factors which might prove to be reliable predictors of CHD.

The pioneering work of Friedman and Rosenman in the Western Collaborative Group Study, a longitudinal study begun in 1960, provided the first convincing evidence of a pattern of behavior called Type A which appeared to be associated with a characteristic action/emotion complex exhibited by individuals chronically struggling to obtain an unlimited number of poorly defined things in the

shortest period of time, in the face of opposing effects by persons or things in the environment (Matteson & Ivancevich, 1980). This broad definition suggests a wide range of behavior characteristics which could be used to describe the Type A behavior pattern (TABP). Some of those most commonly cited in the literature are competitiveness, time urgency, aggressiveness, achievement striving, and hostility. Researchers discovered that subjects who displayed the characteristic TABP were at greater risk for CHD than those who did not display the behavior. Most importantly, the relationship between TABP and CHD remained significant even when other risk factors such as hypertension, smoking, and diet were statistically controlled (Rosenman, Brand, Jenkins, Friedman, Straus, & Wurm, 1975).

As evidence linking TABP to CHD began to accumulate, researchers attempted to determine whether different aspects of TABP were differentially linked to CHD risk. The hostility component has emerged as the characteristic which seems to have the most predictive power for CHD risk of all the TABP characteristics (Matthews, Glass, Rosenman, & Bortner, 1977). The growing body of research on TABP and the hostility component suggests that hostility may be the critical element of association with CHD.

Although the literature provides convincing evidence of the relationship between the elements of TABP and CHD risk, the Type A syndrome is less well researched and understood from the perspective of the motivation for the behavior. One explanation for the evolution and maintenance of Type A behavior suggests

that cognitions form the basis of the behavior pattern (Price, 1982). In her theory, Price proposes that the cognitions are an outgrowth of socio-cultural values and conditions of worth communicated through the family, significant others, schools, and the media. According to Price (1982), a strong network of personal beliefs fostering a variety of fears and anxieties firmly anchors the cognitions and dominates the individual's behavior and view of the environment. The cornerstones of the belief system are the following strongly held propositions: (a) Personal esteem and worth equate with the number and quality of achievements; (b) There are no universal moral principles, so it is up to each person to fend for himself/herself in accumulating his/her "share" of what is important in life; and (c) All resources (time, recognition, material benefits, love, etc.) are scarce and, therefore, the targets of strong competition. Several researchers (Burke, 1984; Philp & Williams, 1985) have investigated the relationship between Price's (1982) theory of beliefs and TABP and concluded that there is some evidence to suggest a link between beliefs and TABP. However, these conclusions must be viewed with caution because the instruments used to measure beliefs have not been subjected to rigorous psychometric evaluation and the studies have methodological flaws.

The propositions in Price's theory are yet to be empirically substantiated, but the implications of such a theory are far-reaching. Traditional therapeutic intervention methods of stress reduction typically used to bring about changes in TABP and the damaging

are insufficient and achieve only short term results (Price, 1982). Interventions which are aimed specifically at altering established and long held beliefs appear to be more useful in bringing about lasting modifications or changes in TABP (Friedman & Ulmer, 1984; Thurman, 1985). However, because there is at present no tangible evidence of the specific beliefs which may lead to TABP, most clients who receive treatment are those who have already suffered some form of heart disease and are in restorative treatment programs. Convincing evidence of the existence of a relationship between specific beliefs, TABP, and hostility would open the way for development of interventions specifically aimed at altering the potentially damaging beliefs.

Statement of Problem

The dilemma in moving forward with intervention strategies for TABP and the hostility component is the absence of a valid measure for establishing the existence of unique beliefs associated with these behaviors. Since hostility appears to be the TABP element which places people at greatest risk, it seems particularly important to identify world views strongly related to hostility.

Hostility has typically been thought of as a component of anger, but indications are that it is a disposition which can exist without overt signs of anger and may even exist in the absence of anger (Buss, 1961). Although hostility can manifest itself in expressions of anger, it is predominantly a disposition or way of viewing life events and the world. It consists of

implicit verbal responses (thoughts) involving negative feelings and negative evaluations of people and events (Buss, 1961).

The implications are that hostile people have a negative and pessimistic view of people and the world which has resulted from previous negative experiences (Cook & Medley, 1954).

Rotter (1954), in his social learning theory, provides a widely researched and accepted theoretical delineation of the views, or beliefs that people have about others and the world. He hypothesizes that the major determinants of behavior are expectancy of reinforcement, value of reinforcement, and the situation (Rotter, 1975). Rotter (1982) emphasizes that antecedent conditions described in terms of relevant past and present experience can be used for successful predictions of behavior, based on how the person views expectancy of reinforcement, the value of reinforcement, and the conditions of the situation. The critical factor is cognitions, or the belief regarding the nature of the causal relationship between one's own behavior and the consequences. Rotter (1966) proposed that people have generalized expectancies, or beliefs about the world with regard to whether or not reinforcement, reward, or success is dependent on their own behavior or is controlled by external forces. If reinforcement is thought to be controlled by external forces the person is said to have an external locus of control (LOC). If the person perceives that events are contingent on his/her own behavior, the perception of causality is an internal LOC.

EXERCISE

Unlike locus of control, hostility does not focus on reinforcement, but on beliefs and attitudes about how people behave towards others. The notion of expectancies does play a role in hostility, but instead of expectancies about the impact of one's control over reinforcement, hostility involves expectancies about behavior of others based on previously experienced situations and events. Hostility results from the individual's cognitions of being wronged, slighted, cheated, harmed, or otherwise threatened by the actions of others, as opposed to a belief that reinforcement is or is not contingent on one's own behavior. It may be that hostility often does result from the perception that others are controlling the reinforcers. However, the two constructs of hostility and locus of control are assumed to be largely independent, with the focus of hostility being attitudes, feelings, and emotions about people, events, and situations, and the thrust of locus of control being perceptions of the individual as to whether or not reinforcement, reward, or success in the world is dependent on his/her own behavior or controlled by external forces.

The instrument developed by Rotter (1966) to measure LOC was factor analyzed (Collins, 1974) and four common themes or beliefs emerged: (a) the difficult-easy world; (b) the just-unjust world; (c) the predictable-unpredictable world; and (d) the politically responsive-unresponsive world. These beliefs, though stated differently, are similar to the beliefs proposed by Price (1982). Moreover, Price's hypothesis is based on social learning theory; therefore, both belief theories stem from the same conceptual

roots. For example, Price's idea that Type A people believe that personal esteem and self-worth equate to the number and quality of achievements suggests that external reinforcement received from others in the environment in the form of recognition for achievements is a key element of the Type A belief system. The individual who evaluates his/her worth according to external achievements may view the world as more difficult than one who evaluates his/her worth on a more intrinsic basis. The former individual may feel that he/she has to prove his/her worth in all situations. The relationship between Price's model and the Rotter factors is evident also in the similarities between the Price belief that there are no universal moral principles and the Rotter just-unjust world belief. Both center on the reliability of fairness and justice as functional values across human experiences. The Rotter belief that the world is either predictable or unpredictable relates to the consistency or randomness of the environmental reinforcement schedule. If reinforcement is viewed as inconsistent, one must continue to strive at all times to insure that adequate reinforcement is received. The notion of competitive striving is a critical element in the Price Type A belief that all resources (money, love, time, and other things which are important in life) are scarce and therefore targets of strong competition. Thus the incessant striving of the Type A person may be related to the belief that reinforcement is unpredictable. These commonalities among the Price and Rotter beliefs suggest linkage between the two theories and a possible bridge for the gap between beliefs and TABP.

There is a well established and psychometrically sound instrument for measuring the Rotter beliefs (Rotter, 1966). Examination of relationships between the Rotter factors and TABP components (with emphasis on the hostility element) could provide new knowledge concerning the motivation for CHD risk behavior, and lead to new intervention strategies to reduce this destructive behavior before the onset of CHD. The purpose of this study was to examine the relationships among TABP, hostility, and three Rotter LOC beliefs: (a) difficult-easy world; (b) just-unjust world; and (c) predictable-unpredictable world.

Definitions

Since some of the terms and constructs used in this study ✓ could be interpreted and defined in different ways, the following definitions apply:

Type A behavior - a constellation of behaviors which has been shown to have a relationship to CHD risk.

Hostility - a persistent negative attitudinal set about people, events, and the world resulting from previous negative experiences and sustained by self-verbal responses or cognitions.

Locus of control - beliefs regarding the nature of the causal relationship between one's own behavior and the consequences.

External locus of control - belief that reinforcement follows some personal action but is not contingent on this action.

Internal locus of control - belief that reinforcement is contingent on one's own action.

Anger-in - inability or unwillingness in a variety of circumstances to verbally or nonverbally express anger, irritation, resentment, or annoyance against the source of frustration. For the purpose of this study, Anger-in is the total of the Resentment and Suspicion scale scores on the Buss-Durkee Hostility Inventory.

Anger-out - verbal or nonverbal expression of anger, irritation, resentment, or annoyance against the source of frustration. For the purpose of this study, Anger-out is the total of Assault, Indirect Hostility, Irritability, and Verbal Hostility scale scores on the Buss-Durkee Hostility Inventory.

Assault - physical violence against others.

Indirect hostility - aggression expressed in devious means such as gossip or practical jokes, and undirected aggression such as temper tantrums and slamming doors, where there is a discharge of negative affect not directed at someone.

Irritability - a readiness to express negative affect at the slightest provocation.

Negativism - oppositional behavior, usually directed against authority.

Resentment - jealousy and hatred of others which includes a feeling of anger at the world over real or imagined mistreatment.

Suspicion - projection of hostility onto others, which may vary from distrust to beliefs that people are planning harm.

Verbal hostility - negative affect expressed in both the style and content of speech which may include arguing, shouting, or screaming; content includes threats, cursing, and being overly critical.

CHAPTER II

REVIEW OF LITERATURE

In recent years the body of literature which has attempted to explain and better understand the nature of TABP and its relationship to CHD has grown rapidly. Although the Type A syndrome has been recognized as an action-emotion complex which has some relationship to CHD risk for over 20 years, more than half of the journal articles published during this period have appeared in the last five years (Price, 1982). This chapter includes a synthesis of the most significant studies done on TABP, with emphasis on the hostility component of the behavior pattern. The Price (1982) theoretical model of Type A beliefs is also discussed, and available research involving the belief theory is reviewed. Finally, Rotter's theory of social learning and locus of control is outlined and pertinent research is examined.

Type A Behavior Pattern

Type A behavior is a continuous struggle and an obsessive and compulsive attempt to accomplish or achieve more and more things or participate in more and more events in less and less time, most often in the face of great opposition -- real or imagined -- from others or the environment. The Type A person seems to be dominated and driven by insecurity (which may not be readily apparent to others) and excessive aggressiveness (Friedman & Ulmer, 1984). These and other psychological factors have been



implicated with coronary heart disease, along with physical risk factors such as diet and smoking. While physical risk factors have long been linked to heart disease, it has only been since the turn of the century that personality and behavioral correlates of heart disease appeared in the literature.

History

One of the earliest behavioral descriptions of the coronary prone individual was provided in 1910 by Sir William Osler, a well known physician, when he reported that a preponderance of coronary patients exhibited specific behaviors related to ambition, hard-driving orientation, and strong discipline (Matteson & Ivancevich, 1980). Osler went on to use his observations with respect to drive and competitiveness in diagnosing suspected heart disease. These themes were also used by other physicians and became the cornerstones of later research into behavioral characteristics of coronary patients. It was not until the 1940's, however, that the idea of a coronary personality began to emerge as an item in the medical research literature. Flanders Dunbar, one of the pioneers of psychosomatic medicine, interviewed several hundred hospital patients and concluded that they all varied in their personality characteristics with CHD patients emerging as a distinct personality grouping (Dunbar, 1943). Dunbar described the coronary personality as compulsive, dominating, and aggressive, characteristics inferred by Osler forty years earlier.

In the early 1960's attempts continued to define personality types or factors characteristic of CHD patients. They were based on interpretation and factor analysis of various measures of personality such as the Cattell Sixteen Personality Factor Questionnaire and the Minnesota Multiphasic Personality Inventory. These efforts met with inconsistent results (Matteson & Ivancevich, 1980). At about the same time, a group of California coronary researchers, Meyer Friedman and Ray Rosenman began developing an approach which departed from the notion of a coronary personality and instead began to focus more on behavioral characteristics or responses to the environment which might be related to CHD. These researchers are credited with the first systematic study of the possible association of behavioral characteristics and CHD.

