To the Graduate Council:

I am submitting herewith a thesis written by David M. Ferguson entitled "The Relationship Between the Myers-Briggs Type Indicator and Self-Reported Type A Behavior." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Educational Psychology.

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A

THE RELATIONSHIP BETWEEN THE MYERS-BRIGGS TYPE INDICATOR AND SELF-REPORTED TYPE A BEHAVIOR

A Thesis

Presented for the

Master of Science

Degree

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ABSTRACT

The purpose of this study was to detect significant relationships between the Type A behavior pattern and Jungian types.

The Type A behavior pattern describes a style of behaving that has been significantly linked to coronary heart disease. The Type B behavior pattern is defined by its relative absence of Type A characteristics. The Jenkins Activity Survey is one instrument that was designed to assess the presence of the Type A (or Type B) behavior pattern. For this study, 14 items were chosen from the Jenkins Activity Survey. A varimax factorial loading analysis indicated that these items contributed significantly to individual assessment on the Type A/B continuum. These items were then placed in the form of self-statements and each of the 267 high school seniors who volunteered for the study was requested to rate him/herself on the accurateness of each statement for him/herself.

The other instrument used in the study was the Myers-Briggs Type Indicator. This instrument is based on Jung's theory of Type and characterizes an individual as either extraverted or introverted, sensing or intuitive, thinking or feeling, and judging or perceiving.

The data from the research was analyzed using both a bivariate correlation procedure and a multiple regression procedure. In the bivariate analysis Type A behavior correlated significantly with extraverted and judging types. Type B behavior correlated significantly with introverted and perceiving types. In the multiple regression analysis Type A behavior correlated significantly with extraversion,

intuition. and judging. Type B behavior correlated significantly with introversion, sensing, and percepting.

The results of the study suggest that certain Jungian types may tend to be significantly more at risk for the development of coronary heart disease than others.

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CHAPTER I

INTRODUCTION

Vital Statistics of the United States, 1975, reports that heart disease is the leading cause of death in the U.S. In 1975 alone, it accounted for 717,000 fatalities, or 38 percent of all deaths. The resulting medical costs make it America's most expensive illness.

Coronary heart disease is a clinical disorder produced by lesions of the coronary arteries. The etiology of coronary heart disease has become a rapidly developing field of research. The ability to indicate or correct physiological factors that result in or have caused coronary heart disease has grown measurably in the last two decades. Heart and artery transplants are just two examples of these developments.

Other researchers have studied the role of the mind in coronary heart disease. This idea, that coronary heart disease might be related to the behavioral and psychological habits of its victims, has been suggested for centuries. In 1628, the English physician William Harvey wrote, "Every affection of the mind that is attended with either pain or pleasure, hope or fear, is the cause of an agitation whose influence extends to the heart" (Eastwood and Trevelyan, 1971, p. 289). Jenkins (1978) quotes Sir William Osler, who suggested in 1897 that the pressure that results from forcing the body to perform at maximum capacity continually was responsible for arterial degeneration rather than excessive eating and drinking. Even though this link was first suggested at least 350 years ago, the majority of the research

has occurred in the last 20 years. Friedman and Rosenman are cardiologists who pioneered in behavioral pattern research. Their findings have opened the door for much of the present research. These two cardiologists described a behavior pattern which seems characteristic of a majority of coronary heart disease patients. This coronary prone behavior pattern is called Type A, while the behavior pattern which is characterized by the relative absence of coronary prone behavior is known as Type B (Friedman and Rosenman, 1969).

More specifically, Friedman states that the coronary prone behavior pattern describes individuals who are chronically struggling to attain poorly defined goals. Jenkins (1975, p. 6) suggests that the Type A life style also includes, "extremes of competitiveness . . . aggressiveness, haste, impatience, restlessness, hyperalertness . . . and feelings of being under the pressure of time and under the challenge of responsibility." These behaviors will not be predominant in the Type B life style.

Jenkins et al. (1978) have added to the research of Friedman and Rosenman by developing an instrument designed to indicate whether a person typifies the Type A pattern or the Type B pattern. This instrument is the Jenkins Activity Survey or the JAS.

This theory of Type A versus Type B behavior lacks the comprehensiveness of an adequate theory of personality (Jenkins, 1978). Its ability to predict is limited to the area of chronic heart disease. Many scientists have attempted to formulate a comprehensive, predictive, yet concise theory. In his Psychological Types (1923) Jung offers a theoretical system that may be useful in identifying basic personality characteristics underlying Type A and Type B personalities. In this book, Jung attempts to move from a broad theoretical view of human

behavior to an understanding of the rationale underlying each behavioral event. Jung was not satisfied with a general psychology; he insisted on a specific psychology. Jung developed his theory from an analysis of the basic differences of mental functioning. He postulated two attitudes--extraversion and introversion, and four functions--thinking, feeling, sensing, and intuition. Further, Jung stated that thinking and feeling were rational functions because they both required an act of judgment. Sensation and intuition are nonrational functions since they are based on perception and require no reasoning. Jung stated that an individual develops the most skill with the processes he/she prefers to use. The individual's behavior will reflect the use of these dominant processes.

Isabel Briggs Myers and Katherine Briggs have developed the Myers-Briggs Type Indicator also known as the MBTI (Myers, 1962) which implements Jung's theory of type. An examinee's results reveal his/her dominant processes.

Specifically, Jung describes extraverts as more action oriented, preferring to live their lives in the exterior world, while introverts are more thought and feeling oriented, preferring to live their lives in the interior world. It follows that the extravert does his/her best work externally, while the introvert does his/her best work internally (Myers, 1960). This polarity suggests that an excessive striving or urgency (Type A) would seem more likely in the action oriented extraverts than the thought and feeling oriented introverts.

Next, an examination of the judging-perception characteristics suggests other parallels. The judging person is described as running his/her life while the perceptive person is described as living his/her life (Myers, 1962). Further, the judging person foregoes reception of

information input in order to come to a conclusion as quickly as possible. The perceptive person foregoes coming to a conclusion in order to collect more information. Hence, the judgment preference seems to be characterized by impatience (Type A) while the perceptive preference seems to be characterized by patience (Type B).

