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I am submitting herewith a dissertation written by Paul J. Cardozo entitled "The Assertiveness of Hypertensives: A Personality Study." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Psychology and Guidance.

Robert L. Williams

Robert L. Williams, Major Professor

We have read this dissertation
and recommend its acceptance:

Donald J. Dickenson

Kenneth B. West

Karen H. Anderson

Accepted for the Council:

L. Evans Poth

Vice Chancellor

Graduate Studies and Research

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THE ASSERTIVENESS OF HYPERTENSIVES:

A PERSONALITY STUDY

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Paul J. Cardozo

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ABSTRACT

This study tested the hypothesis that hypertensives are less assertive than normotensives. Hypertensive and normotensive subjects took a self-report assertiveness inventory (the Peneca Self-Expression Scale) which includes four measures: expression of negative feelings, compliance, expression of positive feelings, and aggression. In addition, two significant others (a friend and a relative) took the same questionnaire in order to give their observations of the subject's behavior.

It was hypothesized that on the first three assertiveness measures the hypertensives would report significantly less assertiveness than would the normotensives. Because of a suspected tendency to give socially desirable responses, it was also hypothesized that on the first three measures hypertensives would report significantly greater assertiveness than would their significant others. No differences were expected on the measure of aggression.

The only hypothesis which was confirmed was the one concerning the expression of positive emotions. That is, hypertensives reported expressing positive emotions significantly less than did normotensives. This difference was not found among the reports of significant others. Although this finding did not agree with a psychophysiological analysis of hypertension, it was concluded that failure to express positive emotions may produce a "negative" climate in interpersonal relationships, which in turn contributes to elevated blood pressure.

When distinguishing between the effects of friends and those of relatives, the experimenter found that friends of hypertensives gave higher reports of aggression than did friends of normotensives, but to a nonsignificant degree.

The implications of the findings for behavioral treatment of hypertension were discussed. The use of assertiveness training (with emphasis placed on the expression of positive feelings) could be integrated with relaxation training.

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CHAPTER I

INTRODUCTION

What is Hypertension?

With each stroke of the heart, blood is pumped in spurts. The arterial system then converts these spurts into a steady outflow. Pressure is basically created in two ways: (1) the pumping of the heart, and; (2) the peripheral resistance (the distensibility of the arteries and veins). Systolic blood pressure (SBP) is present when the blood is pumped through the vessel; diastolic blood pressure (DBP) is present when the blood is not being pumped. BP can change anywhere from 15 to 20 millimeters of mercury (mm Hg) during the course of a day (Rushmer, 1970). A commonly accepted level for normal reading is 120 mm Hg for SBP over 80 mm Hg for DBP (i.e. 120/80); a borderline hypertensive reading is 140/95. There are varying opinions about what levels constitute hypertension, however.

Hypertension is abnormally high blood pressure. This disease is commonly seen among old people because there is decreased compliance of the veins and arteries as the aging process progresses (Engelman and Braunwald, 1970). It has also been found that a high percentage of blacks are its victims (Jagger and Braunwald, 1970; Lennard and Glock, 1957). There are many different ways hypertension can be generated. The major types are renal (of the kidney), endocrine, neurogenic, and essential. Essential hypertension is the most common, accounting for greater than 90 percent of the cases of hypertension (Engelman and Braunwald, 1970; Jagger and Braunwald, 1970). It can lead to many types

of heart disease: ventricular hypertrophy, angina pectoris, narrowing of the arterioles, various types of central nervous system disorders, and renal vascular lesions (Engelman and Braunwald, 1970). It is generally accepted that no physical genesis for essential hypertension has been found, hence the term, "essential."

Personality Studies of Hypertensives

Social stress seems to accompany hypertension. In their review of the literature on hypertension McGinn, Harburg, Julius, and McLeod, 1964 concluded that ". . . blood pressure changes may be associated with many forms of psychological stimuli or stresses" (McGinn et al. 1964, p. 210). Hypertensives have reported that in childhood they were treated strictly and that they had a higher incidence of neurotic traits than what normotensives reported (Davies, 1970). In checking with the life histories of hypertensives, Reiser, Brust, and Ferris (1951) found a positive correlation between meaningful life events (both negative and positive) and the onset of hypertension.

In a study of high school adolescents, de Castro, Diesbroeck, Erikson, Farrel, Leong, Murphy, and Green (1976) compared the percentage of students having high blood pressure at a private suburban high school with the percentage at an inner city school. Although no black-white differences occurred, there was a significantly greater percentage in the inner city school (15.5 percent versus 3.6 percent). It was concluded that in facing more stress a greater number of inner city students developed hypertension.

The personality studies of hypertensives are not in agreement but, as will be pointed out later, a common theme does seem to run through many of these findings. Richter-Heinrich, Driust, Muller, Schmidt, and Sprung (1975) found that hypertensives scored high in neuroticism on a battery of self-report tests. This same characteristic was described in terms of low ego resilience and long-lasting subjective stress by Kasl and Cobb (1970). In a twin study Torgerson and Kringlen (1971) found that the twins with the higher blood pressure more frequently reported having been quiet, withdrawn, insecure, and obedient in childhood.

On the IPAT Anxiety Scale hypertensive subjects scored high on overall anxiety (Pilowsky, Spalding, Shaw, and Korner, 1973). McGinn et al. (1964), Richter-Heinrich et al. (1975), and Saslow, Gressel, Shobe, DuBois, and Schroeder (1950) concurred with this finding, while Henry and Cassel (1969) described this trait as being an uncertainty of satisfying their urges.

Whitehead, Blackwell, DeSilva, and Robinson (1977) found that scores for state anxiety on the Spielberger State-Trait Anxiety Inventory were significantly and positively correlated with BP (although the correlations were fairly low). Further, their subjects rated their state anxiety and took their BP four times a day. There were, again, small but significant positive correlations. However, among other methodological problems in their study, many of the subjects rated their anxiety after taking their BP. Their anxiety ratings, therefore, could have been a function of their knowledge of their BP levels.

Harburg, Julius, McLeod, McGinn, and Hoobler (1964) found that hypertensives scored high on Cattell's 16PF measures of sensitivity; sensitivity was also noticed by Kidson (1973). Tenseness was noted by Pilowsky et al. (1973) and Kidson (1973). Torgerson and Kringlen's (1971) twins with the higher BP were reported to be shy; Hamilton (1942) and Richter-Heinrich et al. (1975) stated that their hypertensive subjects were introverted. A low need for affiliation was found by O'Neill (1976) to be characteristic of hypertensives. In contrast Tracy (1978) compared subjects who scored high on an extroversion scale with those who scored in the moderate range. Those in the group that scored high also had significantly higher SBPs.

One trait observed in a number of studies is the high degree of compliance hypertensives seem to exhibit. Hamilton (1942) was one of the first to note this trait, but he referred to it as submissiveness (as did Harburg et al., 1964). From a psychoanalytic perspective, Alexander (1950) also noted the trait of compliance. Based on interviews with hypertensives, Wolf and Wolff (1951) concluded that excessive compliance was characteristic of these subjects. In reviewing his research, Wolf (1961) stated that hypertensives have a strong need to conform and to please people, and they are generally appeasing.

The most widely studied hypertensive characteristic is that of anger or, more precisely, suppressed anger. In his review of the literature on hypertension Davies (1971) stated that inhibited aggression was an incessant theme. Based on the observations of hypertensives, Alexander (1950) and Wolf (1961) also noted that they inhibited the

expression of anger, and even seemed to put on an air of being well-adjusted. On the Cornell Medical Index hypertensives scored higher on the Q scale, indicating greater anger (Kidson, 1973). Whitehead et al. (1977) found that self-reported hostile attitudes correlated significantly and positively with BP but that self-reported hostile behaviors had low correlations with BP.

In addition to noting suppressed anger among their hypertensive subjects Wolf and Wolff (1951) had some interesting observations about both hypertensives and normotensives. The subjects' BP's were measured while they were being interviewed. It was observed that whenever subjects were restraining hostile responses their DBPs rose.

Gutman and Benson (1971) approached this characteristic from a psychophysiological perspective. Based on their review of the literature, they hypothesized that elevated BP results from an evolutionary trait which was originally essential for survival. When under stress, a "defense-alarm" reaction is triggered in the hypothalamus (with a concomitant increase in BP), which leads to a behavioral reaction called "fight or flight." Chronic hypothalamic defense-alarm reactions, particularly among modern-day humans, do not always result in a fight or flight response. This is also called "gritting one's teeth" when angry. The consequence of chronically doing this is chronically elevated BP (hypertension).

Harburg, Erfurt, Hovenstein, Chape, Schull, and Schork (1973) examined the suppressed anger hypothesis more closely. They used subjects from four areas of Detroit: (1) A Black High-Stress area,

(2) A White High-Stress area, (3) A Black Low-Stress area, (4) A White Low-Stress area. The stress of an area was predetermined on the basis of economics, family stability, crime, etc. The subjects were asked what they would do in two situations in which someone unfairly expressed anger to them. They were also asked how they would feel (this was to tap felt anger) and if they would express anger. They were then asked to imagine how they would feel afterwards if they did express anger (this was to tap guilt over expressing anger). Their BP's were also obtained. Those who said they would feel angry, not express it, and would feel guilty over expressing anger in those situations obtained significantly greater DBPs than those who said they would not feel guilty. It is also interesting to note that those from the High-Stress areas gave significantly more responses of suppressed anger. There were few differences between blacks and whites, but the differences generally appeared between the High-Stress subjects and the Low-Stress subjects. Meyer (1968) also found that guilt over the expression of anger caused great increases in DBP.