Behavior Characteristics

Friedman and Rosenman began the first formal investigation of the stress-related syndrome which has come to be known as the Type A behavior pattern in the late 1950's. They noted that coronary patients they were seeing in private practice exhibited very similar speech and motor characteristics. These characteristics included excessively rapid body movements and other gesturing motor behavior, tense facial and body musculature, explosive voice levels, hand and teeth clenching, and impatience (Friedman & Rosenman, 1959). They began to investigate further, speculating about what might be responsible for these common behaviors that

might also provide a connection to CHD. They identified a number of specific characteristics which appeared to be shared by many of their coronary patients. The most common were (a) excessive drive to achieve; (b) eagerness to compete; (c) persistent drive for recognition; (d) sustained and continuous involvement in many activities that were subject to deadlines; (e) habitual acceleration of the rate of execution of mental and physical functions; and (f) extraordinary mental and physical alertness (Friedman & Rosenman, 1959). During the next twenty years, over thirty characteristics of TABP appeared in the literature (Price, 1982). The ten most common in order of frequency cited in the literature are: (a) competitiveness; (b) time urgency; (c) aggressiveness; (d) hard-driving; (e) achievement striving; (f) preoccupied with/subject to deadlines; (g) unbridled ambition; (h) accelerated pace; (i) impatience; and (j) hostility.

In an effort to investigate more carefully the possible connection between TABP and CHD, Friedman and Rosenman conducted a series of laboratory studies which demonstrated that biochemical pathways do exist by which excessive stress and struggle may influence human metabolic functions in ways that could increase a person's susceptibility to CHD. They discovered that some of the same biochemical abnormalities that occur in coronary patients were also present in healthy people who displayed TABP. Some of their findings included elevated serum cholesterol and tryglyceride levels and reduced blood clotting time (Friedman, Rosenman, & Carroll, 1958), and excess catecholamine production

during working hours (Friedman, St. George, Byers, & Rosenman, 1960). These findings supported the hypothesis that there was a relationship between TABP and CHD, and that the behavior could precede onset of the disease (Price, 1982).

The next step in establishing the relationship between TABP and CHD more firmly was the Western Collaborative Group Study. This prospective study was begun in 1960 to determine if TABP had some predictive value for CHD in a population of apparently healthy men aged 39-59. The subjects were classified as either possessing the stress-related pattern of behavior which they called Type A (N=1589), or a more laid back pattern of behavior which they called Type B (N=1565). The pattern of behavior called Type A was conceptualized as consisting of the six components the researchers had identified earlier (Friedman & Roseman, 1959). When Friedman was later asked why they referred to the pattern of behavior as Type A he offered this explanation:

I have often been asked how Type A behavior received its name. In 1958, when we had been refused funding twice for a study of "emotional stress" and its possible relation to coronary heart disease, I went to Washington to see whether I could find out what was going wrong. I spoke to Dr. C.J. Van Slyke of what was then called the National Heart Institute, who explained that because we used the term emotional stress in the title of our grant applications, they were always sent off to psychiatrists for review. These specialists apparently doubted that two cardiologists and a biochemist were equipped to study emotional matters, and refused funding. Dr. Van Slyke, who had himself examined our applications, suggested a small word change. "I believe you fellows are describing a behavior pattern, something that you've actually witnessed," he said. "Why don't you just label it Type A behavior pattern? That shouldn't upset the psychiatrists." We

did so on our third grant application. It was favorably received and funded (Friedman & Ulmer, 1984, p.6).

The 8½-year follow-up data from the study revealed that initially well subjects who had been assessed at intake as demonstrating TABP were more than twice as prone to the onset of CHD as subjects originally assessed as Type B (Rosenman & Friedman, 1974). Of approximately 1500 subjects classified as TABP types, 178 or approximately 12% developed CHD. The study data also showed that TABP subjects with CHD were approximately five times more likely to have a second infarction than were Type B subjects. Moreover, when statistical adjustment was made for other risk factors such as blood pressure, cholesterol, diet, and smoking, the significant relationships between TABP and CHD held (Rosenman et al., 1975).

During the same time frame as the Western Collaborative Group Study, other researchers were also conducting research on TABP which centered around predicting CHD retrospectively or prospectively. Findings of these studies were similar to those of the Western Collaborative Group Study (Caffrey, 1969; Kenigsberg, Zyzanski, Jenkins, Wardwell, & Licciardello, 1974; Wardwell & Bahnson, 1973). Research focusing on the possible association between TABP and CHD also included non-American samples. For example, Theorell and Rahe (1972) reported findings in a study of coronary victims in Sweden which supported TABP relationship findings in American populations. Since publication of the Western Collaborative Group Study findings, other studies have been conducted which added to the evidence linking TABP to CHD (Haynes, Feinleib,

Levine, Scotch, & Kannel, 1978; Shekelle, Schoenberger, & Stamler, 1976; Theorell, Lind & Floderus, 1975). Although some isolated studies have failed to find an association between global Type A and CHD, the majority of published research supports the conclusion that a relationship exists between the elements of TABP and CHD. One thorough review identified 24 studies that addressed the question of a relationship between TABP and CHD (Jenkins, 1976). Of the studies examined in this review, only one found no support, two had mixed results, and the remaining 21 reported positive associations.

The Review Panel on Coronary-Prone Behavior and Coronary Heart Disease (1981) stated:

The Review Panel accepts the available body of scientific evidence as demonstrating that Type A behavior . . . is associated with an increased risk of clinically apparent CHD in employed, middle-aged U.S. citizens. This increased risk is greater than that imposed by age, elevated levels of systolic blood pressure, serum cholesterol, and smoking and appears to be of the same order of magnitude as the relative risk associated with the latter three of these other factors (p. 1200).

Some recent reviews have raised questions regarding the importance of global TABP in predicting CHD (Fischman, 1987; Powell, 1982; Wood, 1986). However, the evidence still seems to favor some combination of factors rather than a specific CHD risk element. The increased risk of CHD associated with TABP becomes more convincing when the physiological consequences of TABP are considered.

Physiological Mechanisms

The bulk of research done on the Type A pattern of behavior suggests that Type As respond to the social and psychological stresses of day-to-day life with stronger physiological reactions than do Type Bs (Houston, 1983). Activation of the sympathetic-adrenal-medullary system, or the fight-flight response, involves release of various neurohormones, especially the catecholamines epinephrine and norepinephrine. Norepinephrine is thought to increase CHD risk by raising systolic and diastolic blood pressure, elevating the level of cholesterol in the blood, increasing sludging, and reducing blood clotting time. The vasoconstriction of the viscera and skin, which are characteristic of the sympathetic-adrenal-medullary system, extends to the skeletal muscles in response to adrenal-cortical arousal, resulting in increased peripheral resistance and accompanying elevations in blood pressure and artery damage. By reacting strongly and more often to stress inducing stimuli in their environments, Type As may experience more frequent and more extended periods of high levels of sympathetic arousal.

Numerous studies illustrate the potential linkage between TABP and physiological indices. For example, Williams, Haney, Gentry, and Kong (1978) noted that extreme Type A behaviors are associated with neuroendocrine, metabolic, and cardiovascular activity which cause formation of atherosclerosis plaques, and Perkins (1984) found that Type A subjects have increased heart rates while doing high response cost tasks. In other studies,

Williams et al. (1982) found increased levels of epinephrine and norepinephrine in an examination of Type A males during performance of a mental arithmetic test, and Lawler, Rixse, and Allen (1983) found greater increases in both heart rate and blood pressure in Type A women during mental arithmetic and visual puzzles. VanSchijndel, Demay, and Naring (1984), in an examination of 60 adult males performing an anagram solution, found that Type As had significantly elevated blood pressure and elevated norepinephrine, and Blumenthal, Lane, and Williams (1985) examined the relationship of Type A behavior and the inhibited power motive and found that Type A men showed a greater tendency than Type Bs to exhibit increased heart rate, systolic blood pressure, and forearm blood flow. Other research has shown a correlation between hostility and the amount of change in systolic blood pressure experienced under stress (Dembroski, MacDougall, Shields, Petitto, & Lushene, 1978). Hostility has also been found to be an effective predictor of physiological changes during the Structured Interview for TABP assessment and during a challenging history quiz (Dembroski, MacDougall, & Lushene, 1979). With very few exceptions, research supports links between the Type A behavior pattern and elevated cholesterol, triglycerides, lipoproteins, and excretion of norepinephrine (Matteson & Ivancevich, 1980).

This research suggests that the sympathetic-adrenal-medullary system is activated in the Type A person more quickly and for longer periods than for the Type B person. While the damage which is occurring inside the body of the Type A person due to

these physiological changes cannot be readily observed, the outward manifestations of TABP mentioned earlier are characteristic and are strong indicators of CHD at work. Despite the long list of descriptors which has accumulated over the years, there is increasing evidence that one component, hostility, may be the key element in the destructive TABP syndrome.

Role of Hostility

As evidence linking TABP to CHD began to accumulate, researchers attempted to determine whether different aspects of TABP were differentially linked to CHD risk. The preponderance of evidence pointed to the hostility component as the strongest risk element. For example, Matthews, Glass, Rosenman, and Bortner (1977) concluded that the hostility component seemed to have the most predictive power for CHD risk of all the TABP characteristics. Williams et al. (1980) found a relationship between the hostility component of TABP and severity of occlusion of the coronary arteries. According to Diamond (1982), this finding represented the strongest direct evidence for the role of TABP and hostility in the development of atherosclerosis. Shekelle, Gale, Ostfeld, and Paul (1983) also found hostility to be associated with coronary atherosclerosis. In another study, high levels of hostility as assessed by the MMPI were found to be predictive of both clinical and coronary disease incidence and total mortality in a 25 year follow-up of 225 medical students (Barefoot, Dahlstrom, & Williams, 1983). Other researchers found that hostility correlated significantly

with systolic blood pressure increases, and that Type A people who display hostility may experience more frequent and prolonged periods of physiological activation than others (Diamond, 1982; Manuck & Krantz, 1984; Williams, 1984). More recently, studies have focused on potential for hostility and a dimension of anger called anger-in, an inability or unwillingness in a variety of circumstances verbally or nonverbally to express anger, irritation or annoyance against the source of frustration (Dembroski, MacDougall, Williams, Haney, & Blumenthal, 1985; MacDougall, Dembroski, Dinsdale, & Hackett, 1985). These findings suggest that the hostility component of TABP may be the critical element of association with CHD and that unexpressed chronic anger may be the most damaging form of hostility.

Relationship of Cognitions

Hostility has typically been thought of as a component of anger (Buss, 1961), but indications are that it is a disposition which can exist without overt signs of anger and may even exist in the absence of anger. Although hostility can manifest itself in expressions of anger it is predominantly a disposition or way of viewing life events and the world. Saul (1976) in The Psychodynamics of Hostility says that hostility is an impulse, intent, or reaction which denotes feeling and motivation. Buss (1961), who has investigated hostility, anger, and aggression extensively, theorizes that hostile people view the world as a cold, threatening place. Hostility is a negative attitude,

as contrasted with anger which is an emotional reaction, and aggression which is an instrumental response with an element of punishment. According to Buss (1961), aggression and anger occupy brief temporal periods while hostility endures much longer because it consists of implicit verbal responses (thoughts) involving negative feelings and negative evaluations of people and events. There may also be elements of destructiveness, contempt, and resentment (Diamond, 1982). For example, Carver and Glass (1978) found that Type A people were more likely to administer shocks to subjects after being harassed and degraded by them than were Type B people. However, these negative feelings and evaluations may be largely unexpressed and may become magnified with the passage of time so that they become part of an enduring pattern of behavior or personality classification (Cooper, Detre, & Weiss, 1981).

Hostility stems from interpretation and evaluation of stimuli and is typically implicit, consisting of ruminations about past attacks on oneself, rejections, and deprivations (Buss, 1961). It can be regarded as a conditioned response with the activating event being the unconditioned stimulus, the self-verbal or language response being the conditioned stimulus, and the conditioned response being the attitudinal response of hostility. These self-verbal responses, which may reflect resentment, jealousy, and the belief that others are threatening, determine how negative the feeling reaction will be to the same or similar stimuli the next time they are presented. Buss (1961) calls this an observing-

labeling response and says that this pairing process is so closely allied that the two are inseparable. Theoresen and Eagleston (1985) agree on this point and state that over a period of time these interactional sequences cause hostility to become an established response pattern. Buss (1961) maintains that the negative language becomes part of the observation and memory of the stimulus and the merged observation-label constitutes the hostile response. The idea of self-verbal responses or cognitions influencing emotions is widely accepted by cognitive therapists such as Beck (1978), Ellis (1975), and others, and major emphasis is placed on identifying and disrupting or changing the thoughts which lead to the undesirable emotional response.

Beliefs About Others and the Environment

The term hostility is often used to refer to a generalized social orientation or constellation of beliefs about others and the environment, and includes beliefs such as; others should not be routinely trusted, one should be hypervigilant and guarded, being suspicious of others is necessary, and others act only in their own self-interest (Thoresen & Eagleston, 1985). This negative attitudinal set has been noted by other researchers to include beliefs that people generally behave toward others in ways that are mean, selfish, and exploitive (Cook & Medley, 1954; Shekelle, Gale, Ostfeld, & Oglesby, 1983; Williams, Haney, Lee, Koug, Blumenthal, & Whalen, 1980). The underlying theme in hostility appears to be negative feelings and negative beliefs about people and events (Buss, 1961).