The intuitive-sensing dimension may not suggest differences between the two types quite as clearly as do the other dimensions. The sensing type acquires his/her usuable data directly through the five senses; therefore, it is readily available to him/her for use. On the other hand, the intuitive type pays little attention to the raw data as recorded by the senses. It tends to be usuable to him/her only after it has "incubated" in his/her unconscious and forms a configuration that comes into his/her awareness as intuition. The anxiety and haste of the Type A seems to limit substantially the possibility of a gestalt that is revealed via the unconscious. Myers' (1962) research has revealed that the sensing individual has a need for order. This appears to corraborate Glass' (1977) hypothesis that Type A behavior is a result of the attempt to maintain order in the environment. Thus Type A behavior seems compatible with the sensing preference while Type B behavior seems compatible with the preference for intuition.

Finally, the thinking-feeling dimension provides a fairly clear relationship to Type A behavior. The feeling types do not mind sacrificing decreased output for increased subjective gratifications, especially in interpersonal relations. The thinking types, on the other hand, are output oriented; subjective experiences are secondary (Myers, 1962). Over valuing output at the cost of satisfying feeling needs can be expected to cause tension and anxiety that characterizes Type A

individuals. Myers (1962) demonstrated the thinking type's need for endurance when combined with the judging dimension. This combination makes one suitable for the demands of high pressure executive jobs, the type of job in which Type A individuals are often found (Glass, 1977). Additionally, Glass (1977) suggests that the relative unimportance of feelings is a Type A prerequisite for becoming an overachiever.

In summary, the extraverted (E), sensing (S), thinking (T), and judging (J) dimensions seem to parallel Type A characteristics, while the characteristics of Type B individuals are more predominant in the introverted (I), intuitive (N), feeling (F), and percepting (P) dimensions. Presumably, the ESTJ individual's self-rating should indicate a tendency toward Type A behavior. Conversely, the INFP individual's self-rating should indicate a tendency toward Type B behavior.

I. STATEMENT OF THE PROBLEM

Several researchers (Jenkins, 1978; Glass, 1977) have indicated a need to examine the relationship between comprehensive typology assessment instruments and coronary prone typology instruments. However, no studies of this type have been conducted. Therefore, this study is directed toward filling that research void by correlating the significant items of the Jenkins Activity Survey with the Myers-Briggs Type Indicator.

II. HYPOTHESES

1. Type A behavior is significantly more characteristic of those types whose preference is extraversion and, conversely, Type B behavior is significantly more characteristic of those types whose preference is introversion.

2. Type A behavior is significantly more characteristic of those types whose preference is sensing and, conversely, Type B behavior is significantly more characteristic of those types whose preference is intuition.
3. Type A behavior is significantly more characteristic of those types whose preference is thinking and, conversely, Type B behavior is significantly more characteristic of those types whose preference is feeling.
4. Type A behavior is significantly more characteristic of those types whose preference is judging and, conversely, Type B behavior is significantly more characteristic of those types whose preference is perception.
5. Type A behavior is significantly more characteristic of those whose preferences include extraversion, sensing, thinking, and judging and, conversely, Type B behavior is significantly more characteristic of those whose preferences include introversion, intuition, feeling, and perception.

III. SIGNIFICANCE OF THE STUDY

A realization of the extent of coronary heart disease explains the intensity and magnitude of the present research in that area. A considerable amount of this research has been devoted to "curing" those with Type A personalities. The initial phase of the treatment often involves revealing the connection between individual behavior and coronary heart disease (Friedman and Rosenman, 1969; Bortner, 1969; Jenkins, 1971; and Matthews, 1970). This information allows an individual the possibility of a more conscious choice concerning his or her

behavior.

A significant correlation between Type A behavior and a Jungian type or combination of types will provide an additional body of theoretical insight which can aid research into the formation and possible modification of the coronary-prone individual. Due to the variety of potential uses of the MBTI, this additional theoretical insight can be widely disseminated.

For example, the counselor may use the MBTI with vocational decisions. The counselor may indicate what type of job would likely require or reinforce coronary-prone behavior as opposed to one that would not require or reinforce such behavior.

Secondly,

> Psychotherapists may find the type concepts useful, in the relatively non-threatening context of the preferences, for helping the patient to see the impossibility of the demands he has been making upon himself and to recognize and strive for the strengths compatible with his own type and therefore attainable (Myers, 1962, p. 5).

Marriage counseling could also be enriched by these study results. Spouses would better understand the needs and dominant processes of Type A individuals. This could result in a more compatible relationship and/or possible modification of the coronary-prone personality.

IV. ASSUMPTIONS AND LIMITATIONS

The validity of the study results are based on the assumption that the sample is an accurate sampling of the population. Another assumption is that the instruments assess what they are proported to assess.

Additionally, two limitations of the study have also been noted. The first refers to the theory on which the Jenkins Activity Survey is based. Jenkins (1978, p. 17) states:

> The Type A behavior pattern was conceptualized on the basis of clinical medical practice. It does not have its roots in psychiatric of psychological theories. Hence, the Type A behavior pattern cannot be easily reduced to the terminology of psychology or psychiatry. In light of its origins in clinical cardiology, it is not suprising that measures of this concept show relatively low correlations with most standard psychological tests.

The make-up of the sample is another limitation. According to one study (Butensky et al., 1976), students of rural schools show less Type A behavior than students of suburban schools. Hence, generalization of the results will be limited to this population only. Furthermore, twelfth grade students have not yet reached the degree of stability in personality structure (in this case, the independant variables) nor in coping modes that define the dependant variables (Type A and B) that adults have who are in the age range in which the incidence of cardiac disease is highest. This being the case, any relations found between independant and dependant variables can be expected to be lower than would be expected among the adult population with the greatest incidence of coronary problems.

CHAPTER II

REVIEW OF RELATED LITERATURE

I. TYPE A BEHAVIOR

As a result of the failure to convincingly link coronary heart disease and cholesterol diets, Friedman and Rosenman (1969) began research into the effects of stress on coronary heart disease. This research led to a list of overt behaviors whose presence gave rise to blood abnormalities characteristic of coronary heart disease. Collectively this list of behaviors was labeled the Type A coronary prone behavior pattern. Friedman defined the pattern as:

> a characteristic action-emotion complex which is exhibited by those individuals who are engaged in a relatively chronic struggle to obtain an unlimited number of poorly defined things from their environment in the shortest period of time and, if necessary, against the opposing effects of other things or persons in this environment (Friedman, 1969, p. 8).