It may be that hypertensives are unaware of this build-up of anger. An interesting study was conducted by Sapira, Scheib, Moriarty, and Shapiro (1971) which concerned the perception of hypertensives. Hypertensive and normotensive patients were shown two movies of a role-played physician-patient interaction. In the first movie the physician behaved rudely and acted disinterested in the patient, while in the second movie the physician was relaxed and warm. The mean arterial BP ($DBP + (SBP - DBP/3)$) was obtained from the subjects while they were observing the

films. The hypertensives had significantly greater BP responses to both films than did the normotensives. When it came to verbalizing the differences between the two films, however, the normotensives were able to distinguish the behaviors of the physicians while the hypertensives identified no differences. The authors concluded that hypertensives may perceptually screen out noxious stimuli. Lee, Carstairs and Pickersgill (1971) presented a series of pictures of stick figures which represented various need situations. The hypertensives with high DBP tended to forget aggression pictures more. Schachter (1957) also posited this perceptual problem when his hypertensive subjects had greater BP responses to emotionally charged situations than did the normotensives, yet the hypertensive subjects did not report significantly greater emotional response.

The Significance of Treatment of Hypertension

The response of hypertensives to treatment can shed some light on the personality of the hypertensive. It is noteworthy that biofeedback, in spite of its effectiveness in remediating many somatic problems, did not have overwhelming results at first in reducing high blood pressure (Benson, Shapiro, Tursky, and Schwartz, 1971; Elder and Eustis, 1976; Friedman and Taub, 1977; Goldman, Kleinman, Snow, Bidus, and Korol, 1975; Richter-Heinrich et al., 1975). These studies were able to obtain statistically significant reductions in BP, but the reductions were actually small and not clinically significant (i.e., the hypertensive subjects still had high blood pressure).

There have been some successful attempts at lowering the blood pressure of hypertensives using biofeedback (Elder, Ruiz, Deabler, and Dillenkoffer, 1973; Kristt and Engel, 1976; Walsh, Dale, and Anderson, 1977). With few exceptions, biofeedback studies have not included follow-up results. The few that have included follow-up data revealed that improvements were not maintained.

An alternative (and successful) behavioral treatment of hypertension has been the use of relaxation and meditative techniques (Benson, Rosner, Marzetta, and Klemchuk, 1974a and 1974b; Friedman and Taub, 1977; Graham, Beiman, and Ciminero, 1977). In addition to achieving clinically and statistically significant decreases in BP, these techniques, if practiced regularly, helped maintain the decreases for up to 40 weeks (none of the follow-ups extended beyond this time period).

In one highly successful study employing relaxation techniques Patel (1975b) trained hypertensive subjects in yoga and gave them BP feedback at the same time. These subjects were able to achieve significant reductions in both DBP and SBP while subjects without any training were unable to do so. Further work by Patel and North (1975) confirmed the usefulness of combining these techniques. In addition, a twelve-month follow-up revealed that the drops in BP were maintained (Patel, 1975a). These studies demonstrated that along with altering BP in the laboratory a change of their coping styles in the natural environment took place.

Various reviews of the literature on the behavioral treatment of hypertension (Blanchard and Miller, 1977; Jacob, Kraemer, and Agras, 1977; Shapiro, Schwartz, Ferguson, Redmond, and Weiss, 1977) have

concluded that continued practice of the recently learned response (the relaxation response) is essential for sustaining decreases in BP. These are effective "passive coping" styles (Lazarus, 1976) in the face of stress. The coping styles of hypertensives may be what maintains the elevated BP.

Assertiveness Theory and Hypertension

Psychophysiological theorists have pointed out two different types of coping responses to stress (Lazarus, 1975). Direct action involves behaviorally dealing with the problem creating the stress emotion. The other type of coping style is more passive in that it does not involve behaviorally dealing with the problem, but involves visceral responding instead. Assertiveness is like direct action in that a person can contingently change situations by ". . . standing up for personal rights and expressing thoughts, feelings, and beliefs in direct, honest, and appropriate ways . . ." (Lange and Jakubowski, 1976, p. 7). Nonassertiveness is like the passive coping style (although an ineffective style) in that one does not contingently alter situations. This results in not respecting one's own rights because of ". . . failing to express honest feelings, thoughts, and beliefs and consequently permitting others to violate oneself . . ." (Lange and Jakubowski, 1976, p. 9). It should be pointed out that two of the characteristics of nonassertiveness are submission to the desires of others (Lange and Jakubowski, 1976)—also known as compliance—and the nonexpression of anger (Alberti and Emmons, 1974). Another characteristic of nonassertiveness, which will be

discussed later, is the lack of expression of positive feelings (Alberti and Emmons, 1974). Rimm, Hill, Brown, and Stuart (1974) found that assertiveness training helped people in expressing their anger. Mothers in disturbed families were found to be less assertive than mothers in "healthy" families when expressing approval or disapproval to their children (Bugenthal and Love, 1975). Eisler, Miller, Hersen, and Alford (1974) helped some nonassertive husbands become less compliant by training them to become more assertive. The husbands also were able to make more positive statements to their wives as a result of the assertiveness training.

A few studies (Hamilton, 1942; Saslow et al., 1950; Wolf, 1961) have mentioned the lack of assertiveness among hypertensives. Hokanson, Burgess, and Cohen (1963) compared the SBPs of subjects who were unable to express themselves when frustrated (nonassertive) with the SBPs of those who were able to express themselves. The subjects were required to count back from 100 to 0 by 2's while the experimenter constantly interrupted and harassed them for counting too slowly. The subjects were then allowed to express their feelings of frustration to varying degrees. They next played a game in which the subject would pick a number between 1 and 10, and the experimenter would have to guess that number. If the experimenter was wrong, the subject got to shock the experimenter (in the most direct expression of feelings of frustration) while others would simply inform the experimenter that he was wrong (the least direct expression). There were three other conditions in which another person would be shocked for making incorrect guesses. The

subjects had great increases in SBP when in the frustration condition. The greatest reduction in SBP occurred when the subject was able to shock the experimenter while the smallest reduction occurred when the subject just informed the experimenter of an error (the difference approached significance).

Some support for the nonassertiveness hypothesis has been attained by Moses, Daniels, and Nickerson (1956). They successfully treated four hypertensive people with psychoanalysis. One of the goals of treatment was to increase their capacity for assertiveness. After six to twelve months of treatment, all four people increased in assertiveness and achieved BP reductions to the normotensive range (these reductions were maintained during the two to six years of follow-up).

It should be mentioned that there are some studies which have not been able to demonstrate consistent personality characteristics of hypertensives (Cochrane, 1973; Ostfield and Lebovits, 1959; Sandburg and Bliding, 1976; Silverstone and Kissin, 1968; Stratoudakis, Hammersma, and Russell, 1976). Most of these studies have relied exclusively on self-report data; it could be hypothesized that these inconsistencies could be attributed to an inability of hypertensives to accurately report their actual behavior. Further, the contradictions in the research could be explained by a tendency of hypertensives to give socially desirable responses.

The personality literature on hypertension has dealt exclusively with the "negative" aspects of these subjects. However, assertiveness theory also focuses on the strengths of people and on developing these

strengths for use in interpersonal relationships (Lange and Jakubowski, 1976). Therefore, this study will also examine the "positive" aspects of hypertensives within the context of assertiveness.

This discussion has, thus far, centered on lack of assertiveness. There are, in fact, a few modes of reacting which may be neither assertive or nonassertive. The type typically found in the literature is aggression. Aggression is typically found in two forms—passive-aggressive (which includes such behaviors as nagging and moralizing) and active-aggressive (which includes such behaviors as violence and verbal abuse).

Most assertiveness models assume that assertiveness is a continuum, with nonassertion at one pole and aggression at the other (see Figure 1).

<u>Nonassertive</u>	<u>Assertive</u>	<u>Aggressive</u>
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Figure 1. Traditional model of assertiveness.

Note that, in addition, this model does not distinguish between passive-aggressive and active-aggressive forms of aggression.

In the author's experience another model might be more appropriate. Some instances of aggression may stem from prior nonassertion. An example of this would be when a person has been angered by co-workers but "kept his/her mouth shut to keep the peace." Later in the day, this person's children would re-experience Hiroshima because they had

left their shoes in the living room. A model which could better explain this type of situation is found in Figure 2.

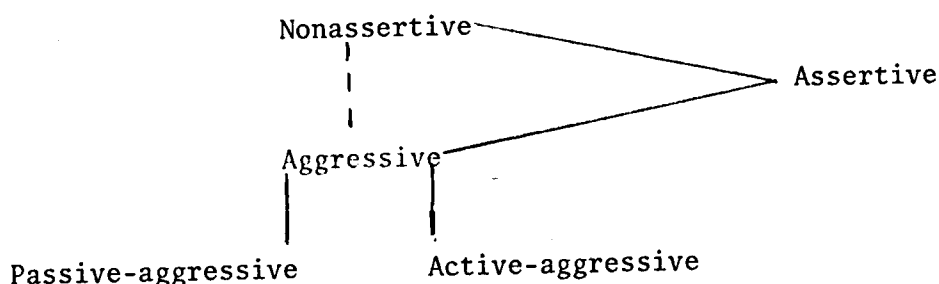


Figure 2. Alternative model of assertiveness.

