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John Henryism and Blood Pressure Differences Among Black Men

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A community probability sample of southern, working-class, black men (N = 132) between 17 and 60 years of age was administered a scale to measure the degree to which they felt they could control their environment through hard work and determination. Since the legend of John Henry—the famous, black steeldriver of American folklore—can be understood as a cultural statement about how black Americans must often attempt to control behavioral stressors through hard work and determination, items for the scale were developed to reflect the theme of John Henryism. It was hypothesized that men scoring below the median on education but above the median on John Henryism would have higher blood pressures than any other group. The data were in line with the prediction, in that men who scored low on education and high on John Henryism had significantly higher diastolic blood pressures than men who scored above the median on both measures. Study findings are discussed in terms of the meaning that education and John Henryism may have for raising or lowering autonomic arousal when individuals encounter behavioral stressors in everyday life.

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Preliminary construct validity evidence for the John Henryism Scale is also presented.

KEY WORDS: blood pressure; blacks; education; stress; coping.

INTRODUCTION

Over the past 25 years, some rather impressive evidence has been assembled on the sociodemographic correlates of essential hypertension for U.S. population groups. Blacks are known to be two to four times more likely than whites to develop hypertension by middle age (Comstock, 1957; Fries, 1973; Stamler *et al.*, 1967; National Center for Health Statistics, 1977). Males, early in adult life, are at higher risk than females (Fries, 1973; National Center for Health Statistics, 1977); and persons with low levels of formal education are more susceptible to hypertension than better-educated individuals (Dyer *et al.*, 1976; Hypertension Detection and Follow-Up Program, 1977; Keil et al., 1977; National Center for Health Statistics, 1977; Syme *et al.*, 1974).

Since the basic physiology of blood pressure regulation is incompletely understood, progress in developing comprehensive models to explain satisfactorily the aforementioned race, sex, and social-class differences in susceptibility to essential hypertension has been slow. Most investigators agree, however, that these demographic factors provide important clues regarding the etiology of this circulatory disorder. Increasingly, the high rate among black Americans (and the poor, more generally) is thought to result from a combination of risks conferred by genetic predisposition, dietary habits, and exposure to inescapable behavioral stressors which may severely tax their coping resources (Gillum, 1979; Harrell, 1980; Tyroler and James, 1978; Weiner, 1979a). With a group of southern, working-class, black males as the study population, this report deals with one aspect of the third issue, namely, the relationship between the perceived ability to cope with behavioral stressors and mean blood pressure levels.

Fifteen years ago, Ostfeld and Shekelle (1967) critiqued the evidence linking psychological factors and blood pressure elevation. Though they expressed reservations about the external validity of the mostly laboratory studies conducted up to that time, they nevertheless concluded that psychological appraisal of stimulus threat and perceived ability to cope with the threat were probably long-term mediators of blood pressure level. They presented four characteristics of ordinary life situations which seem to be associated with pressor responses: (1) the outcome of the event is uncertain; (2) the possibility of bodily or psychological harm exists; (3) although

running away or physical resistance may be considered, they are not appropriate behavior; and (4) the person involved commonly feels compelled to maintain a vigilant mental attitude until the situation is clarified or resolved.

Since 1967, a number of more sophisticated laboratory- and field-based studies have been conducted, and several of these, as discussed by Syme (1979), are directly relevant to the above four-point framework. For example, Kasl and Cobb (1970) found that men undergoing job loss experienced elevations of blood pressure. Moreover, the longer the unemployment, the larger was the increase in blood pressure. Cobb and Rose (1973) observed that air traffic controllers, clearly a high vigiliance group, had higher mean blood pressures than a comparable group of workers in jobs requiring less sustained vigilance. D'Atri and Ostfeld (1975) reported that prisoners in crowded cells had higher blood pressures than men assigned to private cells; and in Detroit, Harburg *et al.* (1973) demonstrated that average blood pressures were higher for black male residents of high-stress areas—where unemployment, crime and crowded living circumstances were chronic features of the environment—compared to black males in low-stress areas. Each of these field-based studies provides promising, though indirect support for Ostfeld and Shekelle's theoretical proposition that a sustained pressor response is most likely to occur when the behavioral stressor seems uncontrollable (i.e., the outcome is not clearly dependent on one's actions), yet neither fight nor flight is possible.