The Type B noncoronary prone behavior pattern is characterized by a relative absence of Type A characteristics.

It is important to note that a Type A person does not manifest all the traits constituting the pattern and even a Type B displays some Type A features (Glass, 1977). Clinical assessment of Type A and Type B personalities is usually contingent on the total number of Type A characteristics present and their intensity (Jenkins, 1975).

The previously mentioned list of descriptors developed by Friedman and Rosenman was combined in a structured interview. The ability to predict coronary disease utilizing this interview was researched in a study known as the Western Collaborative Group study (Rosenman et al.,

1964). This study assessed the subject's blood lipids and coagulation, body measurements, socioeconomic factors, individual habits, cardiovascular status, and overt behavior patterns. Utilizing a "double blind" procedure, the structured interview yielded a highly significant number of individuals who were classified as coronary-prone (due to their responses during the interview) and also clinically diagnosed as coronary diseased individuals. No other single descriptor provided a prognostic entity as accurate as exhibition of the Type A behavior pattern.

Follow-up experiences of the Western Collaborative Group were conducted at two years (Rosenman et al., 1966), at 4.5 years (Rosenman et al., 1970), and a final follow-up at 8.5 years (Rosenman et al., 1975). Each follow-up confirmed that:

> The Type A behavior pattern was strongly related to coronary heart disease incidence, and this association could not be explained by association of behavior pattern with any single predictive risk factor or with any combination of them (Rosenman et al., 1975, p. 872).

Jenkins (1975, p. 6), in light of this research, formulated the following, more precise definition of the coronary prone behavior pattern:

> The Type A behavior pattern is considered to be an overt behavioral syndrome or style of living characterized by extremes of competitiveness, striving for achievement, aggressiveness (sometimes stringently repressed), haste, impatience, restlessness, hyperalertness, explosiveness of speech, tenseness of facial muscles, and feelings of being under the pressure of time and under the challenge of responsibility. Persons having this pattern are often so deeply committed to their vocation or profession that other aspects of their lives are relatively neglected. Not all aspects of this syndrome or pattern need be present for a person to be classified as possessing it. The pattern is neither a

> personality trait nor a standard reaction to a challenging situation, but rather the reaction of a characterologically predisposed person to a situation that challenges him or her. Different kinds of situations evoke maximal reactions from different persons.

Physiologically, Glass (1976) states that this behavior pattern places stress on the individual. Glass hypothesizes that as stress increases so does the cholesterol content in the body. Cholesterol increase causes plaque deposits on the walls of the arteries, which results in narrower vessels. The heart must pump harder to push the bood through these narrower vessels. As the heart pumps harder, the blood pressure increases and tends to tear the plaque deposits away from the artery walls. This plaque results in clots which are capable of closing off one or more of the coronary arteries. Hence, arterioslcerosis (hardening of the arteries) progresses to myocardial infarction (heart attack).

II. EMPIRICAL DOCUMENTATION

Researchers have attempted to empirically document the behaviors that define the Type A pattern. Burnam, Pennebacker, and Glass (1973) researched the excessive achievement striving of Type A individuals. Their study compared the number of mathematical problems attempted by a group of Type As and a group of Type Bs under a deadline versus a no-deadline treatment. The Type As attempted significantly more mathematical problems in the no-deadline condition, but not during the deadline condition. Type A individuals performed at a similar level under both conditions, but Type B individuals attempted more problems under deadline than no-deadline.

In another study on achievement striving, responses to an interview indicated that Type As differed significantly from Type Bs in the number of sports in which they participated in high school, in number of athletic awards received in high school, in extracurricular activities in college, in number of academic honors in college, and number of high school social activities (Glass, 1977). The frequency of the event listed in each category above was higher for Type As than for Type Bs in every category except the final one. Type B individuals displayed more involvement in social activities.

Aecharchyn et al., (1981) studied the achievement of Type As also. They concluded that Type As were involved in more activities, placed greater emphasis on academic success, and achieved higher performance records than Type Bs.

Additionally, it was suggested that due to the Type A's attention to the task at hand and the desire to achieve, he or she would be less aware of fatigue. In a study conducted by Carver, Coleman, and Glass (1976), Type As and Type Bs reported their level of fatigue at measured intervals while on a treadmill. Not only did Type As suppress feelings of fatigue to a greater extent than Type Bs, but they also performed at a level closer to their endurance than Type Bs.

The time-urgency supposedly exhibited by the Type A individual was tested in an experiment by Burnam, Pennebaker, and Glass (1973). A group of Type A individuals were asked to individually judge the lapse of one minute. It was hypothesized that the impatience of Type As would lead to an experience of time passing slowly, consequently Type As would judge the passage of one minute sooner they Type Bs. The mean deviation (for each group) from the one minute mark was not significantly different.

However, the mean judgment of the two groups differed in the appropriate directions significantly. This suggests that the As and Bs err equally but in opposite directions. Other studies also suggest that the Type A person's impatience causes him or her to do poorly on a variety of tasks involving a period of delay before response (Glass et al., 1974; Glass, 1977).

Researchers have also attempted to document the excessive aggressiveness and hostility found in the coronary-prone behavior pattern. Van Egeren (1979) paired Type A individuals together and Type B individuals together and requested that each pair complete a task which required ongoing communication between the pairs. Later, Type As were paired with Type Bs and they were also required to communicate. An analysis of the interactions revealed Type A pairs displayed significantly more competitive, aggressive behavior than Type B pairs, and pairs consisting of each type.

A study by Carver and Glass (1978) demonstrated another incidence of excessive aggression in Type As. In this study, Type As and Type Bs were exposed to a situation that threatened their sense of competence and mastery. Both types were then given an opportunity to administer varying degrees of electrical shock to a confederate if the confederate performed incorrectly on a task. A control group of Type As and Bs were not placed in a threatening position. They did, however, participate in the administration of shock treatment to the confederate. In neither event did the confederate actually receive electrical shock. The results indicated that the Type As exhibit a significantly greater amount of aggression after being in a threatening situation. Prior to threat, levels of intergroup aggression were not significantly different.