It has been suggested that hypertensives lead life-styles which could be described as Type A behavior (Friedman and Rosenman, 1974). That is, they are competitive and achievement-oriented, hostile, and have a great sense of time urgency. However, scores on the Jenkins Activity Survey (a measure of Type A personality) were found to be unrelated to BP (Shekelle, Schoenberger, and Stamler, 1976).

Hypotheses

Hypertensives appear to be nonassertive (the results of this nonassertion is high blood pressure). The hypertensives' self-reported assertiveness will be assessed (as will the self-reported assertiveness of normotensives). Since it may be that hypertensives give socially desirable responses significant others (friends and relatives) of the subjects will also report their observations of the subjects' assertiveness.

In this way the self-reported assertiveness can be compared with the reported assertiveness of people who have interacted with the subjects. In addition, although no differences are expected, the aggressiveness of the two subject groups will be compared.

Hypothesis 1: The self-reports of hypertensives will indicate significantly less assertiveness than will the self-reports of normotensives. This will be expressed as:

- (a) significantly less expression of negative emotions.
- (b) significantly greater compliance.
- (c) significantly less expression of positive emotions.

Hypothesis 2: The congruence between self-reports and other-reports on assertiveness will be significantly lower for hypertensives than for normotensives (the hypertensives will report themselves as being more assertive than will their significant others). This will be expressed as:

- (a) significantly less congruence in rating the expression of negative emotions.
- (b) significantly less congruence in rating compliance.
- (c) significantly less congruence in rating the expression of positive emotions.

CHAPTER II

METHODS

Subjects

Subjects were used from three different settings: 37 university students and staff (from The University of Tennessee, Knoxville); 9 from a black church (Lennon Seney United Methodist Church, Knoxville, Tennessee); and 15 from a fire department (Knoxville City Fire Department, Tennessee). There were 23 hypertensive subjects and 38 normotensive subjects who submitted self-reports; of these, 12 of the hypertensive subjects returned questionnaires from both a friend and a relative while 27 of the normotensives returned both questionnaires; 1 hypertensive subject returned only the friend's questionnaire and 4 normotensive subjects returned only the friend's questionnaire; 1 hypertensive subject returned only the relative's questionnaire while 2 normotensive subjects returned only the relative's questionnaire; 9 hypertensive subjects turned in neither a friend's nor a relative's questionnaire while this number for normotensives was 5.

The subjects with BP's of 140/95 or greater were classified as hypertensive. The subjects with BP's of 135/90 or lower were classified as normotensive. Any potential subjects who had SBP readings from 136 to 139 and/or had DBP readings from 91 to 94 were not included in the study. An independent samples t -test revealed that the two groups were significantly different in both DBP and SBP. For DBP, $t(59) = 13.48$, $p < .001$; for SBP, $t(28.32) = 11.08$, $p < .001$ (the variances for SBP were

not homogeneous, and a t-test based on separate variance estimates was required. Those who fell in the normotensive range but were on BP medication were not included, either. Any potential hypertensive subject who was known to have an organic basis for the hypertension was excluded from the study (only one person fell in this category).

Apparatus

The instrument used to assess assertiveness (and aggression) was created by the author and is called the Peneca Self-Expression Scale (PSES, see Appendix A). It is a self-report test that was primarily derived from the Adult Self-Expression Scale (Gay, Hollandsworth, and Galassi, 1975). Some of the aggression items were derived from Rathus Assertiveness Schedule (1973). The PSES consists of 40 items and uses a nine-point scale (1-9, ranging from never engaging in a behavior to always engaging in the behavior). Of the 40 items, 27 are positively scored and 13 require reverse scoring. The test is made up of four scales each consisting of ten items: the Positive Emotion (PE) scale taps the expression of positive feelings; the Negative Emotion (NE) scale taps the expression of negative emotions (such as anger); the Compliance (C) scale taps compliance with the wishes of others; and the Aggression (A) scale taps the amount of aggressive behavior. These items were constructed and placed in the scales based on the consensual validation of four people (including the author) who have considerable acquaintance with the field of assertiveness.

Three forms were developed. Form S (Self) was for the designated subject, and the items were worded in the first person. Form O-M

(Other-Male) was for the significant other when the designated subject was male, and the items were worded in the third person using the pronouns "he," "him," etc. Form O-F (Other-Female) was for the significant other when the designated subject was female, and the items were worded in the third person using the pronouns, "she," "her," etc.

Test-retest reliability was assessed over a three-week period, using Form S, with University of Tennessee students. The coefficients of correlation were .84 for the PE scale, .82 for the NE scale, .92 for the C scale, and .88 for the A scale.

Procedure

Subjects were approached (generally in groups) by the author, received a brief verbal explanation of the study, and their participation was requested. Those who agreed to participate had their BP's taken (people who did not wish to participate but who wanted to know their BP's were not turned away from this phase of the procedure). The BP screenings were sometimes conducted by the author (who is experienced at taking BP's) and sometimes by paramedics or nurses. When time permitted three readings were taken per person and the median reading was the designated reading for him/her. Often time permitted only one reading. If a subject was close to the cutoff of one of the subject categories another reading would be taken to insure that she/he was correctly classified.

The subject was then given two copies of the PSES, Form S and Form O-M or O-F depending on the sex of the subject (refer to Appendix A). They were also given three answer sheets (see Appendix B); the designated

subject, the friend, and the relative were each to fill out one. Attached to each answer sheet was an Informed Consent Form (see Appendix C) which the subject was requested to read and sign if she/he agreed to participate. The answer sheets were coded so that the respondent could be identified as a designated subject, friend, or relative. The codes also identified the designated subject's classification (hypertensive or normotensive).

The subjects were instructed to insure that neither they nor their friends and relatives had completed the questionnaire at any other time (using any of the forms). Anonymity was emphasized and they were told that the Informed Consent Forms would be detached from the answer sheets so that the author would not be able to match any person with his/her responses. Further, they were given three envelopes in which each of the three respondents could place his/her answer sheet (with the attached Informed Consent Form) and seal it. In this way the designated subject would not have access to the others' responses if they were unwilling share this information. The subject was also told that if the friend and/or relative was willing to share their answers with the subject, they should wait to do this until all three of them completed the questionnaire. Boxes were left for some subjects where they could conveniently deliver their answer sheets. Other subjects (the students) were to give the answer sheets to the author. After returning the answer sheets, the subject was given a more extensive explanation of the study and its hypotheses (see Appendix D).

CHAPTER III

RESULTS

The raw data are in Appendix E. Scores for each of the scales were obtained by summing the scale's constituent items (including a correction formula for the items scored in the reverse) and dividing by ten (the number of items in the scale), leaving a mean score for each scale. Not all the subjects answered all the items. In this case the divisor would be the number of items answered, still leaving a mean score.

For the six major hypotheses six independent samples t-tests (Winer, 1971) were run. For tests of the scores on the Aggression scale two more independent samples t-tests were conducted (one for self-reports and one for the congruence between self- and other-reports). Since a total of eight tests were being conducted the global α level had to be adjusted in order to reduce the increased probability of Type I error. The formula (Wheeler, personal communication) was: $\text{Global } \alpha = 1 - (1 - \alpha)^k$, where k = the number of tests conducted. In this case $k = 8$ and the global α was set at .05. This required that the significance level for each t-test be .00625.

As can be seen from Table 1, of the first set of hypotheses only Hypothesis 1c was supported. That is, the self-report data indicated that hypertensives saw themselves as expressing positive emotions significantly less than did normotensives.

TABLE 1. T-test of Self-Reported Differences Between Hypertensives (HT) and Normotensives (NT) on the Expression of Positive Emotions (PE), Negative Emotions (NE), and Compliance (C).

Scale	Group	Number of Cases	Mean	Standard Deviation	t
PE	HT	23	6.06	.80	-3.01*
	NT	38	6.75	.91	
NE	HT	23	5.21	.84	-1.92
	NT	38	5.74	1.14	
C	HT	23	4.54	.97	.25
	NT	38	4.48	.95	

* $p < .00625$

In order to determine if the difference on the PE scale was due to a bias created by one of the samples, independent samples t-tests were conducted between the samples of each setting (across subject classification—hypertensive and normotensive). The results indicated no differences between the responses of subjects from the university, the black church, and the fire department on the PE scale. There was no difference between the university sample and the black church sample, $t(43) = .68$, $p = .50$. No difference appeared between the university sample and the fire department sample, $t(49) = .67$, $p = .51$. Nor was there a difference between the black church sample and the fire department sample, $t(22) = -.23$, $p = .82$.

In obtaining a score for the significant others, a mean was taken for the relative's and friend's score on each scale. This mean score was then subtracted from the score for the designated subject. The difference was, in its converse, the congruence score. Thus, a low difference score indicates a high degree of congruence. Independent samples t-tests were conducted on the second set of hypotheses. Table 2 reveals that none of these hypotheses was supported. No differences between the congruence scores of hypertensives and those of normotensives appears for any of the three assertiveness scales.

Neither the self-reported scores nor the congruence scores on the Aggression scale revealed any differences between hypertensives and normotensives (refer to Table 3).