Hostile people seem to become easily irritated, aggravated, or angry about the trivial errors of other people because they see others as ignorant, dumb, or inept (Friedman & Ulmer, 1984). These beliefs or views about others are verified by endorsement of items on the MMPI by hostile people (Williams et al., 1980). Some of the items endorsed are: I have often met people who were supposed to be experts who were no better than I; I do not try to cover up my poor opinion or pity of a person so that he won't know how I feel; I have often had to take orders from someone who did not know as much as I did; and I have frequently worked under people who seem to have things arranged so that they get credit for good work but are able to pass off mistakes onto those under them. The researchers in this study concluded that the attitudinal differences between people who had high hostility scores and those who did not centered on the assumption that people in general are going to behave toward others in ways that are mean, selfish, and exploitive, and that they should be punished for these transgressions. This element of revenge for treatment by others seems to be an important part of the hostile person's views about others and the environment (Saul, 1976).

The common thread which dominates hostile reactions and thinking is what one believes about the actions of others and events in the environment. One is subjected to an unpleasant experience directly or indirectly by others in the environment and perceives an encroachment of rights such as autonomy, freedom ✓ of expression, or expectations of respect from other people (Beck,

1978). The loss of self-esteem and self-devaluation which accompanies the experience reinforces the person's negative perceptions, beliefs, and the expectation that similar results will accrue in the future. The hostile person therefore has little confidence in human kind and typically sees others as dishonest, unsocial, immoral, mean, and worthy of punishment (Cook & Medley, 1954). The implications are that hostile people have negative and pessimistic beliefs about people and the world which motivate their behavior and influence interpersonal relationships.

Type A Beliefs

Price (1982) hypothesizes that people who demonstrate TABP and the hostility component share a common set of beliefs about others and the environment. She suggests that cognitions form the basis of the behavior pattern and that these beliefs are an outgrowth of socio-cultural values and conditions of worth communicated through the family, significant others, schools, and the media. The model she proposes has its roots in learning theory and the interaction of the individual with the environment.

Theoretical Model

Early learning theory generally viewed external observable behavior as the focus of interest with the environment as the primary determinant of psychological functioning. The theory hypothesized that the immediate positive consequences for a given behavior increased the likelihood of the behavior occurring again,

and immediate negative consequences decreased that likelihood. The assumption was that if we know what is taking place in a person's environment we should be able to use this information to predict and control behavior. These views were based primarily on animal research, however, and failed to take into account the key element which separates humans from other animals - the ability to think. Since humans have the ability to symbolize experience, they have the potential to respond to the same environmental event in a number of different ways. The way in which a person does respond to a particular stimulus is largely a function of how the person filters, transforms, and categorizes input from the environment. Through cognitive processes, humans can influence the impact that the environment has on them, as well as influence the environment by their behavior. Price (1982) suggests that Type A pattern of behavior has the following elements: (a) cognitions; (b) observed behavior; (c) the social/physical environment; and (d) physiological factors. Cognitions include what a person says or thinks to himself/herself about an event or factor in the environment. Behavior is what a person does and what a person says. The environment includes physical and social factors in the setting in which the behavior occurs. Physiological factors are those physiological changes which take place as a result of the interactions of cognitions, behavior, and the environment.

Price believes that what she calls social antecedents or contingencies lay the foundation for the development of TABP.

Social contingencies, or the conditions under which a person's behavior is rewarded or punished (recall the earlier discussion in Chapter I concerning the relationship of Price's theory to Rotter's social learning theory) play a vital role in shaping TABP. These contingencies include emphasis on economic and material success and the accumulation of "things", religious values and the protestant work ethic, and achievement/competition in education. Price also identifies what she calls personal antecedents such as family beliefs and expectations learned through instruction and modeling, beliefs and expectations transmitted in school, and the impact of mass media on beliefs and expectations. The model is based on the premise that people learn primarily through observations of others, instruction, and experience with the consequences of their actions (Price, 1982). The beliefs which result from socio-cultural factors are thought of as the core of TABP and determinants of behavior.

Nature of Beliefs

According to Price, several beliefs and fears dominate the Type A person's thinking and view of others and the world, but the behavior pattern revolves around the core belief that one must prove oneself constantly and in every way.

According to the proposed model of Type A, the essence of the behavior pattern centers around the belief that one needs to prove himself. The fear, or anxiety, associated with the presumed unsystematic relationship between intentionality and consequences (i.e., good actions can produce bad, or adverse, consequences; bad

actions can produce positive consequences) also figures into the behavior pattern by providing the rationale for using whatever means necessary (including unprincipled behavior) to prove oneself. Fear of insufficient time, ability, achievements, recognition (love), and other resources exacerbate a Type A person's seemingly relentless efforts to prove himself (Price, 1982, p. 72).

X The belief that one must constantly prove oneself implies that individual worth is not constant, therefore personal esteem or sense of self equates to the number and quality of achievements. How individuals feel about themselves is determined primarily by what others think about them (Price, 1982). The underlying fear associated with this belief is the fear of being judged by others as not having sufficient worth, resulting in loss of recognition, esteem, or love.

The second belief proposed by Price is the belief that there are no universal moral principles and no orderly relationship between intentionality and consequences. The fears connected to this belief are that good may not prevail and that justice may not triumph. Since the Type A person believes that there is no universal system of justice, he/she also believes that it is up to him/her to ensure justice for himself/herself personally. This kind of thinking implies an attitude of revenge, a component which has been commonly observed in TABP (Price, 1982).

The third belief holds that all resources (time, love, recognition, material benefits, etc.) are scarce, therefore one must continuously compete to obtain what is important in life. The fear associated with this belief is that there will not be a sufficient supply of whatever is essential and needed in life (Price, 1982).

Research Support

Other researchers have drawn conclusions which lend support to Price's theoretical framework. For example, Matthews (1982) noted that type As have a high need for achievement, they are intensely interested in social comparison information, i.e., "How am I judged in relation to others" and they tend to adopt values which are culturally and socially motivated. There are indications that these beliefs and values begin in early childhood (Matthews & Jennings, 1985). Burke and Deszca (1982) reported that Type As have a high fear of failure or being seen by others as not having sufficient worth. Other research indicates that the Type A strives to gain and maintain control over the environment (Glass, 1977; Strube & Werner, 1985), and responds more in incentive performance situations where there is tangible evidence of achievement than does the Type B person (Blumenthal et al., 1983). Friedman and Ulmer (1984) identify insecurity of status or inadequate self esteem resulting from failure to receive unconditional approval during childhood as one of the core causes for the Type A behavior pattern. Since beliefs about personal esteem and worth, principles of fairness, and scarcity of resources are related to the world of work, the working environment plays a significant role in the Type A quest to prove himself/herself (Brief, Rude, & Rabinowitz, 1983; Ivancevich, Matteson, & Preston, 1982).

Burke (1984a; 1984b) reported a series of three studies which examined Price's (1982) Type A Belief theory. Subjects were undergraduate and graduate students (N=290) and persons

employed in various aspects of police work (N=220). Type A behavior was assessed in two studies by the Jenkins Activity Survey (JAS) and the third used measures developed by the researcher for that study. The constructs proposed by Price (1982) were assessed by an instrument with 50 questions answered along a five point scale. Instrument items were developed by the researcher and an associate based on their individual and collective judgments. Internal consistency assessment using Cronbach's Alpha method yielded reliabilities greater than .70 for only four of the seven scales. Factor analysis was done on the instrument, but only on the seven measures of beliefs and fears rather than the total 50 items in the inventory. The researcher concluded that his objective of developing an instrument with desirable psychometric properties was reasonably well met; however, this conclusion appears overly optimistic when principles of test development and psychological measurement are considered (Carmines & Zeller, 1954; Helmstadter, 1964; Nunnally, 1967). Although the researcher concluded that there was modest validation of the proposed link between beliefs and fears in Type A behavior, this conclusion must be viewed with caution in light of the questionable psychometric soundness of the beliefs and fears instrument used.

An unpublished study (Philp & Williams, 1985) using the Cognitive Orientation Form (COF), an instrument developed specifically for the purpose of examining Price's (1982) theory reached conclusions which were similar to Burke's (1984a; 1984b) findings. Although

the COF has not undergone the rigorous psychometric evaluation necessary to yield unequivocal data, analysis of the initial study data points toward relationships between Type A behavior and a network of beliefs shared by Type As. Correlation coefficients revealed significant correlations between overall scores on the COF and overall scores on the Jenkins Activity Survey (JAS). Multiple linear regression analysis indicated that COF scores had some strength as predictors of JAS scores of Type A behavior. Preliminary item analysis indicated that items pertaining to the proposition that personal worth is measured by the number and quality of achievements differentiated between A and B subjects, whereas items related to scarcity of resources and universal moral principles evidenced more limited discrimination between As and Bs.

In light of the unproven psychometric properties of the instruments used in these studies it is not possible to draw any firm conclusions concerning relationships between Type A behavior and beliefs. However, the evidence suggests that further inquiry into the possible relationships could yield significant new knowledge concerning Type A behavior and beliefs. Since a major methodological flaw in previous studies is lack of a psychometrically sound instrument for measuring beliefs that the Type A person holds about others and the world, an established instrument with an accepted theoretical foundation could correct this flaw. Therefore the Rotter Internal-External Scale (RIES) (Rotter, 1966), was chosen for this study.

Locus of Control ✓

The concept of locus of control grew out of social learning theory developed by J.B. Rotter (1954). According to Rotter's theory, a person's actions are determined on the basis of values, expectations, and the situation (Rotter, 1975). Locus of control relates to all three factors and is considered to be a generalized expectancy for whether reinforcement is controlled by one's own actions or by outside forces.

Expectancy of Reinforcement

Relevant past experiences influence expectancies, but it is not simple recall of success or failure experiences that determine the generalized expectancy of internal or external control; it is the interpretation of the cause of those experiences (Lefcourt, 1982). If the individual perceives that reinforcement is a consequence of his/her own actions and therefore under personal control, the expectancy is one of internal control. However, if the individual perceives that reinforcement is unrelated to one's own behavior and therefore beyond personal control, the expectancy is one of external control. When a person perceives two situations as similar, his/her expectancies for a particular kind of reinforcement, or class of reinforcements, will generalize from one situation to another (Rotter, 1982). In this regard, family, school, media, and society in general are important determinants of expectancy.

The assumption that expectancy of control of reinforcement influences the way people think and behave has been tested in many studies (Lefcourt, 1982). For example, Phares (1957) manipulated expectancy of control of reinforcement and found that knowledge of a subject's perception of control was useful in predicting the type of judgments the subject would make in response to success and failure in tasks. If a task is perceived as being solvable through personal control, subjects use their experience with that task as a basis for estimating success or failure. If the results of performance are perceived as outside personal control, or random, subjects will estimate success based on chance. ✓ James and Rotter (1958) confirmed Phares' findings that perception of control predicted the manner in which people respond to performance outcomes, as have other researchers (Lefcourt, 1982; Phares, 1976; Rotter, 1966, 1975). The greatest impetus for research was development of a sound instrument for measuring locus of control (Rotter, 1966). Over 600 studies had been stimulated by this instrument by the mid-70's (Rotter, 1975).

According to Lefcourt (1982), the best theoretical statement to explain the expectancy of reinforcement control construct comes from Rotter's original work:

In social learning theory, a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by the reinforcement in the future. Once an expectancy for such a behavior-reinforcement sequence is built up the failure of the reinforcement to occur will reduce or extinguish the expectancy. As an infant develops and acquires more experience he

differentiates events which are causally related to preceding events and those which are not. It follows as a general hypothesis that when the reinforcement is seen as not contingent upon the subject's own behavior that its occurrence will not increase an expectancy as much as when it is seen as contingent. Conversely, its nonoccurrence will not reduce any expectancy so much as when it is seen as contingent. It seems likely that, depending upon the individual's history of reinforcement, individuals would differ in the degree to which they attributed reinforcement to their own actions.

Expectancies generalize from a specific situation to a series of situations which are perceived as related or similar. Consequently, a generalized expectancy for a class of related events has functional properties and makes up one of the important classes of variables in personality descriptions. . . A generalized attitude, belief, or expectancy regarding the nature of the causal relationship between one's own behavior and its consequences might affect a variety of behavioral choices in a broad band of life situations. Such generalized expectancies act to determine choice behavior along with the value of potential reinforcements. These generalized expectancies will result in characteristic differences in behavior in a situation culturally categorized as chance versus skill determined, and they may act to produce individual differences within a specific condition (Rotter, 1966, p. 2).