Paralleling these findings are the results of a study by Pittner and Houston (1980). These researchers, after placing As and Bs in a threat situation, concluded that the Type As show more psychophysiological arousal than Type Bs. The study also revealed that Type As employed more suppression in response to a threat to their self-esteem than did Type Bs. Other researchers have recorded the presence of this increased level of aggressiveness in children who evidence Type A behavior (Matthews and Angulo, 1980; Rutensky et al., 1975).

Matthews and Brunson (1979) conducted a study on how Type As differ from Type Bs in the allocation of attention. They concluded that Type As focus their attention on the central tasks and are less aware of the peripheral tasks than Type Bs. Type As actively inhibit or suppress their attention to task-irrelevant peripheral events that might distract them from the main task. This results in Type As appearing hyperalert. The researchers suggested that body symptoms would likely be ignored if they were not relevant to the main task. Hence by suppressing their attention to symptoms, Type As often ignore the warnings of heart disease.

III. DEVELOPMENT OF THE PATTERN IN INDIVIDUALS

Researchers have attempted to understand the genesis of the Type A behavior pattern. The hypotheses have generally been aligned with the researcher's individual orientation and the results are not without exceptions. The heritability of the behavior pattern has received minimal support. In a study comparing monozygotic and dizygotic twins, Matthews and Krantz (1976) found a moderate genetic component on only one dimension (hard-driving, competitive) of the Type A behavior pattern. While research headed by Rosenman (1974) reports absence of support for the

heritability of Pattern A. Rahe et al., (1978) concluded that the JAS seems to falsely suggest heritability of Pattern A. They propose the formation of an adjective checklist scale which might provide assessment of Type A free from genetic influence.

In light of the previous research, recent studies seem to focus on environmental conditions as the major force in forming the Type A behavior pattern. Glass (1977) has postulated that Type A is the result of one who constantly attempts to maintain control of their environment. This pattern, according to him, is not inherited and is most evident when the forementioned individual is confronted with uncontrollable stress. Further, Glass suggests that whether or not a Type A individual attempts to exert control in a specific situation depends on the salience of that situation. High salience tasks or situations result in greater expenditures of energy for control. A study by Matthews (1979) yielded support for this hypothesis.

Matthews (1979) has also conducted research on children and their parents who display the Type A pattern. This report points to specific environmental conditions as critical in the maintenance of a childhood Type A into adulthood. Her study revealed that mothers and female strangers tended to react to Type A behavior in boys by verbally eliciting improved performance in the boys. With this kind of ongoing interaction, the Type A pattern is continually reinforced.

Bortner, Rosenman, and Friedman's research (1970) also supports the environmental hypothesis. Their study revealed that adolescent boys whose fathers have the coronary-prone behavior pattern are themselves somewhat more likely to display aspects of this behavior pattern.

IV. ASSESSMENT TECHNIQUES

The structured interview has been a standard from which other assessment techniques and instruments have progressed. Bortner and Rosenman (1967) combined the JAS and related performance tasks in an attempt to measure Type A. Bortner (1969) later developed an instrument consisting of fourteen rating scales. Each rating scale was composed of two bipolar adjectives, one representing Type A behavior and another representing Type B behavior. An individual rated him/herself on the continuum connecting the two adjectives. The relation of an individual's mean score to the group's mean score reflected the presence of Type A behavior or Type B behavior.

Another instrument was developed by a group of recognized specialists of coronary heart disease (Friedman et al., 1974). These specialists submitted items they felt to be predictive of Type A behavior. Items submitted by several specialists were selected for the instrument.

Sherwitz et al., (1977 and 1979) modified the structured interview of Friedman and Rosenman. These researchers included specific behavioral descriptors and specific vocal characteristics indicative of Type A or Type B.

Matthews and Angulo (1980) have also developed a scale for assessing the presence of Type A behavior. This instrument, however, is different from previous instruments in that it targets children and adolescents. It consists of 17 statements that characterize Type A behavior in children and has been used from kindergarten through eighth grade.

Perhaps the most widely used instrument is the Jenkins Activity Survey (Jenkins, 1978). Developed by C. David Jenkins, this instrument

has received continued upgrading and refining. It is a 52 item questionnaire that has been administered to a wide variety of populations. This instrument is recommended for use with employed persons between the ages of 25 and 65. According to Jenkins (1978), the validity of the JAS has been supported in at least eight studies. In each of these studies the presence of coronary heart disease was significantly associated with Type A behavior. On the basis of these eight and other studies, Jenkins concludes that the Type A pattern is independent of the most commonly studied risk factors (cigarette smoking, blood pressure, serum cholesterol . . .) of coronary heart disease.

V. RELATIONSHIP TO OTHER CONSTRUCTS

Attempts to relate Type A behavior to other psychological measures have resulted in, "relatively low correlations with most standard psychological tests" (Jenkins, 1978, p. 17). Caffrey (1968) correlated Cattell's 16 Personality Factor Inventory scales with ratings from the Structured Interview. The highest resulting correlation was .22.

Another study attempted to determine any significant relationships between Type A scores and the Guilford-Zimmerman Temperament Survey, the Thurstone Temperament Schedule, the Strong Vocational Interest Blank, the Gough Adjective Ckeck List, and the Thematic Apperception Test (Jenkins, 1978). The Type A scale correlated significantly with the General Activity Scale of the Guilford-Zimmerman Temperament Survey, the Active Scale of the Thurstone Temperarent Schedule, and the Occupational Level of the Strong Vocational Interest Blank. These correlations suggest that the Type A individual is significantly more active and aspires to higher occupational levels than the Type B individual.

Another study correlated Type A scores and the California Psychological Inventory (Jenkins, 1978). Significant correlations were observed between the Job Involvement of the Jenkins Activity Survey and the Dominance scale, between the Speed and Impatience scale of the Jenkins Activity Survey and the Self-Control and Good Impression scale. Resulting conclusions are that Type As are more domineering, have more self-control and are likley to impress others more than Type Bs.