Further t-tests were conducted which separated the effects of the ratings of significant others into their two components—friends and

TABLE 2. T-test of Congruence Score Differences Between Hypertensives (HT) and Normotensives (NT) on the Expression of Positive Emotions (PE), Negative Emotions (NE), and Compliance (C).

Scale	Group	Number of Cases	Mean	Standard Deviation	t
PE	HT	12	-.05	1.09	-.49
	NT	27	.11	.75	
NE	HT	12	-.57	.74	-1.67
	NT	27	.05	1.18	
C	HT	12	.15	.93	1.27
	NT	27	-.24	.90	

* $p < .00625$

TABLE 3. T-test on the Differences Between Hypertensives (HT) and Normotensives (NT) on the Aggression Scale—Self-Report (S-R) and Congruence (Con) Scores.

Test	Group	Number of Cases	Mean	Standard Deviation	t
S-R	HT	23	3.29	.83	- .91
	NT	38	3.49	.86	
Con	HT	12	-.28	1.12	-1.01
	NT	27	.09	1.04	

* $p < .00625$

relatives (see Tables 4 and 5). None of the scales showed any differences between the ratings of the friends or relatives of hypertensives and those of normotensives on the assertiveness scales. However, the t value for the friends' ratings indicated a strong trend on the Aggression scale with hypertensives' friends yielding higher ratings than normotensives' friends. This difference did not appear for relatives.

Since there were differences between the self-ratings of hypertensives and normotensives on the PE scale, a linear regression analysis was applied to BP and PE self-rating to see if one could be predicted from the other. The SBP regression is in Figure 3 and the DBP regression is in Figure 4. The linear regression for SBP predicted a significant amount of the variance, $F(1,59) = 7.94$, $p < .01$. The linear regression of DBP also predicted a significant amount of the variance, $F(1,59) = 8.10$, $p < .01$. The negative slopes indicated an inverse relationship between BP and self-observed expression of positive feelings.

To identify items which might have contributed to the significant differences, the experimenter did a frequency count for each of the items of the self-reported PE scale among the hypertensive subjects. Only one of the items (Item 9) yielded a high rate of response at either of the extremes of the Likert scale, but the high number of responses at the low end of the scale was in opposition to the direction already predicted by the original t-test. That is, the responses to Item 9 were not consistent with expressing positive emotions at a low rate.

TABLE 4. T-test on the Differences Between the Ratings of the Friends of Hypertensives (HT) Versus Those of the Friends of Normotensives (NT)—Positive Emotions (PE), Negative Emotions (NE), Compliance (C), and Aggression (A).

Scale	Group	Number of Cases	Mean	Standard Deviation	t
PE	HT	13	6.46	.76	- .66
	NT	31	6.66	.96	
NE	HT	13	6.01	1.26	.71
	NT	31	5.75	.99	
C	HT	13	4.53	1.49	- .03
	NT	31	4.54	1.20	
A	HT	13	4.15	1.27	2.71
	NT	31	3.11	1.12	

* $p < .00625$

TABLE 5. T-test on the Differences Between the Ratings of the Relatives of Hypertensives (HT) Versus Those of the Relatives of Normotensives (NT)—Positive Emotions (PE), Negative Emotions (NE), Compliance (C), and Aggression (A).

Scale	Group	Number of Cases	Mean	Standard Deviation	t
PE	HT	13	5.92	1.03	-2.35
	NT	29	6.72	1.02	
NE	HT	13	5.40	1.01	-1.40
	NT	29	5.88	1.05	
C	HT	13	4.51	1.02	- .14
	NT	29	4.56	1.11	
A	HT	13	3.32	1.07	-1.03
	NT	29	3.70	1.11	

* $p < .00625$

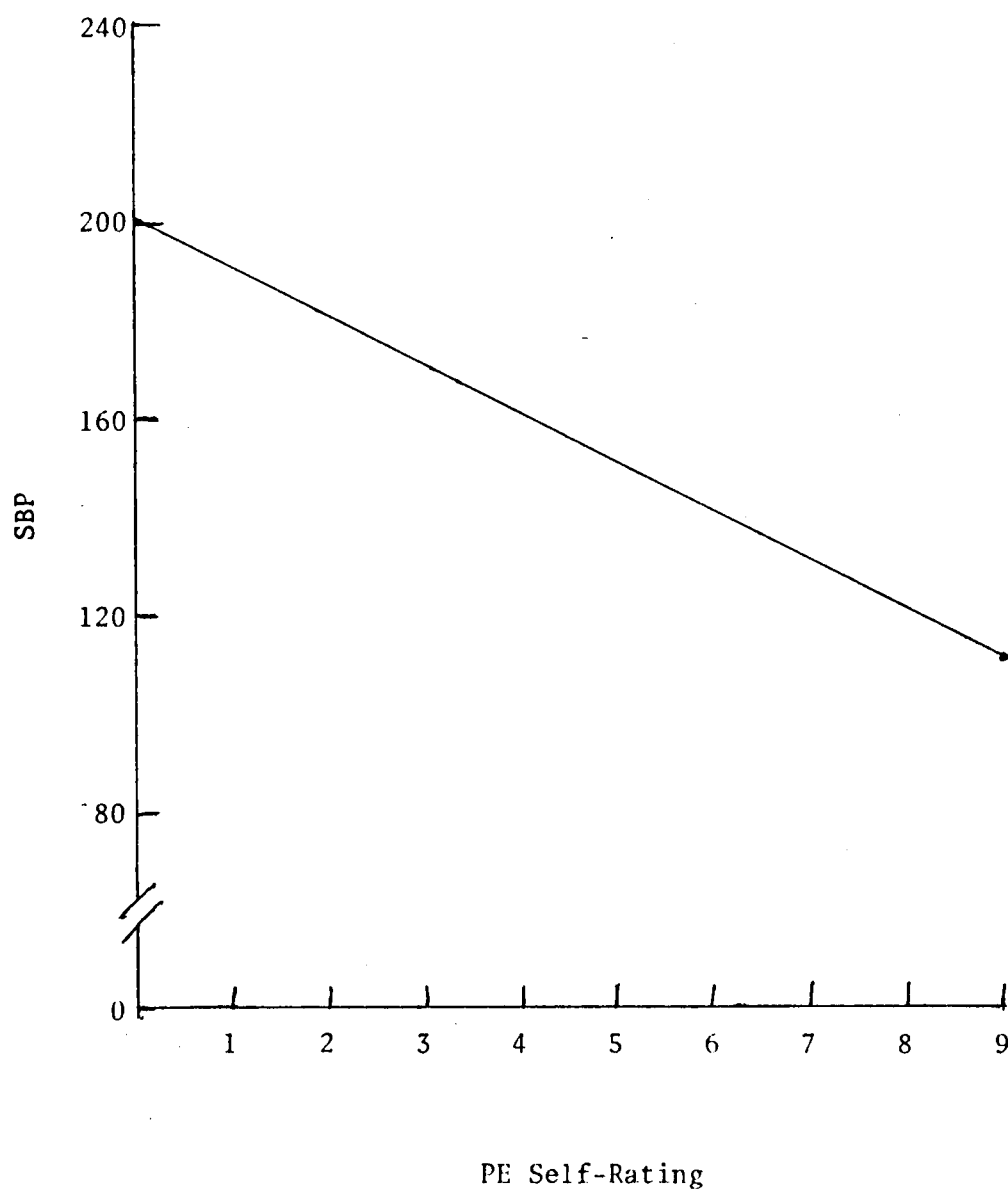


Figure 3. Linear regression of Positive Emotion (PE) self-rating and systolic blood pressure (SBP).