In this quote, Rotter refers to expectancy of control as a generalized attitude or belief. In order to measure this belief and locus of control, he developed the Rotter Internal-External Scale (Rotter, 1966), which embodies several common themes or beliefs associated with locus of control.

Common Beliefs

Collins (1974) factor-analyzed the items on the Rotter Internal-External Scale and found four common themes or beliefs: (a) the difficult-easy world; (b) the just-unjust world; (c) the predictable-unpredictable world; and (d) the politically responsive-

unresponsive world. The difficult-easy world factor makes general statements about the environment and includes items such as: most people don't realize the extent to which their lives are controlled by accidental happenings; or unfortunately, an individual's worth often passes unrecognized no matter how hard he tries. A person who endorses these items believes that his environment is composed of difficult, complicated, and unsolvable tasks. Just-unjust world factor items generally concern the feedback that people receive from the world; people who endorse these items believe that there is a causal relationship between a person's behavior and the feedback received from the environment. The difference between a belief in a difficult world and belief in an unjust world is that the unjust world factor identifies responsibility for comprehending and coping with the complexities and difficulties of the environment. The items which make up the predictable-unpredictable world factor center on events being influenced by luck or fate. The distinguishing element among difficult world, unjust world, and unpredictable world is that a belief in a just world and the necessity to cope with complexity does not always imply the absence of luck. A person who endorses predictable-unpredictable world items believes that luck and fate have little or nothing to do with the outcome of events. Politically responsive-unresponsive factor items refer to politics and government and beliefs about the political responsiveness of environment. A person who scores externally on all factor

items believes that (a) the reinforcement schedule in their world is complex and difficult (the world is difficult); (b) effort and ability are not generally rewarded (the world is inequitable and unjust); (c) the environmental reinforcement schedule is random (the world is unpredictable and ruled by luck); and (d) the government is unresponsive. Any of these beliefs would inhibit coping strategies, lower self-esteem, and lead the person to conclude that they have little control over events (Collins, 1974).

The relationship of LOC to other variables has been examined in literally hundreds of studies (Lefcourt, 1982), but research concerning the variables of interest in this study is fairly sparse. For the purpose of this particular research, variables of interest were TABP, hostility, and LOC. Two studies (Beck & Lesiak, 1977; Moore & Padillo, 1984) examined hostility and LOC in populations of mental outpatients with primary focus of the research on depression. Both found positive relationships between hostility and an external LOC. Smith and Frohm (1985) also examined hostility and LOC in college undergraduates as part of a study of construct validity and psychosocial correlates of the MMPI hostility scale (Cook & Medley, 1954) and found a statistically significant mild positive correlation. If there is a positive relationship between hostility and LOC, then it should follow that the same relationship exists between TABP and LOC, since hostility is thought to be a critical element of TABP. Several studies (Dembroski, MacDougall, & Musante,

1984; Frost & Wilson, 1983, Rose & Veiga, 1984) have examined the relationship between TABP and LOC, but the results have been mixed: Frost and Wilson (1983) in a study of LOC, TABP, and job satisfaction among nurses found no statistically significant relationship between TABP and LOC; Rose and Veiga (1984) in a study of interventions for TABP and anxiety among undergraduate students found no relationship between LOC and TABP and no benefit for either LOC or TABP subjects as a result of interventions; and Dembroski et al. (1984) in a study of language and control in the TABP Structured Interview (SI) and the Jenkins Activity Survey (JAS) found that internal LOC was characteristic of the JAS defined Type A but not the SI defined Type A. Although LOC has been examined in several studies concerning TABP or hostility, a search of the literature failed to reveal published studies which have focused on beliefs associated with the Rotter Internal-External Scale (Collins, 1974).

Hypotheses

The purpose of this study was to examine the relationships among TABP, hostility, and three Rotter LOC beliefs: (a) difficult-easy world; (b) just-unjust world; and (c) predictable-unpredictable world.

The hypotheses of the study were:

1. Types A and B subjects (as measured by the Jenkins Activity Survey) would differ in their beliefs (as measured by the Rotter

Internal-External Scale). Type A people would score more in the direction of externality on these beliefs than did Type Bs. The most pronounced differences between As and Bs was expected for the just-unjust belief.

2. Types A and B subjects would differ in their scores for hostility (as measured by the Buss-Durkee Hostility Inventory). Type A subjects were expected to have higher hostility scores than Type Bs, with the greater difference being the anger-in rather than the anger-out dimension of hostility.

3. Hostile and non-hostile subjects (as measured by the Buss-Durkee Hostility Inventory) would differ in their beliefs (as measured by the Rotter Internal-External Scale). Hostile people were expected to score more in the direction of externality, with externality more strongly related to the anger-in dimension of hostility than the anger-out dimension.

CHAPTER III

METHOD

Subjects

Subjects (N=91) were members of the Air National Guard who were either full-time members of the Guard or employed in civilian occupations with weekend duty with the Air National Guard once a month. At the time of the study, all subjects were attending professional military education courses designed to enhance leadership and management skills. Participants were volunteers whose only incentives were feedback on the results of the questionnaires and a post-testing presentation on TABP, hostility, and LOC. Ages of the participants ranged from 25 to 52 with the average age 30. There were 72 male and 19 female subjects. Fifty of the subjects were married, 30 had never been married, and 11 were divorced or separated. Only ten subjects had less than a college degree, and seven had master's degrees or higher. The majority of participants (N=79) were white American Caucasians. Other participants included seven black American Negroes, two Hispanic Americans, and three Asian Americans. Twenty-eight participants reported a family history of coronary heart disease, while the remaining 63 denied any family history of heart disease. The number of subjects included in the study exceeded the number required by power analysis (N=84) (Cohen, 1977), using Cohen's

(1965) recommendation that the significance level be established at .05, that power be .80, and that effect size be medium ($r=.30$).

Design

Since the study did not involve any manipulated treatments, it was descriptive in nature. The variables which were examined were scores on three instruments; the Jenkins Activity Survey (JAS) which is designed to measure Type A behavior, the Buss-Durkee Hostility Inventory (BDHI) which is intended to measure hostility, and the Rotter Internal-External Scale (RIES) which measures locus of control.

Materials

Jenkins Activity Survey

Subjects were administered the Jenkins Activity Survey (JAS) (Jenkins, Zyzanski, & Rosenman, 1979), currently the most widely used instrument to assess Type A behavior (Mitchell, 1985). The JAS provides an overall Type A score and separate factor scores for three components of Type A behavior: (1) Speed and Impatience (Factor S), (2) Job Involvement Factor (Factor J), and (3) Hard-Driving and Competitive (Factor H). Internal consistency reliability coefficients range from .65 to .85 (Caffrey, 1968; Jenkins, Zyzanski, & Rosenman, 1979; Mitchell, 1985). Test-retest reliability ranges from .60 to .70 for retest intervals of from six months to four years (Mitchell, 1985). Concurrent validity has been established by comparing JAS scores to Type A ratings

based upon the structured interview with correlations ranging from .63 to .90 (Dembroski, Weiss, Shields, Haynes, & Feinleib, 1978; Jenkins, 1970; Mitchell, 1985; Rosenman, 1978; Zyzanski, 1978). Evidence of the predictive validity of the JAS was demonstrated in the findings of the Western Collaborative Group Study which showed that subjects who scored in the top third incurred 1.7 times the incidence of coronary heart disease (CHD) over a four year interval compared to those scoring in the lower third (Mitchell, 1985). Although the JAS is not considered suitable for clinical judgment in its current state of development, it is deemed a valuable contribution to the advancement of research and appropriate for both experimental and clinical research (Mitchell, 1985).

Buss Durkee Hostility Inventory

The Buss-Durkee Hostility Inventory (BDHI) was used to assess levels of hostility (Buss & Durkee, 1957). This inventory is the most widely recognized and used scale for measuring hostility (Novaco, 1975). The BDHI yields an overall hostility score and scores for seven subscales: assault, indirect aggression, irritability, negativism, resentment, suspicion, and verbal aggression. Inter-correlations of the subscales yield only two with correlations above .50 (verbal hostility and irritability, $r=.66$; suspicion and resentment, $r=.58$) indicating that the various scales are tapping independent behaviors (Buss & Durkee, 1957). Test-retest reliability for overall hostility is .82 and all but one of the subscales (negativism, $r=.46$) have correlations above .60. Concurrent

validity has been established by comparing inventory results and clinical ratings of hostility and aggression (Buss, 1961). Concurrent validity has also been established by correlation with other instruments: the Rorschach using the Elizurand DeVos system ($r=.74$); the Taylor Manifest Anxiety Scale ($r=.57$); the Anger Self Report ($r=.64$); and others. The inventory was subjected to item analysis and factor analysis which revealed an attitudinal component of hostility (resentment and suspicion) and a "motor" or action component (assault, indirect hostility, irritability, and verbal hostility). The attitudinal component served in this study as the operational measure of anger-in and the motor component as the measure of anger-out.

Rotter Internal-External Scale

Locus of control was measured using the Rotter Internal-External Scale (RIES) (Rotter, 1966) designed to assess generalized beliefs about the nature of the world and the control that one has over reinforcement relative to his or her behavior. The psychometric soundness of this instrument has been validated in over 600 studies (Rotter, 1975). Test-retest reliability ranges from .60 to .83 and internal consistency ranges from .69 to .79 (Rotter, 1966). The RIES has concurrent validity of .44 with the adult Nowicki Strickland I-E Locus of Control Scale and correlates from .49 to .56 with the Levenson Internal-External Scale (Lindbloom & Faw, 1982). The RIES has no distinct subscales, but a factor analytic study (Collins, 1974) found four distinct factors.

Factor loadings on the difficult-easy world factor ranged from .58 to .37; for the just-unjust world, factor loadings ranged from .56 to .40; predictable-unpredictable world factor loadings ranged from .67 to .46; and for the politically responsive-unresponsive world, factor loadings ranged from .64 to .43. According to Collins (1974), the four-factor varimax rotation meets established criteria for simple structure with 80 percent of the items loading greater than $\pm .35$ on only one of the four factors, 50 percent loading greater than $\pm .50$ on one of the four rotated factors, and the majority loading less than $\pm .20$ on the other three factors.

Procedure

The researcher met first with the potential subject pool (approximately 175 people) to provide an overview of the study and to secure volunteers for participation. Those who volunteered were asked to complete an Informed Consent Statement (Appendix A) at that time. Testing was accomplished in two sessions several days later.

Participants were divided into two groups with questionnaires completed in different sequences for each group to reduce the possibility of the order of test administration confounding results. The first group completed the JAS first, followed by the BDHI, and RIES last. The second group began with the RIES, then completed the BDHI, and finished with the JAS. Both groups were provided the same instructions prior to completing the questionnaires (Appendix B). Prior to testing, all participants were asked

to complete a Demographic Information form (Appendix C). Two hours were allocated for each testing session but all participants finished before the two hour period ended.

A follow-up session was conducted by the researcher for each group of participants, in which individual feedback was provided to each participant (Appendix F, G, and H). The follow-up session began with a short presentation on TABP, the relationship of hostility as a characteristic of TABP, and the theory of locus of control. The presentation concluded with suggestions for alternative ways of dealing with the stress which appears to be associated with TABP and the hostility element. Following the presentation, feedback forms were passed out by the researcher and questions were answered. All participants attended one of the follow-on sessions. The only identifying data associated with individual participants was a four digit number provided by each participant which was used for return of feedback forms.

CHAPTER IV

RESULTS

Statistical Analysis System (SAS) computer programs were used for statistical analysis of the data. As a first step, univariate descriptive statistics and frequencies for all variables were examined for skewness and kurtosis. A second preliminary step was to examine the correlation matrix for multicollinearity, or the degree to which predictor variables may be highly correlated. When multicollinearity is present in regression analysis the results may be confounded and therefore unreliable (Younger, 1979). Some correlation among variables was found and adjustments were made prior to performing the regression analysis. These adjustments will be discussed in the section on correlation and regression analysis.

Demographic Relationships

Since demographic data were not a primary focus of this study, no tests for statistical significance were run for demographic and descriptive data. However, comparisons of means and standard deviations of various data were revealing.