Additionally, in a medical school sample, significant relationships have been observed between cumulative grade point average during medical school, relative ranking in class and the Type A scale (Jenkins, 1978).

Burke and Weir (1980) examined relationships between Type A behavior and the California Psychological Inventory, the Rotter Internal-External Locus of Control Scale, the Crowne-Marlow social approval scale, the Survey of Work Values, Cattell's 16 Personality Factor scale, elements of Bradburn's social participation scale, a measure of preferred coping behavior, and the degree of involvement in supportive social relationships. Significant relationships suggested that Type As were more rigid, had greater social needs, were more socially involved, and tended to place greater work related demands on themselves than Type Bs. Type A behavior also revealed a significant relationship with active coping behaviors (distraction and withdrawal) and the Feeling Factor of Cattell's 16 Personality Factor Scale.

Additional studies have shown that one of the factors positively related to myocardial infarction was excessive working (Thiel, Parker, and Bruce, 1973). Jenkins (1977) has concluded that social insecurity along with Type A behavior increases one's chances of heart disease. Burke and Weir's conclusions (1980) parallel the previously mentioned

studies. These two researchers concluded that the Type A work values were in line with the Protestant Work Ethic. Also, Type A individuals were more active in community organizations but not friendships. Type As seem to have a need to be socially involved but their relationships do not reach the depths that Type Bs do.

In summary, the Type A behavior pattern is rather widely acknowledged. The defining characteristics of Type A and Type B individuals have been supported by research studies. This research has guided the development and refinement of several Type A/B instruments, one of which, the Jenkins Activity Survey, will be used in this study.

VI. JUNGIAN TYPOLOGY

"What sort of man was Jung? . . . Physician, psychiatrist, psychoanalyst, professor, scholar, writer, social critic, family man, and citizen--Jung was all of these" (Hall and Nordby, 1973, pp. 28 and 29).

Carl Jung is acknowledged to be one of the foremost psychological innovators of the twentieth century. Jung attached himself to Freud who decided Jung was to be "his crown prince" (Hall and Lindzey, 1978, p. 111). Jung, however could not synthesize his own ideas with Freudian logic and both refused to yield in their beliefs. The catalyst of the inevitable schism was Jung's rejection of Freud's overemphasis of sex. This split afforded Jung the opportunity to focus on and complete his own theory of psychoanalysis. Jung's theory is evidence to the fact that he thrived on the study of the psyche. Hall and Lindzey (1978) provide a comprehensive summary of that theory.

VII. THEORY OF TYPOLOGY

Jung was not content with a vague understanding of the mechanics of the psyche. He was bent on understanding its specifics and its generalities. Jung postulated a theory by which people are classified, but he does not claim to be the originator of such an idea. Jung (1921) cites Claudius Galen's categories as perhaps the most important. Galen categorized according to affect or emotion. Jung realized that other psychological data should also be included and argued that quite often, emotional expressions are not characteristic of our "real" personality. He states:

> If we wish to define the psychological pecularity of a man in terms that will satisfy not only our own subjective judgment but also the object judged, we must take as our criterion that state or attitude which is felt by the object to be the conscious, normal condition. Accordingly, we shall make his conscious motives our first concern, while eliminating as far as possible our own arbitrary interpretations (1921, p. 514).

He postulated the attitudes, introversion and extraversion, as one dimension which his theory utilizes. The extravert in all his/her,

> judgments, perceptions, feelings, affects, and actions feels external factors to be the predominant motivating force, or who at least gives weight to them no matter whether causal or final motives are in question (Jung, 1921, p. 514).

The introvert is motivated chiefly by internal or subjective factors. The extravert focuses his/her attention on the objective outer world. The introvert is preoccupied with his/her own affairs and ideas.

Jung said the psyche also consisted of a number of different psychic functions. The four basic functions of the psyche are intuition as opposed to sensation, and thinking as opposed to feeling. An intuitive

individual perceives things primarily through, "indirect perception by way of the unconscious" (Myers, 1962, p. 2). In contrast, the sensing individual perceives things primarily through the use of one of the five senses. The thinking individual, "makes a judgment as to whether there is a true connection between two or more ideas" (Hall and Nordby, 1973, p. 99).

The last dimension in Jung's typology involves classifying an individual as relying primarily on rational or irrational functions. The rational functions are the thinking and feeling functions. Jung said these were rational because they involve a judgmental process. Sensing and intuition are non-rational processes because they involve only perception; reasoning is not necessary.

Early in childhood an individual begins to prefer certain processes more than others. This is partly as a result of heredity and partially environmental. It is expected that the preferred process will be more highly developed because of its greater use. The less preferred process is active in the unconscious. This maintains a balance in the individual's mental functioning.

VIII. ASSESSMENT TECHNIQUES

Due to the time required to accurately assess one's typology via the interview and observation method, researchers have attempted to develop instruments which could yield more accurate results in less time. Coan (Buros, 1972) says three problems present themselves in this endeavor. First, the variables measured are often indirectly manifested and often may elude self-awareness. Second, since in each person all components are present, discerning between the superior and auxilliary

functions is quite difficult. Third, the manner in which each function is expressed is determined by that individual's dominant attitude.

Initial attempts to develop an instrument that would assess one's typology focused on the introversion-extraversion dimension (Downey, 1926; Heidbreder, 1926; Conklin, 1927; Neyman and Kohlstedt, 1929; and Eysenc, 1947). This and related research has resulted in the commonplace usage of introversion and extraversion. The meanings have been altered, however, and introversion has acquired a rather negative, unhealthy connotation while extraversion is presumably positive and healthy. This value judgment is not present in Jungian psychology.

Although the introversion-extraversion dimension developed rather wide acceptance, it was only one dimension of Jungian typology. One instrument which attempts to correct this limitation is the Gray-Wheelwright Jungian Type Survey (Gray and Wheelwright, 1946). The Gray-Wheelwright assesses an individual on three of the Jungian dimensions. This instrument does not include the rational-irrational dimension.