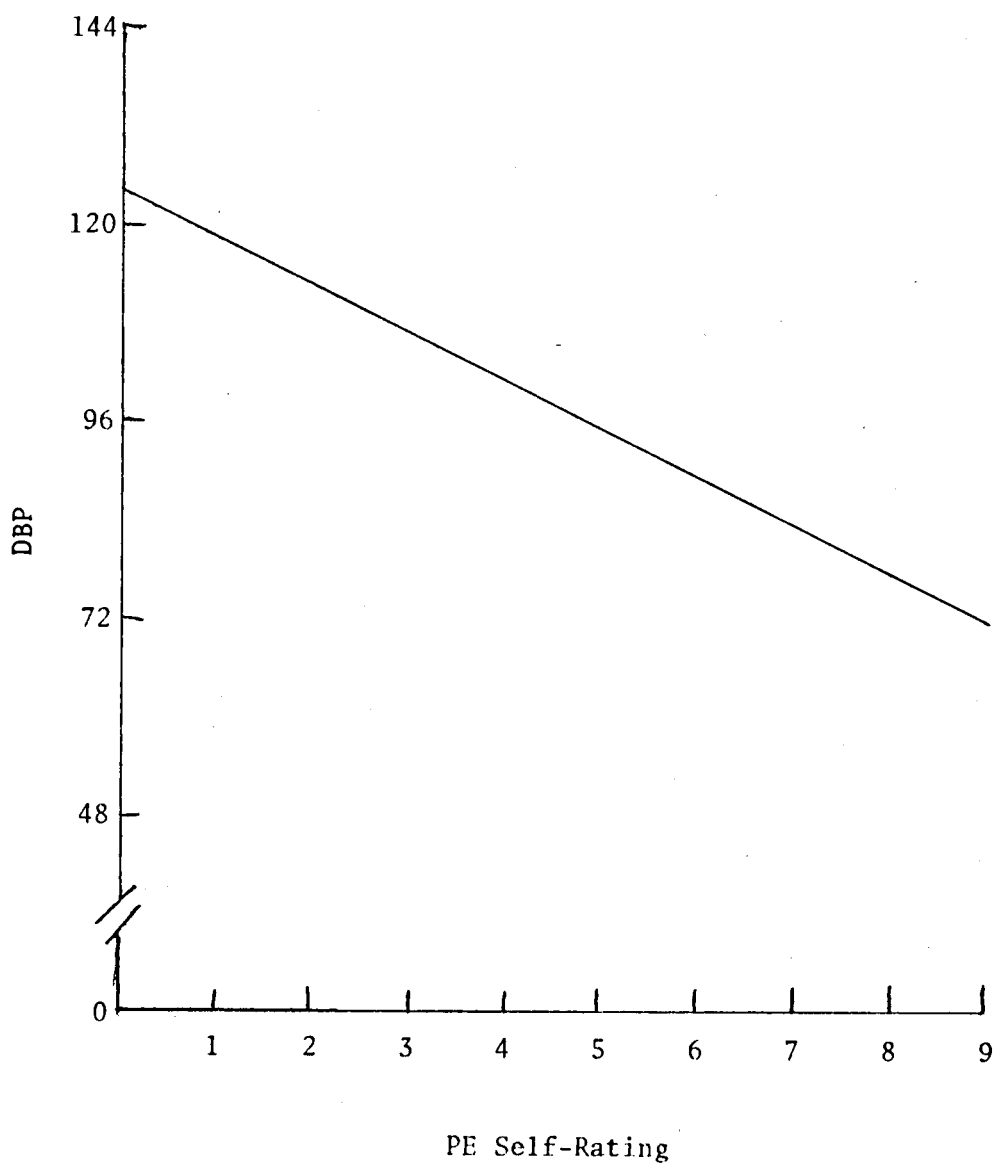


Figure 4. Linear regression of Positive Emotion (PE) self-rating and diastolic blood pressure (DBP).

CHAPTER IV

DISCUSSION

Characteristics of Hypertensives

Of the three hypotheses concerned with self-observed assertiveness (expression of negative emotions, compliance, and expression of positive emotions), Hypotheses 1 and 2 were not confirmed. That is, hypertensives did not report expressing negative emotions less than did normotensives, nor did they report being more compliant. In addition the hypertensives were no less congruent with their significant others on the NE and C scales (a lack of confirmation of Hypotheses 4 and 5). Since there is a reasonable amount of agreement between hypertensives and their significant others on the expression of negative emotions it is difficult to attribute the unexpected equivalence of the two groups on this type of self-reported assertiveness to a tendency for hypertensives to give socially desirable responses. This is in contradiction to the previous studies which found that hypertensives tend to present themselves in a good light.

Gutman and Benson (1971) had hypothesized that because of consistently not acting on anger, hypertensives thwart the fight or flight response, and this brings on the elevated BP. The lack of differences in this study between hypertensives and normotensives on the expression of negative emotions is inconsistent with this hypothesis. It is also inconsistent with the studies which found a lack of expression of anger among hypertensives.

Two methodological limitations of this study could explain this lack of significant differences. First different people measured the BP's in each of the settings. This left open the possibility of a lack of reliability in the BP measurements, and a consequent lack of reliability in the subject classifications. Second, the reports of significant others of hypertensives (along with the self-reports) may have been affected by a tendency to give socially desirable responses. Thus, a whole system of people may have given inaccurate reports of actual behavior. Further work in this area should utilize validated experimenter observations of the behavior of the subjects, rather than using reports which are more easily affected by personal bias. This could be accomplished by using simulated role-play situations.

However, it should be noted that this lack of confirmation is also in agreement with a number of other studies (Cochrane, 1973; Ostfield and Lebovits, 1959; Sandberg and Bliding, 1976; Stratoudakis, Hammersma, and Russell, 1976) which failed to confirm similar hypotheses. Future research should be aimed at why the nonexpression of anger is an inconsistent finding.

Much the same can be said for the findings on the C scale. While a few studies have found a high degree of compliance to be characteristic of hypertensives, others have not concurred. Future research should also focus on the inconsistencies of findings across studies.

Confirmation of Hypothesis 3 was obtained. Hypertensive subjects reported themselves to express positive emotions with less frequency than did the normotensive subjects. This finding does not indicate

whether the hypertensives were satisfied with this low frequency of stating their positive feelings. It may be that they feel awkward at expressing them and are dissatisfied with this condition. On the other hand, they may feel comfortable in not expressing their positive feelings. A third possibility is that they may not experience positive feelings as much as others. One task of future research can be to assess which of these explanations is most accurate.

The statistical significance of the linear regression on BP and the self-reported PE scale points toward an inverse relationship between BP and the expression of positive emotions. The source of this relationship is unknown. However, since most hypertension is not organic in nature, it is reasonable to rule out BP as the causative agent. At the same time, it is difficult to explain how the lack of expression of positive emotions can lead to elevated BP.

Unlike the inhibition of negative emotions, Gutman and Benson's (1971) hypothesis of continual thwarting of the fight or flight response would not appear, upon cursory scrutiny, to hold true for the inhibition of positive emotions. That is, the inhibition of positive emotions would not normally be accompanied by sympathetic arousal (and elevated BP). However, when viewed within a social context this hypothesis might be more credible.

Operant interpersonal theory (Stuart, 1973) emphasizes reciprocity in human relationships. If a person behaves in a way that is positively reinforcing for another person then the other person will reciprocate by behaving in ways which are positively reinforcing to the first person.

The results of this study could indicate that the hypertensive receives little positive communication from others because he/she sends few messages which contain positive feelings. This would mean that the messages which are being communicated primarily reflect either negative or neutral affect. BP might then become elevated because, relative to the amount of time giving and receiving communications with positive affect, more time is spent in giving and receiving communications devoid of positive affect.

Curiously, the significant others of the two subject groups did not differ in their assessments of their respective subjects' expression of positive emotions (a lack of confirmation of Hypothesis 6). Thus, while the significant others of hypertensives did not believe them to inhibit expressing positive feelings, the hypertensives, themselves, do perceive a lesser degree of this behavior. It may be that the hypertensives are aware of their positive feelings and have difficulty expressing them, but their significant others are not aware that the hypertensives have these inhibited feelings.

Although not significant the strong trend of the high aggression ratings among friends of hypertensives should not be overlooked. Apparently only friends of hypertensives perceive more aggressive behavior to be exhibited, because neither the relatives nor the hypertensives themselves noted this higher frequency of aggressive behavior. So it may be that hypertensives are more aggressive in the presence of people with whom they are less intimate. At the same time, the hypertensives may not be aware of their own aggressive behavior. Future research

should be directed at the aggressive behavior of hypertensives in varying degrees of intimacy.

Implications for Treatment

Although the nature of the relationship between BP and the expression of positive feelings does not reveal the causative agent, there is strong evidence from other studies that a behavioral approach to treatment (i.e., relaxation training and meditation) of hypertension can be highly effective. Thus, it might be of benefit to help hypertensives to better express their positive feelings. This could be integrated into an already existing relaxation training program.

Helping hypertensives express their positive feelings should focus on the reciprocal nature of such actions. The expression of the positive feelings itself is not expected to reduce BP. However, the improved situation, with more emphasis on the positive interchanges in relationships may help maintain reductions in BP. The relaxation response would bring about the initial reductions in BP. An assertiveness training program with most emphasis on the expression of positive affect would maintain the reductions.

Miscellaneous Observations

Personality research in the area of hypertension, and in general, has been overly dedicated to studying pathology. In the area of hypertension the progress of research might have been more accelerated if more attention was paid to strengths which can enhance interpersonal relationships. This change in emphasis can not only open up new

perspectives of understanding people but can also point to innovations in treatment.

A final observation involves a limitation of assertiveness tests. This study has demonstrated that the concept of assertiveness can more usefully be viewed as a collection of different types of assertiveness rather than one summary score on a test. Assertiveness training is more useful when addressing the specific needs of the people undergoing the training rather than being a universal set of exercises which has just a little bit of application to everyone. By the same token assertiveness training tests need to assess specific areas of difficulty and strength for an individual in order to give a specific description of him/her, and to point toward person-specific treatment.