For example, Table 1 presents a comparison of means and standard deviations for JAS population groups which most closely resemble the sample in this study. The U.S. Air Force Personnel group which consisted mostly of officers is probably most like the study sample. The means for Type A were comparable (1.75 and 1.1), although the study sample mean was slightly higher. Factor S, Speed and Impatience

TABLE 1

Comparison of Means and Standard Deviations for Jenkins Activity Survey
Normative Data and Study Sample

	<u>Study Sample</u>	<u>U.S. Air Force Personnel (N=614)</u>	<u>Auto Manufacturer Managerial Staff (N=180)</u>
Type A Total			
Mean	1.75	1.1	0.3
SD	8.90	9.3	9.6
Factor S - Speed and Impatience			
Mean	-0.42	-2.4	-0.8
SD	8.43	8.6	9.5
Factor J - Job Involvement			
Mean	3.33	6.6	3.8
SD	8.57	7.7	10.9
Factor H - Hard driving and Competitive			
Mean	-2.24	-0.8	1.9
SD	8.52	9.0	9.5

was also higher for the study sample (-0.42 versus -2.4) while Factor J, Job Involvement, and Factor H, Hard-driving and Competitive were lower for the study sample (3.33 versus 6.6 and -2.24 versus -0.8 respectively). Standard deviations for both groups were comparable, with the greatest difference both in standard deviations and means being Factor J, Job Involvement. The difference in Job Involvement could be attributable to the fact that career active duty Air Force people typically consider their jobs more as an integral part of

life and personal identity, therefore, job involvement may be greater than in some other segments of society.

Means and standard deviations for BDHI norms and this study sample are compared in Table 2. Means for men in the BDHI norm group were higher overall and for every scale except Indirect Hostility where the study group was slightly higher (.15). Means for women in the BDHI group were also higher overall and for each scale except Suspicion, where the study group was .43 higher. Differences between the normative and study groups were not large, however, and may partially be attributable to age differences. The BDHI norm group was composed of college students, whereas the study group was composed of slightly older adults with an average age of 30.

The comparison of RIES normative data and the study sample in Table 3 shows higher mean scores for both men and women in the RIES group. Data from more recent norms (Cellini & Kantorowski, 1982) indicate even higher scores ($M=10.87$, $SD=4.02$ for men; $M=11.70$, $SD=3.71$ for women) than the original RIES norm group. The difference between RIES norms and the study sample could be attributable to the younger norm groups (college students) and the fact that as students they may have a stronger orientation toward external control and the influence of powerful others (professors) in their lives.

Table 2

Comparison of Means and Standard Deviations for
Buss-Durkee Hostility Inventory Normative Data and Study Sample

<u>Variable</u>	<u>Study Sample</u>				<u>Buss-Durkee Norms</u>			
	<u>Men (N=72)</u>		<u>Women (N=19)</u>		<u>Men (N=85)</u>		<u>Women (N=88)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Assault	3.86	2.08	3.21	2.12	5.07	2.48	3.27	2.31
Indirect Hostility	4.62	2.09	5.15	1.95	4.47	2.23	5.17	1.96
Irritability	4.88	2.51	4.78	1.65	5.94	2.65	6.14	2.78
Negativism	2.18	1.41	1.89	1.10	2.19	1.34	2.30	1.20
Resentment	1.80	1.68	1.36	1.64	2.26	1.89	1.78	1.62
Suspicion	2.59	1.82	2.73	1.44	3.33	2.07	2.26	1.81
Verbal Hostility	7.06	2.35	6.63	2.33	7.61	2.74	6.82	2.59
Total Hostility	27.04	9.23	25.78	7.33	30.87	10.24	27.74	8.75

Table 3

Comparison of Means and Standard Deviations for
Rotter Internal-External Scale Normative Data and Study Sample

<u>Study Sample</u>				<u>Rotter Norms</u>			
<u>Men (N=72)</u>		<u>Women (N=19)</u>		<u>Men (N=575)</u>		<u>Women (N=605)</u>	
<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
7.94	3.79	7.21	3.59	8.15	3.88	8.42	4.06

A comparison of mean scores and standard deviations by sex (Table 4) for JAS, BDHI, Anger-In, Anger-Out, and RIES showed slightly higher mean scores for men than women on BDHI, Anger-In, Anger-Out, and the RIES (27.04 versus 25.78; 4.40 versus 4.10; 20.43 versus 19.78; and 7.94 versus 7.21 respectively), while the mean score for women was higher for the JAS (1.90 versus 1.70). These differences were not great enough to permit any meaningful inferences.

Table 4

Comparison of Means and Standard Deviations for Jenkins Activity Survey, Buss-Durkee Hostility Inventory, Anger-In, Anger-Out, and Rotter Internal-External Scale Scores by Sex

	<u>Men (N=72)</u>		<u>Women (N=19)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Jenkins Activity Survey	1.70	8.58	1.90	10.28
Buss-Durkee Hostility Inventory	27.04	9.23	25.78	7.33
Anger-In	4.40	3.10	4.10	2.68
Anger-Out	20.43	6.68	19.78	5.32
Rotter Internal-External Scale	7.94	3.79	7.21	3.59

The data by marital status in Table 5 revealed that subjects who were divorced/separated had higher mean scores on every measure when compared to those who were married or had never been married. Possible explanations for these differences include the following notions: higher BDHI, Anger-In, and Anger-Out scores are a reflection of subjects' feelings of rejection, mistreatment, and betrayal as a result of divorce; higher RIES scores are an indication of feelings

of loss or reduced control in life associated with divorce; and the higher JAS score suggests personality characteristics such as impatience and hostility which could have contributed to the divorce or separation.

TABLE 5

Comparison of Means and Standard Deviations for Jenkins Activity Survey, Buss-Durkee Hostility Inventory, Anger-In, Anger-Out, and Rotter Internal-External Scale Scores by Marital Status

	<u>Never Married</u>		<u>Married</u>		<u>Divorced/Separated</u>	
	<u>(N=30)</u>		<u>(N=50)</u>		<u>(N=11)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Jenkins Activity						
Survey	1.31	9.32	1.09	8.67	5.89	8.41
Buss-Durkee Hostility						
Inventory	27.06	8.24	25.92	9.62	29.90	6.25
Anger-In	4.06	3.01	4.26	3.02	5.45	2.94
Anger-Out	20.43	5.53	19.88	7.19	21.81	4.81
Rotter Internal-						
External Scale	7.56	3.93	7.82	3.52	8.27	4.49

The most striking differences across groups by educational levels (Table 6) was between the high school group and groups at higher educational levels. The high school group was lower on the JAS, lower on the BDHI, comparable on Anger-In, lower on Anger-Out, and higher on the RIES. These scores suggest that the person who only completes high school

TABLE 6

Comparison of Means and Standard Deviations for Jenkins Activity Survey,
Buss-Durkee Hostility Inventory, Anger-In, Anger-Out, and
Rotter Internal-External Scale Scores by Education Level

	High School (N=10)		Associate Degree (N=8)		BS/BA Degree (N=66)		MS/MA Degree (N=6)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Jenkins Activity	-1.62	8.97	-0.02	10.19	2.38	8.57	-0.23	9.00
Survey								
Buss-Durkee	22.20	8.40	24.00	5.50	27.37	8.82	27.66	7.76
Hostility Inventory								
Anger-In	4.00	3.62	4.62	2.92	4.36	3.00	3.33	1.50
Anger-Out	16.40	5.91	17.25	3.80	20.83	6.30	22.16	5.52
Rotter Internal-	9.50	4.83	7.75	2.91	7.65	3.69	6.83	3.65
External Scale								

may be more relaxed, less competitive, less hostile (lower JAS, BDHI, and Anger-Out scores), and more inclined to view reinforcement and control as external (higher RIES score).

Table 7 presents a comparison of mean scores and standard deviations by subject occupation. Persons in this study sample who own their own business had higher scores on the JAS (perhaps due to stronger competitiveness and hard-driving behavior), higher overall score on the BDHI (possible indication of suspicion, lack of trust and resentment developed through business dealings) and higher Anger-Out scores (more willingness to express anger outwardly than people in some other occupations who may have jobs at risk if anger is expressed openly). Persons in sales/marketing had the highest mean scores on the RIES, suggesting that reinforcement (completion of a sale or obtaining an account) is under someone else's control.

Mean scores by race (Table 8) revealed highest scores on the JAS and lowest scores on the RIES for Hispanic Americans in the study sample. Highest BDHI, Anger-In, and Anger-Out scores, and lowest JAS scores occurred for Asian Americans in the sample. Black American subjects in the study had the highest scores on the RIES. White American subjects obtained scores closest to the normative group scores.

As part of the demographic questionnaire, all subjects were asked to provide information concerning history of heart disease in the immediate family, i.e., siblings, mother, father, grandfather, or grandmother. This information is presented in Table 9. Those who reported a history of heart disease had a lower mean score on

TABLE 7

Comparison of Means and Standard Deviations for Jenkins Activity Survey, Buss-Durkee Hostility Inventory, Anger-In, Anger-Out, and Rotter Internal-External Scale Scores by Occupation

	Own Business (N=4)		Academic K-12 (N=8)		Human Svc. (N=6)		Sales/Marketing (N=8)		Tech/Engineering (N=13)		Mgmt/Plan (N=9)		Govt/Svc (N=32)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Jenkins	5.05	8.75	3.05	7.59	1.20	12.59	-0.55	8.79	0.04	9.03	2.06	9.33	2.35	9.12
Activity Survey														
Buss-Durkee	33.50	12.71	27.50	5.01	31.00	11.79	26.00	6.32	28.53	6.83	21.66	8.98	27.18	9.54
Hostility Inventory														
Anger-In	4.75	2.22	3.75	2.43	6.33	2.88	4.00	2.72	4.46	3.04	2.67	1.87	4.81	3.60
Anger-Out	26.50	10.01	21.87	2.90	23.00	9.14	19.75	4.92	21.62	4.15	16.67	6.93	20.16	6.35
Rotter	8.00	2.44	6.25	2.12	7.83	2.56	9.12	4.15	8.30	5.40	7.00	3.39	7.75	3.95
Internal-External Scale														

Note: Occupations with N=1 or 2 omitted (Clerical, Academic position-college, Outdoor, Art/Music, Transportation, Finance, and Media).

TABLE 8

Comparison of Means and Standard Deviations for Jenkins Activity Survey, Buss-Durkee Hostility Inventory, Anger-In, Anger-Out, and Rotter Internal-External Scale Scores by Race

	<u>White American (N=79)</u>		<u>Black American (N=7)</u>		<u>Hispanic American (N=2)</u>		<u>Asian American (N=3)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Jenkins	1.96	9.09	-0.45	5.63	9.80	4.80	-4.20	9.88
Activity Survey								
Buss-Durkee	26.51	8.77	26.57	9.82	27.00	2.82	34.00	12.16
Hostility Inventory								
Anger-In	4.10	2.83	5.57	3.59	4.50	3.53	7.66	5.03
Anger-Out	20.35	6.52	17.85	6.28	21.00	1.41	24.00	5.19
Rotter	7.65	3.61	10.00	4.96	4.50	3.53	8.33	3.51
Internal-External Scale								

TABLE 9

Comparison of Means and Standard Deviations for
Jenkins Activity Survey, Buss-Durkee Hostility Inventory, Anger-In,
Anger-Out, and Rotter Internal-External Scale Scores by
Reported History of Heart Disease in Family

	<u>History of Disease (N=28)</u>		<u>No History of Disease(N=63)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Jenkins Activity	0.52	8.56	2.28	9.06
Survey				
Buss-Durkee	29.35	9.85	25.63	8.18
Hostility Inventory				
Anger-In	4.67	3.72	4.19	2.65
Anger-Out	22.10	5.79	19.49	6.54
Rotter Internal-	8.35	4.14	7.53	3.55
External Scale				

the JAS, but higher scores on the BDHI, Anger-In, Anger-Out, and RIES. This information taken by itself suggests that Type A behavior measured by the JAS may be less of a risk factor than hostility and externality. Obviously such an inference could not be drawn from this study alone, but it is consistent with information now appearing in the literature which questions the CHD risk assessment of the global Type A behavior pattern.

Test of Hypotheses

Independent samples t-tests were used to test the hypotheses, using a level of significance of .05. Type A subjects (N=36) were identified by scores of +5 or higher, and Type B subjects (N=24) were identified by scores of -5 or lower. These scores are one-half standard deviation above and below the norm mean and identify subjects who are more extreme in terms of TABP (Jenkins, Zyzanski, & Rosenman, 1979). The same rationale was used for selection of high hostility subjects (N=21 with scores of 34 or higher) and subjects with lower levels of hostility (N=44 with scores of 25 or lower), as well as subjects with external locus of control (N=30 with scores of 10 or higher), and subjects who were more in the direction of internality (N=35 with scores of 6 or lower). Since the groups were unequal in size, the assumption of equal variances was tested to insure that variances were homogeneous (Huck, Cormier, & Bounds, 1974). All hypothesis testing decisions were made using the procedures just described, but additional t-tests were done for more extreme groups one standard deviation above and below the norm means on the designated independent variables. This information is presented in Appendix I, along with a comparison of correlational data.

Hypothesis One

The first hypothesis predicted that Type A subjects would be more external than Type B subjects in their locus of control beliefs

as measured by the RIES, with the most pronounced difference expected for the just-unjust world belief. This hypothesis was not supported. In fact, absolute differences in means suggested a trend toward internality among Type As (see Table 10).