Another instrument that attempts to assess individuals on each Jungian dimension is the Myers-Briggs Type Indicator (Myers, 1962). This is a paper and pencil instrument which can be hand scored in a relatively short time. The review of literature suggests that the Myers-Briggs Type Indicator is used in more Jungian typology studies than previously mentioned instruments. Perhaps the major criticism concerning the MBTI is that it assesses a conventional interpretation of the Jungian dimensions rather than the theoretical interpretations postulated by Jung (Buros, 1965).

Stricker and Ross (1962) conducted a study in which they correlated the 11th edition of the Gray-Wheelwright with the MBTI. The study

revealed that the two instruments reliably measure the same constructs. Hence either the instruments, which were developed separately, measure the exact same, yet wrong, constructs or the instruments accurately measure what they proport to measure. It seems much more likely for the latter instance to be true than for two separate groups of researchers to err in exactly the same way.

IX. RELATIONSHIP TO OTHER CONSTRUCTS

Various studies have been conducted to correlate one's type with individual interests (Stricker and Ross, 1962), values (Myers, 1962), needs (Myers, 1962), with various personality measures (Stricker and Ross, 1962; Steele and Kelley, 1976), with aptitude (Myers, 1962), and with individual conceptual systems (Carskadon and Knudson, 1978).

More specifically, Stricker and Ross (1962) demonstrated a significant relationship between the judging type and Attitude to Work (or need for achievement). The perceptive type correlated significantly with Tolerance of Complexity (or Flexability). This suggests that the judging type seems to strive more in his/her work while the perceptive type tends to be more relaxed, perhaps less competitive.

In a study using external ratings and the MBTI, Ross (Myers, 1972) recorded significant relationships between the judging type and the tendency to be thorough, responsible, dependable, the tendency to work steadily, be fond of work and industrious.

Steele and Thomas' 1976 research indicated high correlations between the Eysenck Personality Questionnaire and the MBTI. Both instruments also correlated very highly with themselves revealing good discriminant reliability.

Additionally, Veach and Touhey (1971) examined the relationships between accurate time perception and Jungian type. Accurate perceivers scored significantly higher on the personality types of extraversion and perceiving than inaccurate perceivers.

In summary, the review of literature suggests that the Jungian typology provides a framework in which the Type A behavior pattern should fit. At this time, the author is not aware of any attempt to correlate Jung's typology and the Type A behavior pattern.

CHAPTER III

DESIGN AND PROCEDURES OF THE STUDY

I. DESIGN

Each volunteer was administered Form G of the Myers-Briggs Type Indicator and 14 items from the Jenkins Activity Survey. Individual responses were recorded on a separate answer sheet. Names were not used to insure anonymity.

II. PARTICIPANTS

The cooperating institution for this study was the Jefferson County High School. Nine of the eleven senior level history classes were randomly selected and volunteers were administered the two instruments. A total of 267 students volunteered for the study. 141 subjects were males and 126 were females. The population from which this sample is drawn is a suburban/rural community.

All participants were informed about the extent of data collection and its intended use in the research project. Completion of the questionnaire was considered evidence of each individual's consent to participate.

III. INSTRUMENTATION

The instruments used in the study were the Myers-Briggs Type Indicator and 14 selected items of the Jenkins Activity Survey. Form G of the Myers-Briggs Type Indicator is a 126 item, forced choice,

self-report inventory. It is derived from Jung's theory and is intended for use with normal subjects. The items were developed specifically for use with grades 4 - 12. This instrument provides continuous scores for the following dichotomies: judging-perceiving (J-P), thinking-feeling (T-F), extraversion-introversion (E-I), sensing-intuition (S-N). The scores indicate which aspect of each dichotomy is preferred, which function is dominant, and which function is auxilliary.

The internal consistency reliabilities gennerally range between .70 and .80 (Buros, 1965). The reliability of the thinking-feeling dimension is considerably lower than the other dimensions. Intercorrelations between scores are relatively low.

The instrument is generally considered useful because of the variety of information it yields. It is relatively nonthreatening and can be completed in 30 - 50 minutes.

The Jenkins Activity Survey is a 52 item, forced choice, self-report inventory designed to measure the previously described Type A behavior pattern. The items chosen for this study were taken from form C of the JAS (1978). This instrument provides continuous scores for a global Type A rating and scores for the following facets of the Type A behavior pattern: the speed and impatience factor, the job involvement factor, and the hard driving and competitive factor.

Internal consistency reliability has been reported between .70 and .80 for all four scales (Jenkins, 1978). Estimates of test-retest reliabilities range from .60 to .82 for intervals of six months to four years. The instrument's validity has been assessed by correlating it with other established Type A measures. The overall percentage of agreement was 73% (Jenkins, 1973).

The 1l items that were selected for the instrument used in the study were based on studies by Glass (1977) and Jenkins (1978). Both researchers assessed the factorial loadings of the Jenkins Activity Survey. An item had to have a varimax factorial loading of at least .30 to qualify for the instrument used in this study. Utilizing this criteria, the 1l items selected are believed to be key items defining the Type A behavior pattern. These items were then subjected to a pilot study utilizing ten senior volunteers at the cooperating institution. The pilot study produced two minor changes in wording to facilitate understanding. The overall opinion was that the items were understandable and rather easy to respond to.

IV. ANALYSIS OF RESPONSES

Analysis of the Myers Briggs Type Indicator scores followed the standard format provided by Myers (1962). Subjects received one score for each of the four dimensions. Zero is the midpoint for each dichotomy. This study assigned negative values to the processes (E,S,T,J) that were hypothesized to correlate with Type A behavior, while the processes that were hypothesized to correlate with Type B behavior (I,N, F,P) remained positive. Thus a person's typology was represented as a combination of positive and/or negative scores.

Analysis of the Jenkins Activity Survey was not as straight forward. In response to each self statement (see appendix A), a subject rated him/herself on a five point scale (see appendix B). The five choices were strongly disagree, disagree, neutral, agree, and strongly agree. Further, the scale was divided into 20 even segments with zero (neutrality) being the midpoint. The Type A response on each statement

was given a negative value, correspondingly, the Type B response remained positive. Hence the A/B scores ranged from -10 to +10. Each response was carefully measured from the midpoint and the mean of the 14 responses for each individual was utilized to compute the correlations.