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APPENDICES

APPENDIX A

QUESTIONNAIRES

THE PENECA SELF-EXPRESSION SCALE—FORM S

The following inventory is designed to provide information about the way in which you express yourself to people. Please answer the questions by placing a number from 1 to 9 next to the appropriate item on the answer sheet. Your answer should indicate how you generally express yourself in a variety of situations. If a particular situation does not apply to you, answer as you think you would respond in that situation. Your answer should not reflect how you ought to or how you would like to act. Do not deliberate over any individual question. Please work quickly. Your first response to the question is probably your most accurate one. Than you.^a

- | Never or
Rarely | (1) | (2) | Seldom
(3) | (4) | Sometimes
(5) | (6) | Usually
(7) | (8) | Almost Always
or Always
(9) |
|--------------------|-----|--|---------------|-----|------------------|-----|----------------|-----|-----------------------------------|
| C,R | 1. | If food which is not to your satisfaction was served in a good restaurant, would you bring it to the waiter's attention? | | | | | | | |
| C | 2. | If your spouse/boyfriend or girlfriend is blatantly unfair, do you find it difficult to say something about it to him/her? | | | | | | | |
| PE,R | 3. | Do you find it difficult to accept compliments from others? | | | | | | | |
| NE,R | 4. | If you are angry at your spouse/boyfriend or girlfriend, is it difficult for you to tell him/her? | | | | | | | |
| C | 5. | Is it difficult for you to refuse unreasonable requests from your parents? | | | | | | | |
| NE | 6. | How often do you openly express justified feelings of anger to your parents? | | | | | | | |
| A | 7. | Do you show your anger by name-calling or obscenities? | | | | | | | |
| A | 8. | Are there times when you look for a good, vigorous argument? | | | | | | | |
| PE,R | 9. | If you hear a good joke when you are in the presence of a lot of people, do you stop yourself from laughing out loud? | | | | | | | |
| PE,R | 10. | If you feel joyous, do you tend to be reserved when expressing it? | | | | | | | |
| A | 11. | During an argument do you become so upset that you shake all over? | | | | | | | |
| PE | 12. | If you are proud of a recent accomplishment, do you let others know about it? | | | | | | | |
| C | 13. | Do you ignore it when someone pushes in front of you in line? | | | | | | | |
| C | 14. | If a close relative makes what you consider to be an unreasonable request, do you have difficulty saying no? | | | | | | | |
| NE,R | 15. | Do you hesitate to express resentment to a friend who has unjustifiably criticized you? | | | | | | | |

- | | Never or
Rarely
(1) | (2) | Seldom
(3) | (4) | Sometimes
(5) | (6) | Usually
(7) | (8) | Almost Always
or Always
(9) |
|------|---------------------------|--|---------------|-----|------------------|-----|----------------|-----|-----------------------------------|
| PE | 16. | If you approve of something your parents do, do you express your approval? | | | | | | | |
| C | 17. | Do you find it difficult to refuse the requests of others? | | | | | | | |
| NE | 18. | If a friend who is supposed to pick you up for an important engagement calls and says that he/she cannot make it, do you express your annoyance? | | | | | | | |
| NE | 19. | When you feel unsure of yourself do you express this to someone who is important to you? | | | | | | | |
| A | 20. | If someone pushes ahead of you in line is he/she in for a good battle? | | | | | | | |
| PE,R | 21. | Are you awkward when expressing affection to someone of the same sex? | | | | | | | |
| A | 22. | Are you prone to "fly off the handle?" | | | | | | | |
| A | 23. | Do you try hard to convince others you are right? | | | | | | | |
| NE | 24. | Do you express your negative feelings to others when it is appropriate? | | | | | | | |
| NE | 25. | If you lived in an apartment and the landlord failed to make certain repairs after it had been brought to his/her attention, would you express your displeasure? | | | | | | | |
| PE | 26. | Do you compliment and praise others? | | | | | | | |
| NE,R | 27. | If your boss or supervisor teases you to the point that it is no longer fun, do you have difficulty expressing your displeasure? | | | | | | | |
| A | 28. | Do you continue to pursue an argument after the other person has had enough? | | | | | | | |
| NE | 29. | Do you express anger or annoyance to your boss or supervisor when it is justified? | | | | | | | |
| PE,R | 30. | Do you have difficulty verbally expressing love and affection to your spouse or boyfriend/girlfriend? | | | | | | | |
| A | 31. | Do you get into physical fights with others? | | | | | | | |
| NE,R | 32. | When you feel sad do you avoid telling your spouse or boyfriend/girlfriend? | | | | | | | |
| PE,R | 33. | If you find yourself becoming fond of a friend, do you have difficulty expressing these feelings to that person? | | | | | | | |
| A | 34. | Do you step in and make decisions for others? | | | | | | | |
| C,R | 35. | If a friend makes what you consider to be an unreasonable request, are you able to refuse? | | | | | | | |
| A | 36. | At family meals, do you control the conversation? | | | | | | | |
| C,R | 37. | If a clerk at a store waits on someone who has come in after you when you are in a rush, do you call his attention to the matter? | | | | | | | |
| C | 38. | If your parents wanted you to come home for a weekend visit and you had made important plans, would you change your plans? | | | | | | | |

Never or Rarely (1)	(2)	Seldom (3)	(4)	Sometimes (5)	(6)	Usually (7)	(8)	Almost Always or Always (9)
---------------------------	-----	---------------	-----	------------------	-----	----------------	-----	-----------------------------------

- C 39. If your boss or supervisor makes what you consider to be an unreasonable request, do you have difficulty saying no?
- PE 40. Do you express affection for a friend by touching him/her?

^aNext to each item is a symbol indicating the scale to which it belongs. They are: Expression of Positive Emotions (PE); Expression of Negative Emotions (NE); Compliance (C); Aggression (A). In addition any item scored in the reverse is also preceded by an "R." The items on Forms O-M and O-F match the items on Form S.

PENECA SELF-EXPRESSION SCALE—FORM O-M

The following inventory is designed to provide information about the way in which your friend/relative expresses himself to people. Please answer the questions by placing a number from 1 to 9 next to the appropriate item on the answer sheet. Your answer should indicate how he generally expresses himself in a variety of situations. If you have not had a chance to observe him in a particular situation, answer as you think he would respond in that situation. Your answer should not reflect how you feel he ought to act or how you would like him to act. Do not deliberate over any individual question. Please work quickly. Your first response to the question is probably your most accurate one. Thank you.

Never or Rarely (1)	(2)	Seldom (3)	(4)	Sometimes (5)	(6)	Usually (7)	(8)	Almost Always or Always (9)
---------------------------	-----	---------------	-----	------------------	-----	----------------	-----	-----------------------------------

1. If food which is not to his satisfaction was served in a good restaurant, would he bring it to the waiter's attention?
2. If his spouse/girlfriend is blatantly unfair, does he find it difficult to say something about it to her?
3. Does he find it difficult to accept compliments from others?
4. If he is angry at his spouse/girlfriend, is it difficult for him to tell her?
5. Is it difficult for him to refuse unreasonable requests from his parents?
6. How often does he openly express justified feelings of anger to his parents?
7. Does he show his anger by name-calling or obscenities?
8. Are there times when he looks for a good, vigorous argument?
9. If he hears a good joke when he is in the presence of a lot of people, does he stop himself from laughing out loud?
10. If he feels joyous, does he tend to be reserved when expressing it?
11. During an argument does he become so upset that he shakes all over?
12. If he is proud of a recent accomplishment, does he let others know about it?
13. Does he ignore it when someone pushes in front of him in line?
14. If a close relative makes what he considers to be an unreasonable request, does he have difficulty saying no?
15. Does he hesitate to express resentment to a friend who has unjustifiably criticized him?
16. If he approves of something his parents do, does he express his approval?
17. Does he find it difficult to refuse the requests of others?
18. If a friend who is supposed to pick him up for an important engagement calls and says that he/she cannot make it, does he express his annoyance?

- | | | | | | | | | |
|---------------------------|---------------|------------------|------------------|------------------|----------------|----------------|-----------------------------------|-----------------------------------|
| Never or
Rarely
(1) | Seldom
(2) | Sometimes
(3) | Sometimes
(4) | Sometimes
(5) | Usually
(6) | Usually
(7) | Almost Always
or Always
(8) | Almost Always
or Always
(9) |
|---------------------------|---------------|------------------|------------------|------------------|----------------|----------------|-----------------------------------|-----------------------------------|
-
19. When he feels unsure of himself does he express this to someone who is important to him?
 20. If someone pushes ahead of him in line is the person in for a good battle?
 21. Is he awkward when expressing affection to someone of the same sex?
 22. Is he prone to "fly off the handle?"
 23. Does he try hard to convince others he is right?
 24. Does he express his negative feelings to others when it is appropriate?
 25. If he lived in an apartment and the landlord failed to make certain repairs after it had been brought to his/her attention, would he express his displeasure?
 26. Does he compliment and praise others?
 27. If his boss or supervisor teases him to the point that it is no longer fun, does he have difficulty expressing his displeasure?
 28. Does he continue to pursue an argument after the other person has had enough?
 29. Does he express anger or annoyance to his boss or supervisor when it is justified?
 30. Does he have difficulty verbally expressing love and affection to his spouse/girlfriend?
 31. Does he get into physical fights with others?
 32. When he feels sad does he avoid telling his spouse/girlfriend?
 33. If he finds himself becoming fond of a friend, does he have difficulty expressing these feelings to that person?
 34. Does he step in and make decisions for others?
 35. If a friend makes what he considers to be an unreasonable request, is he able to refuse?
 36. At family meals, does he control the conversation?
 37. If a clerk at a store waits on someone who has come in after him when he is in a rush, does he call his attention to the matter?
 38. If his parents wanted him to come home for a weekend to visit and he had made important plans, would he change his plans?
 39. If his boss or supervisor makes what he considers to be an unreasonable request, does he have difficulty saying no?
 40. Does he express affection for a friend by touching him/her?

PENECA SELF-EXPRESSION SCALE—FORM O-F

The following inventory is designed to provide information about the way in which your friend/relative expresses herself to people. Please answer the questions by placing a number from 1 to 9 next to the appropriate item on the answer sheet. Your answer should indicate how she generally expresses herself in a variety of situations. If you have not had a chance to observe her in a particular situation, answer as you think she would respond in that situation. Your answer should not reflect how you feel she ought to act or how you would like her to act. Do not deliberate over any individual question. Please work quickly. Your first response to the question is probably your most accurate one. Thank You.