Hypothesis Two

The second hypothesis predicted that Type A subjects would differ from Type B subjects in scores for hostility as measured by the BDHI. Despite the fact that Type A hostility scores exceeded Type B scores in every comparison (see Table 11), none of these differences was statistically significant. However, the difference in overall hostility scores did approach the .05 significance level established ($t=1.9206$, $df=58$, $p<.0597$). Nonetheless, this part of the hypothesis was not supported.

It was also predicted that Type A subjects would differ from the Type B subjects more on the Anger-In than Anger-Out variable. Since Type As and Bs did not differ significantly on either dimension, this part of Hypothesis Two was also not supported.

Hypothesis Three

The third hypothesis predicted that hostile subjects would differ from non-hostile subjects in their beliefs as measured by the RIES, with hostile people scoring more in the direction of externality. The differences were statistically significant and in the direction expected (externality) for overall score ($t=3.0406$, $df=63$, $p<.0039$),

difficult world ($t=2.7315$, $df=63$, $p<.0090$), and predictable-unpredictable world ($t=2.8077$, $df=63$, $p<.0074$). The difference for just-unjust world was not statistically significant; therefore, this part of the hypothesis was not fully supported (see Table 12).

A second part of this hypothesis was that externality would be more strongly related to the anger-in dimension of hostility than anger-out. The difference for Anger-In was statistically significant ($t=2.2377$, $df=63$, $p<.0284$), while the difference for Anger-Out was not significant. Thus, this part of Hypothesis Three was also supported (see Table 13).

TABLE 10
Comparison of Means for Hypothesis One

	Total	Difficult World	Just World	Rotter Predictable World
Type A	7.36	2.44	3.33	2.08
Type B	8.00	3.38	3.54	2.54

TABLE 11
Comparison of Means for Hypothesis Two

	Total	Assault	Indirect	Irritability	Busa-Durkee Negativism	Resentment	Suspicion	Verbal Anger-In	Anger-Out
Type A	28.75	4.08	4.94	5.27	2.17	1.83	3.00	7.44	21.75
Type B	24.25	2.88	4.58	4.70	1.75	1.58	2.12	6.58	18.75

TABLE 12
Comparison of Means for Hypothesis Three

	Total	Difficult World	Just World	Rotter Predictable World
Hostile	9.38*	3.61*	3.95	2.85*
Non-hostile	6.65	2.31	3.29	1.93

TABLE 13
Comparison of Means for Hypothesis Three

	Anger-In	Busa-Durkee	Anger-Out
External LOC	5.56*		21.53
Internal LOC	3.37		19.09

*p<.05

Correlational and Regression Analysis

Correlational Analysis

Pearson product-moment correlations were computed to examine relationships among the full range of scores on the three instruments used in the study. The importance attached to statistical significance of correlations should be tempered with the fact that several correlations were run. Relationships will be discussed in the same order that hypotheses were examined in the preceeding section.

Correlations of JAS scores with RIES scores are presented in Table 14. The only significant correlations were in the opposite direction than anticipated: JAS total and Difficult World; Factor J, Job Involvement and RIES total; Factor J and Difficult World; and Factor J and Predictable World. These relationships were not consistent with the expectation that the Type A orientation would be positively associated with externality. A possible explanation for these departures from the anticipated pattern may be that persons identified by the JAS as Type A typically view challenges as obstacles to overcome and redouble their efforts if they fail to meet the standard or overcome the obstacle. Therefore, while they strive for external recognition/reinforcement, they believe that individual effort as opposed to luck or chance - is the secret to obtaining external rewards. The common thread of the role of luck or chance in reinforcement for external LOC is opposed to the Type A person's strong desire to maintain control and may have caused Type A subjects to respond more in the direction of internal locus of control on the RIES.

TABLE 14

Correlation of Jenkins Activity Survey Scores with
Rotter Internal-External Scale Scores

	RIES Total	Difficult World	Just World	Predictable World
JAS Total	-.1135	-.2213*	.1316	.1851
Factor S	-.0931	-.1232	.1196	-.0173
Factor J	-.2234*	-.2620*	.0889	.2269*
Factor H	.0133	-.0242	-.0226	.0256

* $p < .05$

Table 15 presents correlations between JAS scores and BDHI, Anger-In, and Anger-Out scores. The pattern of relationships suggests that the Type A behaviors identified by the JAS are significantly related to hostile behaviors reported on the BDHI. Overall hostility (BDHI Total) and Type A (JAS Total) had a moderate statistically significant relationship, and Factor S, Speed and Impatience on the JAS was strongly correlated with overall hostility. Factor S was also correlated with Assault, Indirect hostility, Irritability, Verbal hostility, Resentment, and Suspicion scores on the BDHI, suggesting that the characteristics measured by Factor S may be the strongest correlates of hostility. Type A (JAS Total) was moderately correlated with Anger-In and Anger-Out, with the Anger-In ($r = .2254$, $p < .0317$) relationship, as expected, slightly stronger than Anger-Out ($r = .2081$, $p < .0477$). Factor S was also significantly correlated with Anger-In and Anger-Out, but the stronger relationship was with Anger-Out. This finding seems logical since Factor S is more an "action" component and Anger-Out is more related to motor behavior.

TABLE 15

Correlation of Jenkins Activity Survey Scores with
Buss-Durkee Hostility Inventory Scores, Anger-In
Scores, and Anger-Out Scores

	JAS Total	Factor S	Factor J	Factor H
BDHI Total	.2385**	.4612*	.0867	.0974
Assault	.1959	.3318*	.1455	.0896
Indirect	.0758	.2781*	.0426	-.0625
hostility				
Negativism	.0896	.1743	.1169	-.0016
Irritability	.1509	.3314*	-.0047	.0954
Verbal hostility	.1737	.3499*	.1613	-.0100
Resentment	.1220	.2128**	-.1225	.2055**
Suspicion	.2718*	.3655*	.0403	.1494
Anger-In	.2254**	.3303*	-.0448	.2010
Anger-Out	.2081**	.4454*	.1196	.0418

* $p < .01$

** $p < .05$

Correlations of RIES scores with BDHI, Anger-In, and Anger-Out scores are presented in Table 16. Total RIES scores were positively correlated with total BDHI scores and with Anger-In, as expected. RIES total scores were also correlated with Resentment and Suspicion subscales of the BDHI. Expected relationships were also obtained between BDHI total and Difficult World, and Predictable World. However, the expected relationship between the BDHI total and Just World was not statistically significant. On the other hand, there was a statistically significant weak relationship between Just World and Resentment, defined as jealousy and feelings of anger at the world over real or imagined mistreatment, and between Just World and Anger-In. This pattern suggests that external beliefs in an unjust world are more related to unexpressed anger and beliefs about mistreatment and unrewarded/unpunished actions than to overall hostility.

Regression Analysis

Multiple regression analysis was used to ascertain the relative contribution of each of the predictor variables toward prediction of the criterion variables, Type A scores on the JAS and hostility scores on the BDHI. For the regression analyses, the backward elimination type of stepwise variable selection procedure was used to allow all variables to interact together. This procedure is preferred in most cases over forward selection or stepwise procedures alone because these procedures may miss a key set of variables (Younger, 1979). The backward elimination stepwise procedure begins with all variables in the model, removing them one at a time according

TABLE 16

Correlation of Rotter Internal-External Scale Scores with
Buss-Durkee Hostility Inventory Scores, Anger-In
Scores, and Anger-Out Scores

	RIES Total	Difficult World	Just World	Predictable World
BDHI Total	.2452**	.2220**	-.1697	-.2363**
Assault	.0732	.0381	-.0620	-.0290
Indirect hostility	.1939	.2616**	-.0861	-.3174*
Negativism	.1361	.0912	-.0524	-.1381
Irratability	.1039	.0705	-.0314	-.1490
Verbal hostility	.1425	.0698	-.1840	-.1131
Resentment	.2488**	.2959*	-.2263**	-.1794
Suspicion	.2500**	.2266**	-.1353	-.1573
Anger-In	.2834*	.2961*	-.2044**	-.1910
Anger-Out	.1771	.1482	-.1264	-.2082**

* $p < .01$

** $p < .05$

Note: Negative correlations for Just World and Predictable
World are appropriate due to directionality of scoring.

to smallest partial F values. The procedure concludes when all partial F values are significant at the established level of significance, which was established at .05. Prior to performing regression analyses, the experimenter examined the correlation matrix for any evidence of multicollinearity or correlations which were very high or near perfect. Since some variables were subscales of instruments, i.e., JAS and subscales Factor S, Factor J, and Factor H, etc., multicollinearity was present among the subscales and the total score on the instrument. In order to adjust for multicollinearity and reduce the risk of regression coefficients being confounded by correlations among predictor variables, variables with high correlations (greater than $r=.47$) were not included in the same regression procedure.

Six backward elimination stepwise procedures were performed with Type A behavior (JAS scores) as the dependent variable and various combinations of subscale and overall scores from the BDHI and RIES as predictor variables. As a result, three SAS General Linear Model (GLM) procedures were performed. The first had Difficult World, Anger-In, and Anger-Out as predictor variables for Type A behavior (Table 17). The strongest predictor positively related to Type A behavior was Anger-In. Like the initial correlations Difficult World was negatively correlated with Type A. R^2 for this model was .16 indicating that 16% of the variability could be predicted by the combination of variables in the model. This value was not considered high enough to make the model predictor variables trustworthy. The next GLM procedure with Type A as the dependent variable included

TABLE 17

Regression Model for Dependent Variable Type A Behavior

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
Difficult World	-1.3889	-.3167	9.42	.0029
Anger-In	0.7565	.2556	4.84	.0305
Anger-Out	0.1840	.1324	1.39	.2413

R = .40

R² = .16

Note: b = regression coefficient

B = beta weight

Unpredictable World, Anger-In, Anger-Out, and Unjust World (Table 18). The only predictor variable in this model which was statistically significant was Unpredictable World which also showed an inverse relationship to Type A. The R² for this model (.13) was also considered too small to make the model of any use. The final GLM procedure with Type A as the dependent variable had Hostility and External Locus of Control as predictor variables (Table 19). Hostility was statistically significant as a predictor, but like the previous models R² (.09) was not high enough to make the model of value in predicting Type A behavior.

TABLE 18

Regression Model for Dependent Variable Type A Behavior

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
Unpredictable World	-1.3427	-.1920	4.08	.0464
Anger-In	0.6264	.2117	3.34	.0710
Anger-Out	0.2327	.1675	2.12	.1490
Unjust World	-0.7192	-.1205	1.26	.2642

R = .36

R² = .13

Note: b = regression coefficient

B = beta weight

TABLE 19

Regression Model for Dependent Variable Type A Behavior

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
Hostility	0.2851	.2834	7.29	0.0083
External locus of Control	-0.4350	-.1830	3.04	0.0847

R = .30

R² = .09

Note: b = regression coefficient

B = beta weight

Five backward elimination stepwise procedures were performed with Hostility as the dependent variable and various combinations of subscale and overall scores from the JAS and RIES as predictor variables. Two GLM procedures were performed as a result. The first model had as predictor variables Unjust World and Unpredictable World (Table 20). Neither variable was statistically significant. The second GLM procedure for Hostility had External Locus of Control and Type A as predictor variables (Table 18). Both variables were found to be statistically significant, but the model R^2 (.13) was not high enough to make the model useful.

TABLE 20

Regression Model for Dependent Variable Hostility

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
Unjust World	.6642	.1120	1.10	.2966
Unpredictable World	.6468	.0930	0.86	.3562

$R = .35$

$R^2 = .12$

Note: b = regression coefficient

B = beta weight

TABLE 21

Regression Model for Dependent Variable Hostility

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
External Locus of Control	0.6518	.2772	7.62	.0070
Type A	0.2683	.2699	7.29	.0083

R = .36

R² = .13

Note: b = regression coefficient

B = beta weight

Three backward elimination stepwise procedures were performed using External Locus of Control as the dependent variable and combinations of BDHI and JAS scores as predictor variables, resulting in one GLM procedure (Table 22). This model included Anger-In and Anger-Out as predictor variables and Anger-In was found to be statistically significant. The R² (.08) for this model was also too small to make the predictive value dependable.