The first four hypotheses were tested using the Pearson Product Moment correlation. The fifth hypothesis was tested using a multiple correlation procedure. The level of significance for the study was set at .05.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the final analysis of the data collected from this relationship study.

I. HYPOTHESES

1. Type A (B) - extraversion (introversion)

The Pearson Product Moment correlation analysis revealed a significant relationship (.001) between self-reported Type A behavior and extraversion (Table 1). Accordingly, Type B behavior correlated significantly with introversion (.001). Hence, the first hypothesis is not rejected. Responding in an extraversion mode correctly predicted a Type A response 61.8% of the time.

2. Type A (B) - sensing (intuition)

The correlational analysis failed to detect a significant relationship as specified by the hypothesis (Table 1). Responding in the intuitive mode predicted Type A behavior only 32% of the time. The first hypothesis receives no support in this bivariate analysis and is therefore rejected.

3. Type A (B) - thinking (feeling)

Once again, no significant relationship was detected when these dimensions were analyzed (Table 1). The resulting correlation was the smallest of the correlations that were computed, thus, the hypothesis is rejected. Responding in the thinking mode predicted Type A behavior 44.6% of the time.

4. Type A (B) - judging (perception)

This hypothesis was supported by the study (Table 1). The relationship was significant at the .05 level of significance. Additionally, responding in the judging mode predicted Type A behavior 46.1% of the time.

5. Type A (B) - extraversion, sensing, thinking, and judging (introversion, intuition, feeling, and perception)

A multiple regression analysis was performed to determine the relative contributions of each of the predictor variables on the dependant variable (Table 1). Although all the regression coefficients were quite small, three of the four predictor variables were significantly related to the dependant variable. However, not all of the detected significant relationships were those hypothesized at the beginning of this research study.

The most significant correlation (.001) was seen between extraversion and Type A behavior. Correspondingly, introversion correlated significantly with Type B behavior. The judging/perception dimension was the second largest significant contributor (.01) to the prediction of Type A/B behavior. As in the bivariate analysis, judging was significantly related to Type A while perception was significantly related to Type B. The last significant contribution (.05) to prediction of Type A behavior resulted from the analysis of the sensing/intuition dimension. However, the predicted relationship was not supported. Instead, the analysis revealed that Type A was significantly related to intuition. Correspondingly, Type B was significantly related to sensing. Finally, no significant relationship was observed between Type A/B and the thinking/feeling dimension. The predictive ability of combining the three

dimensions that did correlate significantly with Type A behavior was low. Combinations of extraversion, intuition, and judging correctly predicted Type A behavior only 8.2% of the time.

The fifth hypothesis did recieve some support, however it can not be completely accepted. Hence, the hypothesis is rejected.

TABLE 1

SUMMARY OF CORRELATIONS AND REGRESSION COEFFICIENTS BETWEEN JUNGIAN TYPOLOGY AND TYPE A/B BEHAVIOR

		E(I)	S(N)	T(F)	J(P)
Type A(B)	Bivariate Correlation Coefficients	.29***	-.11	-.06	.11*
	Multiple Regression Coefficients	.015***	-.008*	-.002	.011**

* Significant at the .05 level.
** Significant at the .01 level.
*** Significant at the .001 level.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Each of the hypotheses tested will be discussed as well as related analyses in order to parallel the findings reported in Chapter IV. A general discussion of each hypothesis will be followed by an overview of the conclusions and specific recommendations.

I. DISCUSSION

1. Type A behavior is significantly more characteristic of those types whose preference is extraversion and, conversely, Type B behavior is significantly more characteristic of those types whose preference is introversion.

The Pearson Product Moment correlation for this hypothesis yielded the largest correlation of all five hypotheses. From a logical view point, this seems predictable. Action oriented behavior is perhaps the most salient aspect of the Type A individual's behavior. One obvious difference between the extravert and the introvert is that the introvert turns his/her energy inward while the extravert exerts his/her energy in outward action.

2. Type A behavior is significantly more characteristic of those types whose preference is sensing and, conversely, Type B behavior is significantly more characteristic of those types whose preference is intuition.

The data analysis failed to support this hypothesis. In fact this study suggests the reverse of the hypothesized relationship. Intuition

is significantly correlated with Type A behavior while sensing is significantly correlated with Type B behavior. This seems to reflect the fact that the intuitive type is alert to possibilities or potentialities. These possibilities or potentialities become goals for which the intuitive type strives. The sensing type is not as alert to these possibilities and therefore seems more 'at peace' with his/her environment.

3. Type A behavior is significantly more characteristic of those types whose preference is thinking and, conversely. Type B behavior is significantly more characteristic of those types whose preference is feeling.

The analysis of this dimension did not reveal any significant relationships. Apparently other variables confound the hypothesized relationship. The rationale for this hypothesis was based on the belief that Type A individuals would be thinking types because decisions are based on the desire for output and not personal values or values of others. This hypothesis is probably clouded by the fact that some Type A individuals aspire for positions and lifestyles centered around other people. The Type A individual's striving can focus on social events (Jenkins, 1978). Hence, Type A and Type B individuals can either be thinking or feeling types.

4. Type A behavior is significantly more characteristic of those types whose preference is judging and, conversely, Type B behavior is significantly more characteristic of those types whose preference is perception.

The hypothesized relationship was significant suggesting that the Type A individual does attempt to come to a decision as quickly as possible while the Type B individual prefers to collect more data before

coming to a conclusion. Haste or impatience is contrasted with tranquility and patience.

5. Type A behavior is significantly more characteristic of those whose preferences include extraversion, sensing, thinking, and judging and, conversely, Type B behavior is significantly more characteristic of those whose preferences include introversion, intuition, feeling, and perception.

The multiple regression analysis presented results that were almost identical to the preceeding bivariate correlations. The extraversion/introversion dimension was responsible for accounting for the largest amount of variance in the predicted equation. The sensing/intuition dimension and the judging/perception dimension also accounted for significant amounts of variance.

II. CONCLUSIONS

This study relates certain Jungian types to items of the Jenkins Activity Survey. Therefore, these Jungian types (extraversion, intuition, and judging) are significant characteristics of the Type A behavior pattern. The types characteristic of the Type A behavior pattern are more likely to result in the previously specified unhealthy life style. This study, then, points to the negative results of certain preferences.