- | | | | | | | | | |
|--------------------|-----|--------|-----|-----------|-----|---------|-----|----------------------------|
| Never or
Rarely | | Seldom | | Sometimes | | Usually | | Almost Always
or Always |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
-
1. If food which is not to her satisfaction was served in a good restaurant, would she bring it to the waiter's attention?
 2. If her spouse/boyfriend is blatantly unfair, does she find it difficult to say something about it to him?
 3. Does she find it difficult to accept compliments from others?
 4. If she is angry at her spouse/boyfriend, is it difficult for her to tell him?
 5. Is it difficult for her to refuse unreasonable requests from her parents?
 6. How often does she openly express justified feelings of anger to her parents?
 7. Does she show her anger by name-calling or obscenities?
 8. Are there times when she looks for a good, vigorous argument?
 9. If she hears a good joke when she is in the presence of a lot of people, does she stop herself from laughing out loud?
 10. If she feels joyous, does she tend to be reserved when expressing it?
 11. During an argument does she become so upset that she shakes all over?
 12. If she is proud of a recent accomplishment, does she let others know about it?
 13. Does she ignore it when someone pushes in front of her in line?
 14. If a close relative makes what she considers to be an unreasonable request, does she have difficulty saying no?
 15. Does she hesitate to express resentment to a friend who has unjustifiably criticized her?
 16. If she approves of something her parents do, does she express her approval?
 17. Does she find it difficult to refuse the requests of others?
 18. If a friend who is supposed to pick her up for an important engagement calls and says that he/she cannot make it, does she express her annoyance?

Never or Rarely (1)	(2)	Seldom (3)	(4)	Sometimes (5)	(6)	Usually (7)	(8)	Almost Always or Always (9)
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19. When she feels unsure of herself does she express this to someone who is important to her?
20. If someone pushes ahead of her in line is the person in for a good battle?
21. Is she awkward when expressing affection to someone of the same sex?
22. Is she prone to "fly off the handle?"
23. Does she try hard to convince others she is right?
24. Does she express her negative feelings to others when it is appropriate?
25. If she lived in an apartment and the landlord failed to make certain repairs after it had been brought to his/her attention, would she express her displeasure?
26. Does she compliment and praise others?
27. If her boss or supervisor teases her to the point that it is no longer fun, does she have difficulty expressing her displeasure?
28. Does she continue to pursue an argument after the other person has had enough?
29. Does she express anger or annoyance to her boss or supervisor when it is justified?
30. Does she have difficulty verbally expressing love and affection to her spouse/boyfriend?
31. Does she get into physical fights with others?
32. When she feels sad does she avoid telling her spouse/boyfriend?
33. If she finds herself becoming fond of a friend, does she have difficulty expressing these feelings to that person?
34. Does she step in and make decisions for others?
35. If a friend makes what she considers to be an unreasonable request, is she able to refuse?
36. At family meals, does she control the conversation?
37. If a clerk at a store waits on someone who has come in after her when she is in a rush, does she call his attention to the matter?
38. If her parents wanted her to come home for a weekend visit and she had made important plans, would she change her plans?
39. If her boss or supervisor makes what she considers to be an unreasonable request, does she have difficulty saying no?
40. Does she express affection for a friend by touching him/her?

APPENDIX B

ANSWER SHEET

Number _____

B.P. _____

- | | |
|-----------|-----------|
| 1. _____ | 21. _____ |
| 2. _____ | 22. _____ |
| 3. _____ | 23. _____ |
| 4. _____ | 24. _____ |
| 5. _____ | 25. _____ |
| 6. _____ | 26. _____ |
| 7. _____ | 27. _____ |
| 8. _____ | 28. _____ |
| 9. _____ | 29. _____ |
| 10. _____ | 30. _____ |
| 11. _____ | 31. _____ |
| 12. _____ | 32. _____ |
| 13. _____ | 33. _____ |
| 14. _____ | 34. _____ |
| 15. _____ | 35. _____ |
| 16. _____ | 36. _____ |
| 17. _____ | 37. _____ |
| 18. _____ | 38. _____ |
| 19. _____ | 39. _____ |
| 20. _____ | 40. _____ |

APPENDIX C

INFORMED CONSENT FORMS

INFORMED CONSENT FORM FOR DESIGNATED SUBJECTS

The study is examining the relationship between blood pressure and personality. I will be completing a questionnaire concerning my behavior in interpersonal relationships. This questionnaire will take 10-20 minutes to complete. Only the experimenter will know my responses and these responses will be coded so that I will not be identified by name. My friends and relatives will be completing the same questionnaire on my behavior, but I will not be informed of their responses unless they desire to give me that information. There are no expected risks, nor is it expected that I will experience any discomfort as a result of my participation. The purpose of this study will be further explained to me after I and my friends and relatives have completed the questionnaire. Any questions I have about the study or about my performance will be answered by the experimenter. This study may help me gain greater insight into my interpersonal behavior. I will also be informed about blood pressure and hypertension. I may withdraw my participation at any time without penalty. Under these conditions I agree to participate in this study.

Signature

Number

Paul J. Cardozo
University of Tennessee
108 CEB
Knoxville, TN 37916
Phone: 974-4159

INFORMED CONSENT FORM FOR FRIENDS AND RELATIVES

The study is examining the relationship between blood pressure and personality. I will be completing a questionnaire concerning the interpersonal behavior of my friend/relative. The questionnaire will take 10-20 minutes to complete. My friend/relative will not be informed of my responses unless I desire to tell him/her. Only the experimenter will know my responses and these responses will be coded so that I will not be identified by name. There are no expected risks and it is not expected that I will experience any discomfort as a result of my participation. The purpose of this study will be further explained to me after I and my friend/relative have completed the questionnaire. Any questions I have about the study or about my performance will be answered by the experimenter. I will be given information about blood pressure and personality. I may withdraw my participation at any time without penalty. Under these conditions I agree to participate in this study.

Signature

Number

Paul J. Cardozo
University of Tennessee
108 CEB
Knoxville, TN 37916
Phone: 974-4159

APPENDIX D

EXPLANATION SHEET FOR SUBJECTS

The Assertiveness of People With High Blood Pressure

This questionnaire contains items related to how assertive or aggressive you (or your friend/relative) are. According to assertiveness training theorists, there are three basic types of interpersonal behavior: (1) Nonassertion, (2) Aggression, (3) Assertion. If you behave nonassertively, you are denying or restricting your own rights because you do not express your feelings and opinions, or you express it in an indirect manner. When you behave aggressively, you express your feelings and opinions but you disregard the rights and feeling of others. This may include punishment, threats, assaults, hostility, etc. When you behave assertively, you directly express your feelings, opinions, and needs without infringing upon the rights of others.

The questionnaire contains items relating to aggression in general. It also samples one type of nonassertion—compliance with other's requests when you don't really want to meet the requests. Two types of assertion are sampled—expression of positive emotions (such as love) and expression of negative emotions (such as anger).

It is my belief that people may develop high blood pressure because of not assertively expressing their feelings. For example, someone may get angered by what another person does but he/she doesn't let the other person know about his/her anger; instead the anger gets bottled up inside, and, in a sense, creates greater pressure. For some people this pressure comes in the form of high blood pressure. For high blood pressure to occur this bottling up of feelings must take place over a period of years. Thus, I expect people with high blood pressure to be less assertive than people with normal levels of blood pressure. Let me emphasize that this is only my hypothesis and is not fact.

The reason I asked friends and relatives to answer the questionnaire is because people are not always the best judges of their own behavior. The way we look at ourselves can be very different from the way others see us.

If you do tend to be nonassertive and bottle up your feelings, you are in no way abnormal. This type of behavior is common in our society.

If you want further information, please contact me. Thank you for your participation.

Paul Cardozo
108 Claxton Education Building
University of Tennessee
Knoxville, TN 37916