Among laboratory studies, Syme (1979) considered the work of Obrist *et al.* (1976, 1978) on active coping to represent a more direct test of the relationship between the blood pressure elevation and the perceived controllability of behavioral stressors. In a series of experiments, Obrist *et al.* (1978) monitored changes in heart rate and in systolic and diastolic blood pressures in a group of male college students who were challenged to complete an unsignaled reaction-time task to avoid intermittent mild electric shocks. Three experimental conditions were created: (1) an *easy* condition wherein the reaction-time task was comfortably mastered within the allotted time; (2) an *impossible* condition wherein the allotted time was so brief that no one could master the task; and (3) a *hard* condition wherein, with real effort and concentration, faster reaction times could be occasionally achieved. They found that β-adrenergic influences on the myocardium, as manifested in increased systolic blood pressure, heart rate, and contractility, were more strongly evoked and sustained in the hard condition, in which the subjects believed that they could control the stressor and actively attempted to do so. In the easy and impossible conditions, the sharp hemodynamic changes observed at the start of the experiment quickly subsided, as the subjects discovered that they could control the stressor either easily or not at all.

Though his conclusion is a posteriori, Syme (1979) suggested that each of the above studies demonstrates the relevance of one or more of Ostfeld and Shekelle's four postulates. Underscoring the importance of believing that stressors can be controlled through active coping, he speculated, further, that since blacks and other poor people are exposed to many behavioral stressors in everyday life (see Dohrenwend and Dohrenwend, 1970), those who attempt to control, or those who think they can control their environment through active coping, may have higher blood pressures than similar others who are more resigned about the issues of environmental mastery.

This last point by Syme represents an extremely interesting research question. It is similar to a proposition set forth by Tyroler and James (1978), whereby the relatively high rates of hypertension among younger, low-income, black males were hypothesized to be due, in part, to their chronic and frequently intense struggle to demonstrate personal competence and achieve a sense of environmental mastery. This hypothesis was based upon writings by Cassel (1974, 1976) and Ostfeld and Shekelle (1967) and by a chance encounter which one of the authors (SAJ) had, earlier in 1978, with an impressive, elderly, hypertensive black man by the name of John Henry Martin.[4]

A detailed summary of John Henry Martin's achievements cannot be presented here, but his life story is a textbook example of active coping. His achievements are also a tribute to the 19th-century black, folk hero—John Henry, the famous steeldriver—for whom he was named. An illiterate sharecropper at age 21, John Henry Martin taught himself to read and write. By age 40, through unrelenting hard work and determination, he owned 75 acres of fertile North Carolina farm land. However, just as John Henry, the famous steeldriver, paid a high price for his victory over the mechanical steam drill (see Johnson, 1927; Levine, 1977), John Henry Martin's victory over peonage was not without its costs. By the time he reached his early 60s, his physical health had become seriously impaired. At this time, he learned that he was hypertensive and that he would have to undergo surgery for peptic ulcer disease. Soon thereafter, the arthritis that had troubled him for much of his adult life worsened, forcing him to give up farming long before he was psychologically ready. In retrospect, John Henry Martin attributes his health problems to his single-minded, relentless pursuit of economic self-sufficiency during his young and middle-adult years. He adds, without any obvious bitterness, that being black, and having no formal education, added significantly to the difficulties he experienced in reaching his life goals.

[4]The surname has been changed.

Thus, through serendipity, the concept of *John Henryism* (as a synonym for active coping) was born. Though it may evoke images of a particular kind of working-class, black man (Levine, 1977), there is no intrinsic reason why the concept of John Henryism should be restricted to either blacks or men in studies of the relationship between active coping and health risks. In conceptual terms, John Henryism is defined simply as an *individual's self-perception that he can meet the demands of his environment through hard work and determination.* The research question is—At low levels of education, is such a self-perception associated with higher levels of blood pressure?

Before describing how John Henryism was operationalized to test this question in the current study, it should be mentioned that the concept, with its strong emphasis on environmental mastery, is similar to constructs such as personal efficacy and locus of control, about which psychologists have written a great deal. Indeed, these constructs occupy a central position in many theoretical formulations of situational and psychological determinants of social behavior (see White, 1959; deCharms, 1968; Rotter, 1966; Lefcourt, 1976; Perlmuter and Monty, 1979; Bandura, 1982) as well as situational and psychological determinants of health (see Seligman, 1975; Langer and Rodin, 1976; Glass, 1977; Matthews, 1982; Kobasa *et al.,* 1982; Suls and Mullen, 1981; Schulz, 1976). The most important point to be made here is that this literature is fairly consistent in concluding that a sense of control over behavioral stressors is associated with positive rather than negative outcomes. Hence, it seems odd to suggest that John Henryism might increase the risk for hypertension when it has been defined, so clearly, as connoting a sense of personal efficacy. The apparent contradiction is resolved if it is recalled that the epidemiological significance of the concept of John Henryism derives from the psychophysiological literature, where perceived control and its behavioral counterpart—active coping—have more often than not been associated with sympathetic nervous system overactivity (Obrist *et al.,* 1978; Houston, 1972; Manuck *et al.,* 1978). In the several instances where perceived control and related coping behaviors were found to be associated with a reduction of autonomic arousal (Hokanson *et al.,* 1971; DeGood, 1975), Manuck *et al.* (1978) suggest that effective coping was essentially effort free. That is to say, only a request by the subject for removal of the noxious stimulus was required for behavioral control to be established. This distinction led Manuck *et al.* (1978) to conclude that the autonomically mediated physiological effects of control-related experiments will depend on both the opportunity to control the stressor and the difficulty of controlling it. In the Obrist studies, perceived control and active coping were accompanied by strong sympathetic nervous system activity because the task difficulty was greater than in the DeGood and Hokanson experiments.