TABLE 22

Regression Model for Dependent Variable External Locus of Control

<u>Variable</u>	<u>b</u>	<u>B</u>	<u>F</u>	<u>Prob. F</u>
Anger-In	0.3210	.2578	4.91	.0293
Anger-Out	0.0312	.0537	0.21	.6467

 $R = .28$
 $R^2 = .08$

Note: b = regression coefficient

B = beta weight

The purpose of employing regression analysis as a statistical procedure in this study was to identify variables and combinations of variables which could best be used in predicting TABP and hostility. It was expected that specific beliefs associated with various scores on instruments would be found to have predictive value. Although some of the expected relationships were found, the predictive values were not high enough to make any reliable inferences about predictive relationships among the variables.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

In the statement of the problem which formed the basis for this research, it was noted that a dilemma in developing successful intervention strategies for TABP is lack of a valid measure for identification and validation of unique beliefs and cognitions thought to be associated with TABP. The suggestion was made that since hostility appears to be the TABP element which places people at greatest risk, world views strongly related to hostility are particularly important. The approach selected for identifying possible views or cognitions associated with hostility - and the stated purpose of this study - was to examine the relationships among TABP and its theorized system of beliefs, the hostility component of TABP, and beliefs thought to be related to locus of control. Parallels were drawn between the TABP beliefs and locus of control beliefs. The assumption was then made that the instrument for measuring locus of control would provide an indication of the existence of certain TABP beliefs and views about people and the world. The parallel beliefs are: (a) the TABP belief that personal esteem and self-worth equate to the number and quality of achievements (i.e., one must constantly prove oneself), and the LOC view that the world is difficult and comprised of difficult, complicated, and sometimes unsolvable tasks; (b) the TABP belief that there are no universal moral principles and no orderly relationship between intentionality and consequences,

and the LOC belief that the world is unjust because there is no causal relationship between a person's behavior and the feedback received from the environment; and (c) the TABP belief that all resources (time, love, recognition, etc.) are scarce (requiring one to continuously compete for what is important in life), and the LOC belief that the world is unpredictable because of the randomness of the environmental reinforcement schedule (requiring one to compete at all times in order to insure that reinforcement is received).

The results of this study did not provide empirical support for the predicted relationship between global Type A behavior and beliefs related to external LOC. The results suggested the possibility of an inverse relationship between global Type A behavior measured by the JAS and external LOC measured by the RIES. Although these data could be interpreted as a challenge to the construct of Type A, this apparent trend is consistent with some aspects of Type A personality. It has been determined that Type A people typically view challenges as obstacles to overcome and redouble their efforts if they fail to meet the standard or overcome the obstacle. They attribute the failure to themselves, rather than luck or chance, and although indications are that reinforcement is external to themselves - in the form of recognition/praise from others - they still consider individual effort as the key to rewards. Since lack of control is the ultimate threat to the integrity of the Type A, an internal belief would reflect denial of such a threat. Therefore, the central theme of luck or chance related to external LOC in the RIES may have caused Type A subjects to answer questions in an internal rather than external direction.

The role of hostility as a key risk element in TABP was not supported by the t-test comparisons, but correlations suggest that there is an overall relationship between these variables. Also, at the extremes (one standard deviation above and below the normative means) of the Type A continuum, Type As and Bs did differ significantly with respect to overall hostility and both Anger-In and Anger-Out (see Appendix I). Although less extreme Type A and B groups (one-half standard deviation above and below the normative mean) did not differ significantly on the hostility measures, the absolute differences in means consistently suggested greater hostility for Type As. Of the various Type A factors, Factor S, Speed and Impatience, is most strongly and consistently associated with hostility measures. This suggests that Factor S may account for most of the relationship between the Type A orientation and hostility. The relationship between hostility and beliefs associated with external LOC suggests that externality may be an indicator of the underlying or "free-floating" hostility which has become associated with TABP. This hostile world view appears to be characterized by the beliefs that other people are not to be trusted and that being suspicious of other people's motives is justified. Behaviors which reflect these beliefs would include suspiciousness and mistrust, excessive competitiveness at work and at play, being highly critical and finding fault with others, and being extremely sensitive to any criticism from others. The implication is that hostility is sustained by a set of beliefs about oneself and what constitutes self-worth, the nature of behavior

and consequences, and how one goes about insuring one's fair share of things that are worthwhile in the world. The relationship between the Anger-In dimension of hostility and external LOC is further support for the existence of a network of beliefs which maintains hostility and contributes to CHD risk.

Implications for Future Research

The increasing research support for hostility as the critical TABP element in CHD risk could lead to abandonment of the global TABP, a concept which might be considered a less reliable and somewhat elusive indicator of CHD risk. It is clear that the physiological mechanisms at work in hostility are health-threatening, but there is also strong evidence that there are other stressors not primarily related to hostility which result in similar physiological responses. These stressors are related to elements in TABP such as insecurity of status, self-esteem, and competitiveness. In view of this evidence, it would be a mistake to focus research only on hostility and exclude other factors which may contribute to CHD risk. For example, speed and impatience might be a factor deserving such attention. The whole constellation of behaviors which comprise the TABP is replete with unsolved and unasked questions. Some possible future research questions are:

1. What are the specific elements in TABP other than hostility and anger which produce the physiological responses that increase CHD risk? Conceptualization and research are needed to further define and refine the behavioral manifestations and cognitions/beliefs which sustain the behavior.

2. What are current assessment procedures measuring? Do various instruments/procedures measure different aspects of the same behavior pattern? Assessment instruments are needed to isolate cognitions which may be the antecedents for outward manifestations of behavior.

3. With the hostility element statistically controlled, what contributions do other TABP elements make to CHD risk? Research in this area could shed more light on why some Type A people develop CHD while others do not.

4. Is management of TABP and its components, e.g. hostility through stress management techniques, a more realistic intervention approach than attempts to alter thinking or change personality? Does successful intervention lead to a reduction in traditional risk factors?

5. What is the most effective method of treatment/intervention? Although more work is being done now in the area of treatment and intervention, conclusive research and studies are needed to identify the approaches that are most effective in dealing with TABP and its components.

Implications for Psychotherapy

The problem with therapeutic interventions for TABP and with many other outward manifestations of behavior is the question "why?". What is the motivation for the behavior and what influences the person to continue the behavior when there is evidence that the behavior is either unhealthy, dysfunctional in terms of social interactions, or both?

The basic premise of this study was that cognitions and beliefs about people and the world form the basis of the TABP and that these beliefs are an outgrowth of socio-cultural values and conditions of worth communicated through the family, significant others, schools, and the media. These beliefs are learned through modeling, instruction, and experience with the consequences of actions. Thoughts and cognitions act as filters and ways to categorize input from the environment, and in the process, the individual physically - and mentally - responds in certain ways, based on a network of underlying beliefs. This study implies a relationship between one of the critical components of TABP, hostility, and beliefs about people and the world which are associated with external LOC.

The constructs of hostility and locus of control are assumed to be largely independent, with the focus of hostility being attitudes, feelings, and emotions about people, events, and situations, and the thrust of locus of control being perceptions about whether reinforcement, reward, or success in the world is dependent on one's own behavior or controlled by luck, chance, and external forces. The hostile person typically believes that others should not be trusted, one must always be vigilant and guarded to protect one's interests, one should be suspicious of the motives of others, and other people act only in their own self-interest. The common thread in this negative and pessimistic view of people and the world is that external forces determine expectations and how one reacts with people and the environment, whether in a positive or a negative way. This

view of the importance of forces outside oneself provides a conceptual link to an external locus of control.

As for hostility, relevant past experiences influence locus of control and expectancy of reinforcement, but it is not simple recall of consequences which determines generalized expectancy of internal or external control. It is the interpretation of the cause of those experiences, or what the person believes about the event or situation. A person who has an external locus of control believes that the world is difficult and complicated, that there is no causal relationship between a person's behavior and consequences, and that the world is unpredictable and ruled primarily by luck. If these beliefs evolve through social learning as the theory suggests, it makes sense that a person who holds these beliefs would distrust others, be hypervigilant, and seek revenge for perceived wrongs. In other words, the person with external locus of control is also a hostile person. This suggests an antecedent relationship in that beliefs and expectancies about people and the world may be the forerunners of hostility. The implication for therapeutic intervention is that the focus should be on beliefs and cognitions if the intervention is to be successful.

Therapeutic techniques which have been used most often in the past fall into two broad categories: (a) management programs which typically consist of relaxation techniques, biofeedback, and psychopharmacology; and (b) alteration approaches which include such methods as changes in lifestyles, relaxation training, self-instruction,

and behavior modification. While some success has been reported, results are typically not longlasting because the underlying motivation for the behavior has not changed. An approach which seems more effective combines techniques previously mentioned with a primary focus on replacing old beliefs with new ones. One example of such a program is the San Francisco Recurrent Coronary Prevention Project (RCPP) which incorporated relaxation training, self-instruction, and self-management, with an active program aimed at changing and modifying destructive beliefs. The area which emerged as the most crucial and most challenging area of treatment was changes in cognitions and beliefs. The approach used for identifying beliefs concentrated primarily on beliefs which maintained a sense of time urgency and free-floating hostility. While this approach was apparently effective in the RCPP, it would seem more effective to focus on more specific beliefs.

As a point of departure, the pattern of beliefs associated with locus of control could be used to explore the belief system of the client. The intensity and pattern of thinking for specific beliefs will vary for individuals just as beliefs and cognitions vary along other dimensions, but it seems important to have a starting point and conceptual framework or notion of typical basic beliefs for a more focused approach to psychotherapy. This approach could be used in a preventive way to identify individuals who may be at risk, as well as "after the fact" CHD cases.

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APPENDIXES

APPENDIX A
INFORMED CONSENT STATEMENT

INFORMED CONSENT STATEMENT

I understand that the purpose of this study is to examine the relationship of behavior characteristics associated with increased coronary heart disease risk and personal beliefs which may underlie this behavior. I have been informed that I will take several paper and pencil inventories dealing with my personal behavior and beliefs which will require approximately two hours. I understand that I will not sign my name to the inventories, that my responses will be included as part of group data, not by individual response, and that the data will be held in strictest confidence by the researcher named below. I also understand that I can withdraw from participation at any point without penalty. If I have any further questions regarding my participation in the study, I understand that I may contact the researcher at the address and phone number listed below.

NAME _____

DATE _____

Allan S. Philp
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APPENDIX B
TESTING INSTRUCTIONS

TESTING INSTRUCTIONS

The first questionnaire you are to complete is designed to give us some basic information about people who participate in this study. I am sure that you've seen this type of information reported in the media when the results of a study are discussed. There are three other questionnaires which follow. You are to complete these questionnaires in the order in which they are provided to you. It is important that you complete them in sequence to reduce the possibility of the results of the study being biased in any way by sequence of completion of the questionnaires. If you have any questions about any of the questionnaires, please raise your hand and I will come to your seat and answer your question. When you have finished, please raise your hand and I will collect the materials. Are there any questions before we begin? If not, please start with the demographic questionnaire.

APPENDIX C
DEMOGRAPHIC INFORMATION

DEMOGRAPHIC INFORMATION

The following questions are designed to give us some basic information about people who participate in this study. Please circle the number corresponding to the answer most descriptive of you, or fill in the appropriate blank. Please answer all questions. Thank you.

A. What is your sex?

1. Male
2. Female

B. What is your age? _____

C. What is your marital status?

1. never married
2. married
3. divorced/separated
4. widowed

D. What is your educational level?

1. less than high school
2. high school graduate or GED
3. BS/BA degree
4. MS/MA degree
5. Ed D/Ph D/MD/JD or equivalent degree

E. What is your occupation

1. professional practice (law medicine, therapy)
2. owner of business
3. clerical (secretarial, etc.)
4. academic position, college
5. academic position, K-12
6. human service (nursing, social work, etc.)
7. sales, marketing
8. technical/engineering
9. outdoor (farming, forestry)
10. art/music/dance
11. management, planning
12. finance, banking
13. government service
14. media (newspaper, radio, TV)
15. transportation (bus, truck, etc.)
16. other (please specify):

F. What is your annual income?

1. below \$10,000
2. \$10,000 - 14,999
3. \$15,000 - 19,999
4. \$20,000 - 24,999
5. \$25,000 - 29,999
6. \$30,000 - 34,999
7. \$35,000 - 39,999
8. \$40,000 - 44,999
9. \$45,000 - 49,999
10. \$50,000 +

G. What is your race?

1. White American, Caucasian
2. Black American, Negro
3. Native American Indian
4. Hispanic American
6. Other (please specify):

H. Do you have a family medical history of coronary heart disease?

1. No
2. If yes, please specify family member(s):

APPENDIX D

BUSS-DURKEE HOSTILITY INVENTORY

BUSS-DURKEE ATTITUDE INVENTORY

This inventory consists of a number of statements. Please indicate whether the statement is true or false for you by darkening the T or F space on your answer sheet. There are no right or wrong answers so your choice should reflect your beliefs, how you typically respond, or what is true or false for you.