Phone: 974-4159

APPENDIX E

TABLE 6

RAW DATA

S ^a	C ^b	SBP ^c	DBP ^d	T ^e	PEMS ^f	PEMF ^g	PEMR ^h	NEMS ⁱ	NEMF ^j	NEMR ^k	CONST ^l	CONF ^m	CONF ⁿ	AGCS ^o	AGCF ^p	AGCR ^q
1	NT	114.00	84.00	3	6.50	5.20	7.40	6.90	5.70	6.80	3.50	5.00	4.20	2.90	3.70	3.00
2	NT	114.00	76.00	3	6.90	6.60	7.10	4.50	4.00	5.00	4.20	5.80	5.70	3.60	1.00	4.20
3	NT	126.00	82.00	3	7.40	7.30	—	5.80	6.80	—	4.20	4.20	—	1.10	3.40	—
4	NT	120.00	80.00	3	6.90	6.90	7.20	6.20	5.80	5.70	4.00	3.60	4.60	4.20	2.70	4.80
5	NT	116.00	64.00	3	6.80	7.60	6.90	6.50	4.50	4.70	5.00	3.60	6.00	2.70	1.20	3.00
6	NT	108.00	74.00	3	7.30	—	7.80	5.40	6.10	6.40	4.90	—	3.20	4.40	—	2.20
7	NT	118.00	68.00	3	7.70	7.00	6.50	6.20	4.60	5.60	5.10	5.10	3.60	4.80	1.30	3.20
8	NT	126.00	84.00	3	5.30	6.40	5.80	5.60	5.40	4.60	3.00	2.60	5.10	2.80	2.00	3.00
9	NT	130.00	86.00	3	6.40	7.00	5.30	6.20	6.60	3.70	4.60	4.60	5.10	3.60	2.70	4.10
10	NT	115.00	78.00	3	7.40	8.00	4.70	7.40	5.40	4.00	4.10	4.60	4.90	3.80	3.80	2.40
11	NT	120.00	90.00	3	6.40	5.50	6.60	5.50	5.20	7.70	4.10	5.70	4.40	3.50	3.20	5.30
12	NT	126.00	88.00	3	6.80	7.50	6.40	5.40	5.60	7.00	4.50	4.70	3.20	2.40	2.30	4.50
13	NT	118.00	68.00	3	7.00	6.50	8.60	6.80	5.20	3.80	3.80	7.10	3.50	2.90	3.20	1.90
14	NT	130.00	84.00	3	6.90	8.60	7.30	6.10	7.50	7.60	4.40	2.80	4.20	4.00	3.60	5.80
15	NT	110.00	80.00	3	4.70	5.20	4.90	5.40	5.80	7.20	5.60	6.50	4.70	1.00	4.70	5.30
16	NT	110.00	78.00	3	7.10	5.60	6.40	6.60	4.60	6.00	5.00	5.80	5.90	4.20	3.40	4.20
17	NT	126.00	74.00	3	7.00	—	—	5.50	—	—	3.30	—	—	3.10	—	—
18	NT	112.00	64.00	3	4.60	7.10	7.10	6.20	7.10	—	6.00	4.20	—	4.60	3.60	—
19	NT	124.00	82.00	3	6.60	5.80	7.60	5.30	4.50	6.60	4.20	5.50	3.10	3.50	3.00	3.00
20	NT	110.00	84.00	3	7.80	7.50	6.80	7.60	7.70	7.00	2.90	2.70	2.10	3.10	3.10	3.80
21	NT	116.00	68.00	3	7.50	7.80	8.70	5.80	6.90	7.00	4.60	3.40	5.00	3.30	2.10	3.20
22	NT	102.00	68.00	3	6.90	7.40	6.40	6.50	5.00	6.30	3.60	4.70	3.80	5.40	3.80	3.80
23	NT	106.00	76.00	3	8.20	6.20	7.00	7.00	6.60	—	4.40	3.40	—	3.40	5.10	—
24	NT	104.00	74.00	3	7.30	6.80	6.70	6.10	6.10	5.80	4.70	5.00	5.10	4.00	2.70	4.60
25	NT	116.00	72.00	3	8.50	7.10	8.40	8.50	6.20	5.80	2.90	4.00	3.40	4.80	3.80	4.00
26	NT	120.00	78.00	1	5.70	4.80	5.80	3.50	5.70	5.00	3.40	3.50	5.40	2.50	3.40	3.40
27	NT	128.00	86.00	1	5.10	7.80	7.40	2.90	—	6.40	7.80	5.80	5.80	2.80	—	2.20
28	NT	90.00	60.00	1	7.60	7.80	—	5.30	6.90	—	3.50	3.80	—	1.70	2.80	—
29	NT	130.00	80.00	2	8.00	—	—	6.00	—	—	4.70	—	—	2.50	—	—
30	NT	120.70	80.00	1	5.80	7.00	7.30	3.60	5.10	4.40	5.00	3.60	3.80	3.00	5.80	6.10
31	NT	118.00	70.00	1	6.20	5.70	6.00	4.60	4.80	4.70	4.10	6.60	4.20	3.60	1.90	3.40
32	NT	124.00	70.00	1	6.00	5.80	5.80	4.30	4.80	4.90	4.80	5.00	4.90	2.40	2.40	3.00
33	NT	110.00	76.00	1	6.70	—	—	5.40	—	—	4.10	—	—	2.80	—	—
34	NT	130.00	80.00	2	7.80	5.40	6.40	5.10	4.00	6.00	5.40	6.20	5.60	3.00	3.20	3.60
35	NT	120.00	68.00	1	6.40	6.00	5.60	5.00	6.80	6.20	4.10	3.20	4.40	3.90	5.10	4.30
36	NT	110.00	68.00	1	6.30	7.40	7.40	6.60	5.90	4.00	3.30	4.40	7.40	2.90	2.50	2.00
37	NT	126.00	90.00	2	6.70	—	—	6.00	—	—	4.40	—	—	5.50	—	—
38	NT	124.00	78.00	1	6.20	—	—	6.70	—	—	5.40	—	—	4.10	—	—
39	HT	144.00	104.00	3	6.00	5.60	7.20	5.20	4.00	6.40	4.50	6.50	3.20	3.80	3.90	3.20
40	HT	142.00	104.00	3	6.50	5.70	6.10	5.20	6.30	4.00	4.30	3.60	5.90	2.90	2.00	3.10
41	HT	154.00	104.00	3	5.70	7.10	7.50	4.30	6.70	5.50	5.50	3.90	4.60	3.40	3.30	3.80
42	HT	170.00	100.00	1	4.00	—	—	5.80	—	—	5.10	—	—	4.00	—	—
43	HT	150.00	100.00	1	7.50	6.40	4.00	4.80	5.30	6.60	4.10	5.40	4.20	2.40	5.60	2.80
44	HT	160.00	120.00	3	6.90	5.80	5.50	5.70	5.80	3.80	5.60	4.90	4.50	2.10	3.90	1.80
45	HT	180.00	100.00	1	5.60	—	—	4.56	—	—	4.33	—	—	3.20	—	—
46	HT	210.00	100.00	1	6.60	—	—	3.80	—	—	5.10	—	—	1.60	—	—
47	HT	160.00	100.00	1	6.60	—	—	4.11	—	—	3.30	—	—	2.80	—	—
48	HT	165.00	98.00	2	6.30	—	—	5.90	—	—	4.80	—	—	4.50	—	—
49	HT	165.00	100.00	1	5.80	7.10	6.30	4.20	5.60	5.10	3.80	4.50	4.20	3.90	5.00	4.70
50	HT	175.00	95.00	2	6.20	7.50	4.60	5.80	7.30	4.80	3.80	3.80	5.00	3.00	5.40	3.50
51	HT	142.00	96.00	2	6.40	6.70	6.50	7.00	9.00	7.10	4.00	2.40	4.10	3.80	6.40	4.40
52	HT	184.00	104.00	1	7.20	7.30	7.22	4.40	5.20	5.89	6.10	6.00	2.33	3.40	4.70	1.40
53	HT	158.00	108.00	1	5.80	5.20	5.60	4.60	5.00	4.80	6.00	6.10	6.10	3.40	4.00	3.40
54	HT	150.00	100.00	1	5.30	—	5.40	5.90	5.00	5.70	4.20	—	4.40	3.60	—	4.10
55	HT	215.00	124.00	1	6.60	—	—	5.50	—	—	5.90	—	—	2.70	—	—
56	HT	160.00	112.00	1	5.60	—	—	4.60	—	—	3.70	—	—	2.30	—	—
57	HT	178.00	110.00	1	5.80	—	—	6.30	—	—	4.20	—	—	2.90	—	—
58	HT	160.00	95.00	3	5.40	7.30	5.40	5.30	6.30	6.00	4.40	6.40	4.60	5.10	4.30	4.80
59	HT	166.00	112.00	3	4.60	5.90	5.60	4.60	5.00	4.50	4.80	4.00	5.50	2.80	2.50	2.20
60	HT	170.00	106.00	1	6.00	6.40	—	6.00	6.60	—	1.80	2.20	—	2.80	3.00	—
61	HT	142.00	96.00	3	6.90	—	—	6.20	—	—	4.80	—	—	3.60	—	—

^aS=Subject number

^bG=Subject group (NT=Normotensive; HT=Hypertensive)

^cSBP=Systolic blood pressure

^dDBP=Diastolic blood pressure

^eT=Number of times blood pressure was measured

^fPEMS=Positive Emotion scale score—self-report

^gPEMF=Positive Emotion scale score—friend's report

^hPEMR=Positive Emotion scale score—relative's report

ⁱNEMS=Negative Emotion scale score—self-report

^jNEMF=Negative Emotion scale score—friend's report

^kNEMR=Negative Emotion scale score—relative's report

^lCOMS=Compliance scale score—self-report

^mCOMF=Compliance scale score—friend's report

ⁿCOMR=Compliance scale score—relative's report

^oAGGS=Aggression scale score—self-report

^pAGGF=Aggression scale score—friend's report

^qAGGR=Aggression scale score—relative's report

A dash indicates that a questionnaire was not completed by this person.

VITA

Paul Cardozo was born in 1951 in Antwerp, Belgium. He eventually moved to the United States in 1958 and became a U.S. citizen in 1963, whereupon his last name was changed to Carson.

In 1973 he received a Bachelor of Arts degree in Psychology from Whittier College. He earned a Master of Arts degree in Clinical Psychology in 1976 from the University of Dayton. He entered The University of Tennessee in the Department of Educational Psychology and Guidance, with an emphasis in counseling. In December, 1979 he was awarded the Doctor of Education degree under his recently readopted last name of Cardozo.

He is a member of the American Psychological Association, the Southeastern Psychological Association, Phi Delta Kappa, and Phi Sigma Tau. Since completing the dissertation, he has been doing an internship at the University of Houston Counseling and Testing Service.