Thus, the study supplies data that yields value judgments concerning certain preferences. This is contrary to Myers (1962) statement that no a priori value judgments are attached to any of the preferences. However in light of the evidence presented, it seems wise to consider the

increased likelihood of certain types contracting coronary heart disease.

The correlations, however, seem too low to utilize the MBTI to predict or identify coronary heart disease. Being characterized by a certain preference is not sufficient as a coronary diagnostic method. Control of additional factors may result in even more accurate prediction levels.

III. RECOMMENDATIONS

In light of the previously stated limitations, three procedural changes would facilitate generalizability. The first recommendation is to repeat the study using an adult population. The result of this will probably be stronger correlations on each of the hypothesized dimensions. Theoretically one would expect stronger correlations because adults, on the average have more clearly defined and stable typologies than youth. This would account for more of the variance. Although it is unlikely that an adequate prediction level would be reached, the control of this variable would facilitate generalizability to a larger population.

A second recommendation would be to utilize the complete Jenkins Activity Survey. This would control for variance that has been introduced by selecting only 14 of the original 52 items. This would result in a more accurate Type A/B assessment and also allow for increased generalizability to the numerous studies that Jenkins and other researchers have completed.

A third recommendation would be to select a group of subjects already exhibiting coronary heart disease and a second group of subjects that are free of coronary heart disease. After this has been done both groups would be administered the Jenkins Activity Survey

and the Myers Briggs Type Indicator. The correlational analysis might well result in correlations that approximate an adequate prediction level.

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APPENDICES

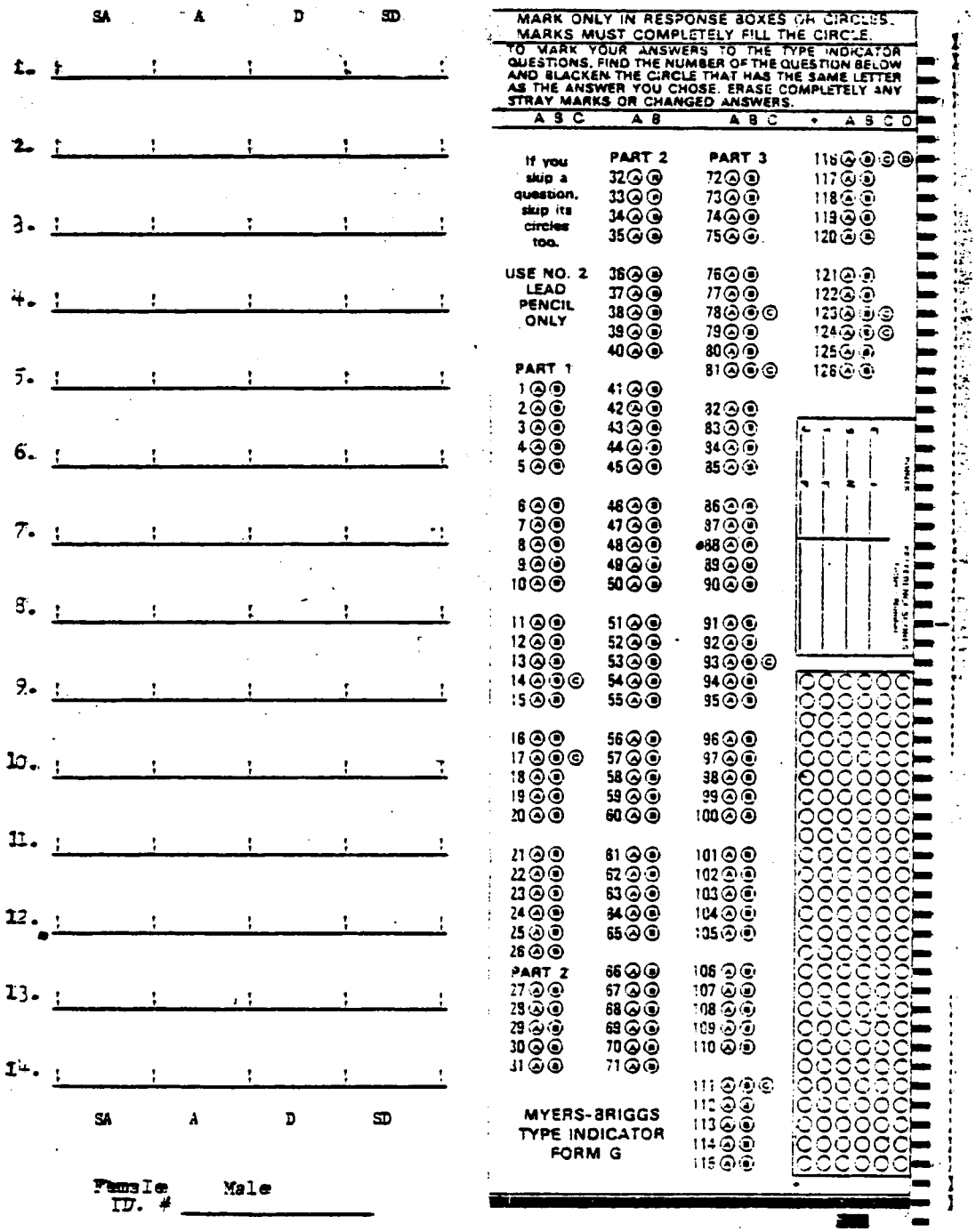
APPENDIX A

JENKINS ACTIVITY SURVEY ITEMS

1. Everyday of my life is filled with challenges to be met.
2. I give much less effort than the average student.
3. When listening to someone who talks slowly, I almost always feel like hurry them along.
4. I feel that I am definitely hard driving and competitive.
5. My friends and family feel that I am definitely hard driving and competitive.
6. I am much less responsible than the average student.
7. I very rarely set deadlines for myself.
8. During vacations I keep my regular study habits.
9. I often hurry even when there is plenty of time.
10. I take life much less seriously than the average student.
11. When eating with others I am usually the last one through.
12. I definitely have less energy than most people.
13. Most people feel that I am relaxed and easy going.
14. My temper is fiery and hard to control.

APPENDIX B

ANSWER SHEET



VITA

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