1. I seldom strike back, even if someone hits me first.
2. I sometimes spread gossip about people I don't like.
3. Unless somebody asks me in a nice way, I won't do what they want.
4. I lose my temper easily but get over it quickly.
5. I don't seem to get what's coming to me.
6. I know that people tend to talk about me behind my back.
7. When I disapprove of my friends' behavior, I let them know it.
8. The few times I have cheated I've suffered unbearable feelings of remorse.
9. Once in a while I cannot control my urge to harm others.
10. I never get mad enough to throw things.
11. Other people always seem to get the breaks.
12. Sometimes people bother me just by being around.
13. When someone makes a rule I don't like I am tempted to break it.
14. I tend to be on my guard with people who are somewhat more friendly than I expected.
15. I often find myself disagreeing with people.
16. I sometimes have bad thoughts which make me feel ashamed of myself.
17. I can think of no good reason for ever hitting anyone.
18. When I am angry, I sometimes sulk.
19. When someone is bossy, I do the opposite of what he asks.
20. I am irritated a great deal more than people are aware of.
21. I don't know any people that I downright hate.
22. There are a number of people who seem to dislike me very much.

23. I can't help getting into arguments when people disagree with me.
24. People who shirk on the job must feel very guilty.
25. If somebody hits me first, I let him have it.
26. When I am mad, I sometimes slam doors.
27. I am always patient with others.
28. Occasionally when I am mad at someone I will give him the "silent treatment".
29. When I look back on what's happened to me, I can't help feeling mildly resentful.
30. There are a number of people who seem to be jealous of me.
31. I demand that people respect my rights.
32. It depresses me that I did not do more for my parents.
33. Whoever insults me or my family is asking for a fight.
34. I never play practical jokes.
35. It makes my blood boil to have somebody make fun of me.
36. When people are bossy, I take my time just to show them.
37. Almost every week I see someone I dislike.
38. I sometimes have the feeling that others are laughing at me.
39. Even when my anger is aroused, I don't use "strong language."
40. I am concerned about being forgiven for my sins.
41. People who continually pester you are asking for a punch in the nose.
42. I sometimes pout when I don't get my own way.
43. If somebody annoys me, I am apt to tell him what I think of him.
44. I often feel like a powder keg ready to explode.
45. Although I don't show it, I am sometimes eaten up with jealousy.
46. My motto is "Never trust strangers."
47. When people yell at me, I yell back.
48. I do many things that make me feel remorseful afterward.
49. When I lose my temper, I am capable of slapping someone.

50. Since the age of ten, I have never had a temper tantrum.
51. When I get mad, I say nasty things.
52. I sometimes carry a chip on my shoulder.
53. If I let people see the way I feel, I'd be considered a hard person to get along with.
54. I commonly wonder what hidden reason another person may have for doing something nice for me.
55. I could not put someone in his place, even if he needed it.
56. Failure gives me a feeling of remorse.
57. I get into fights about as often as the next person.
58. I can remember being so angry that I picked up the nearest thing and broke it.
59. I often make threats I don't really mean to carry out.
60. I can't help being a little rude to people I don't like.
61. At times I feel I get a raw deal out of life.
62. I used to think that most people told the truth but now I know otherwise.
63. I generally cover up my poor opinion of others.
64. When I do wrong, my conscience punishes me severely.
65. If I have to resort to physical violence to defend my rights, I will.
66. If someone doesn't treat me right, I don't let it annoy me.
67. I have no enemies who really wish to harm me.
68. When arguing, I tend to raise my voice.
69. I often feel that I have not lived the right kind of life.
70. I have known people who pushed me so far that we came to blows.
71. I don't let alot of unimportant things irritate me.
72. I seldom feel that people are trying to anger or insult me.
73. Lately, I have been kind of grouchy.
74. I would rather concede a point than get into an argument about it.
75. I sometimes show my anger by banging on the table.

APPENDIX E

ROTTER INTERNAL-EXTERNAL SCALE

ROTTER ATTITUDE INVENTORY

This inventory consists of a number of pairs of statements. Please choose the statement in the pair which is most characteristic of what you believe and darken the letter space on the answer sheet which corresponds to the statement you have chosen.

Example:

- | | | |
|---|----|----|
| 14. A. There are certain people who are just no good. | A. | B. |
| B. There is some good in everybody. | 11 | 11 |

You may believe both A and B are true, or neither A nor B is true. In either case, you must choose the statement with which you agree most. There are no right or wrong answers, so your choice should reflect your beliefs.

1. A. Children get into trouble because their parents punish them too much.
B. The trouble with most children nowadays is that their parents are too easy with them.
2. A. Many of the unhappy things in people's lives are partly due to bad luck.
B. People's misfortunes result from the mistakes they make.
3. A. One of the major reasons why we have wars is because people don't take enough interest in politics.
B. There will always be wars, no matter how hard people try to prevent them.
4. A. In the long run people get the respect they deserve in this world.
B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. A. The idea that teachers are unfair to students is nonsense.
B. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. A. Without the right breaks one cannot be an effective leader.
B. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. A. No matter how hard you try some people just don't like you.
B. People who can't get others to like them don't understand how to get along with others.
8. A. Heredity plays a major role in determining one's personality.
B. It is one's experiences in life which determine what they're like.
9. A. I have often found that what is going to happen will happen.
B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. A. In the case of the well prepared student there is rarely, if ever, such a thing as an unfair test.
B. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. A. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
B. Getting a good job depends mainly on being in the right place at the right time.
12. A. The average citizen can have an influence in government decisions.
B. This world is run by the few people in power, and there is not much the little guy can do about it.
13. A. When I make plans, I am almost certain that I can make them work.
B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. A. There are certain people who are just no good.
B. There is some good in everybody.
15. A. In my case getting what I want has little or nothing to do with luck.
B. Many times we might just as well decide what to do by flipping a coin.
16. A. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
B. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
17. A. As far as world affairs are concerned, most of us are victims of forces we can neither understand, nor control.
B. By taking an active part in political and social affairs the people can control world events.
18. A. Most people don't realize the extent to which their lives are controlled by accidental happenings.
B. There really is no such thing as "luck."
19. A. One should always be willing to admit mistakes.
B. It is usually best to cover up one's mistakes.
20. A. It is hard to know whether or not a person likes you.
B. How many friends you have depends upon how nice a person you are.
21. A. In the long run the bad things that happen to us are balanced by the good ones.
B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. A. With enough effort we can wipe out political corruption.
B. It is difficult for people to have much control over the things politicians do in office.
23. A. Sometimes I can't understand how teachers arrive at the grades they give.
B. There is a direct connection between how hard I study and the grades I get.
24. A. A good leader expects people to decide for themselves what they should do.
B. A good leader makes it clear to everybody what their jobs are.
25. A. Many times I feel that I have little influence over the things that happen to me.
B. It is impossible for me to believe that chance or luck plays an important role in my life.

- 26. A. People are lonely because they don't try to be friendly.
B. There's not much use in trying too hard to please people; if they like you, they like you.
- 27. A. There is too much emphasis on athletics in high school.
B. Team sports are an excellent way to build character.
- 28. A. What happens to me is my own doing.
B. Sometimes I feel that I don't have enough control over the direction my life is taking.
- 29. A. Most of the time I can't understand why politicians behave the way they do.
B. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX F

JENKINS ACTIVITY SURVEY FEEDBACK FORM

JENKINS ACTIVITY SURVEY

The Jenkins Activity Survey is designed to measure Type A behavior, a pattern of behavior which has been closely linked with coronary heart disease. The Type A behavior pattern is characterized by extremes of competitiveness, striving for achievement, aggressiveness, impatience, time urgency, hard-driving, excessive unbridled ambition, accelerated pace, and hostility. In addition to providing a general Type A score, the Jenkins Activity Survey also provides separate factor scores for three subscales:

Speed and Impatience (Factor S) - This factor deals with the time urgency revealed in the style of behavior of the Type A person. Those scoring high on this factor tend to eat very rapidly, become impatient with the conversation of others, hurry other people along, have strong tempers, and become irritated easily.

Job Involvement (Factor J) - This factor expresses degree of dedication to occupational activity. Typically, persons scoring high on this factor report having a challenging, high pressure job. They work overtime and confront important deadlines. They prefer promotion to a pay raise, but usually have received both in the last few years.

Hard-Driving and Competitive (Factor H) - This factor involves perceptions of oneself as being hard-driving, conscientious, responsible, serious, competitive, and putting forth more effort than other people. This series of traits suggests highly socialized but intense drives.

Your scores on the Jenkins Activity Survey are listed below in percentile form. This percentile score indicates the approximate percentage of persons in the population of people who have completed the survey whose scores fall below your scores. For example, if your score is a 99, that means that your score is higher than 99% of the people who took the survey, if your score is 55, that means that your score is higher than 55% of the people who took the survey, and so on. In general, a score of 70 or higher indicates Type A behavior. If your score is 70 or higher, you may want to examine your lifestyle and attitudes with a view toward revising beliefs that may be influencing your behavior pattern.

Type A _____ Factor S _____ Factor J _____ Factor H _____

APPENDIX G

BUSS-DURKEE HOSTILITY INVENTORY FEEDBACK FORM

ID NUMBER _____

BUSS-DURKEE HOSTILITY INVENTORY

The Buss-Durkee Hostility Inventory (BDHI) is the most widely used questionnaire for assessing level of hostility. Research indicates that hostility is a key behavior component of the Type A behavior pattern, a pattern of behavior which has been closely linked with coronary heart disease.

Your score on the BDHI is _____. The average score for men on this questionnaire is 31. The average score for women is 28. If your score is substantially higher than the average, you may want to examine your lifestyle and attitudes with a view toward changing patterns or beliefs which may be contributing to hostility.

APPENDIX H

ROTTER INTERNAL-EXTERNAL SCALE FEEDBACK FORM

ID NUMBER _____

ROTTER INTERNAL-EXTERNAL SCALE

The Rotter Internal-External Scale (RIES) is designed to assess perceptions of control that one has over reinforcement relative to personal behavior. The locus of control theory suggests that people have generalized expectancies or beliefs about the world with regard to whether or not reinforcement, reward, or success is dependent on one's own behavior or is controlled by external forces. If reinforcement is thought to be controlled by external forces the person is said to have an external locus of control. If the person perceives that reinforcement is contingent on his/her own behavior, the person is said to have an internal locus of control.

Your score on the RIES is _____. The average score for men on this questionnaire is 11. The average score for women is 12. If your score is higher you have a tendency toward a belief in external control. If your score is lower, you have a tendency toward a belief in internal control.

APPENDIX I

COMPARISON OF EXTREME SUBJECT GROUPS AND CORRELATIONS

JAS

	<u>± 1 S.D.*</u>		<u>± ½ S.D.**</u>		<u>Correlations***</u>	
	t	p<	t	p<	r	p<
BDHI Total	2.8825	.0084	1.9206	.0597	.2385	.0228
Anger-In	3.7436	.0009	1.3893	.1713	.2254	.0317
Anger-Out	2.1031	.0487	1.8211	.0743	.2081	.0477
RIES Total	-1.1528	.2676	-0.6694	.5065	-.1135	.2838
Difficult World	-1.7613	.1042	-1.3928	.1709	-.2213	.0350
Just World	-1.7015	.1063	-0.5274	.6003	.1316	.2135
Predictable World	-1.7262	.1183	-1.1833	.2434	.1851	.0789
	*N=20, Type A N=8, Type B df=26		**N=36, Type A N=24, Type B df=58		***N=91	

BDHI

	<u>± 1 S.D.*</u>		<u>± ½ S.D.**</u>		<u>Correlations***</u>	
	t	p<	t	p<	r	p<
RIES Total	1.3393	.1990	3.0406	.0039	.2452	.0191
Difficult World	1.3068	.2055	2.7315	.0090	.2220	.0344
Just World	0.9012	.3801	1.7306	.0908	-.1697	.1077
Predictable World	1.4302	.1680	2.8077	.0074	-.2363	.0241
	*N=9, Hostile N=22, Non-hostile df=29		**N=21, Hostile N=44, Non-hostile df=63		***N=91	

RIES

	<u>± 1 S.D.*</u>		<u>± ½ S.D.**</u>		<u>Correlations***</u>	
	t	p<	t	p<	r	p<
Anger-In	2.8191	.0097	2.2477	.0284	.2834	.0065
Anger-Out	2.6038	.0134	1.6261	.1089	.1771	.0930
	*N=18, External N=19, Internal df=35		**N=30, External N=35, Internal df=63		***N=91	

VITA

Allan S. Philp was born in Jackson, Mississippi on July 1, 1937. After graduation from high school in Jackson he attended undergraduate school at the University of Mississippi in Oxford, Mississippi where he was awarded a Bachelor of Business Administration degree in Personnel Management in 1960.

He began a career in the United States Air Force as a second lieutenant on graduation from Ole Miss, attaining the rank of colonel before leaving the Air Force in 1980. He obtained a Master of Science degree in Personnel Guidance and Counseling from Troy State University in 1974, while attending the Air Force Command and Staff College at Air University in Montgomery, Alabama.

After gaining several year's experience in the private business sector, in 1982 he applied and was accepted for the doctoral program in counseling psychology at the University of Tennessee in Knoxville, Tennessee. He was awarded the Ph.D. in March 1987.

He is married and has two children, a son aged seventeen, and a daughter aged fourteen.