These insights provided by Manuck *et al.* (1978) are highly relevant to the current study. In addition to clarifying the circumstances wherein active coping will lead to autonomic arousal, they provide an important clue as to why education is almost always inversely associated with blood pressure in epidemiologic studies (see Dyer *et al.*, 1976; Hypertension Detection and Follow-Up Program, 1977; Syme *et al.*, 1974) and also suggest why John Henryism, at lower levels of education, can by hypothesized to add to the risk for developing elevated blood pressure. In industrialized societies, complex problem-solving and communication skills—gained chiefly through the formal education process—are essential for the successful performance of many job-related tasks and routine commercial transactions. As a group, persons with limited formal education will perceive a wider range of everyday tasks as difficult and will be less able, as other investigators (Antonovsky, 1979; Syme and Berkman, 1976; Jenkins, 1979) have suggested, to adapt quickly to technological innovations. For these individuals, John Henryism is likely to potentiate the autonomic arousal that accompanies having to live everyday with such uncertainty.

METHODS

John Henryism

John Henryism was measured using an eight-item scale, designed specifically for this study. Because the median educational level of the study population was known to be low, a brief scale, with a limited number of response options per question, was developed. This first version of the John Henryism Scale was designed to be interviewer administered, and it represented one component of an hour-long, structured health interview. In developing the scale, the goal was to identify items which would relate the specific motivational themes of hard work and determination to a self-perception of personal competence and environmental mastery. Since this represented a departure from existing measures of personal efficacy and control, the best source of ideas for items to be included in the new scale turned out to be the John Henry folktale itself (see Johnson, 1929; Levine, 1977, especially pp. 421–440). The John Henryism Scale is reproduced in Table I.

Total scores on the John Henryism Scale could range from a low of 8 to a high of 24. High scores indicated that the individual has a strong sense of environmental mastery which is based, in part, on a single-minded determination to reach his goals.

Table I. The John Henryism Scale

Statement	Not true	Somewhat true	Very true
1. I've always felt that I could make of my life pretty much what I wanted to make of it.	1	2	3
2. Once I make up my mind to do something, I stay with it until the job is completely done.	1	2	3
3. I don't let my personal feelings get in the way of getting a job done.	1	2	3
4. It's important for me to be able to do things in the way I want to do them rather than in the way other people want me to do them.	1	2	3
5. Sometimes I feel that if anything is going to be done right, I have to do it myself.	1	2	3
6. I like doing things that other people thought could not be done.	1	2	3
7. I feel that I am the kind of man who stands up for what he believes in, regardless of the consequences.	1	2	3
8. Hard work is the best possible way for a young man to get ahead in life.	1	2	3

Study Population and Research Design

The study community is a small (1980 population <2000), poor, predominantly black town in the Coastal Plains region of North Carolina. Not only is this the poorest region of the state, in terms of per capita income, it is also part of the stroke death belt which runs through the Carolinas and Georgia (Sauer *et al.*, 1966). Hence, hypertension is a significant public health problem among adults in the area.

From September 1980 to March 1981, one of us (SAJ) lived in the study community in order to conduct a social epidemiologic investigation of hypertension among semirural, low-income, black men. During this period, a probability sample of 200 households, representing approximately one-third of the community's occupied black households, was visited. Without replacement, simple random sampling was used as the selection method (see Kish, 1965). Members of selected households were considered eligible to be interviewed if they were male, between 17 and 60 years of age, and mentally capable of completing an interview. Of the 145 men considered eligible, 132 (91%) agreed to be interviewed.

Each interview was conducted in private. The interview focused on the education background and major life aspirations of the men, their health problems, health beliefs and behaviors, and select dimensions of their social, religious, family, and work life. Approximately 15 min into the health section (which came first in the interview schedule), three consecutive first- and fifth-phase blood pressure measurements were taken, using a standard mercury sphygnomanometer. The interviewer (SAJ) was trained and certified to measure blood pressure according to guidelines established by the Hypertension Detection and Follow-Up Program (HDFP). At the end of the interview, just prior to a summary life satisfaction question, the John Henryism Scale was administered. Selected sociodemographic characteristics of the 132 respondents are summarized in Table II.

Table II reveals that this study sample is a relatively young (median age, 30 years), low-income, economically stressed population of black males. For example, unemployment was 43% among the 46 nonstudents under 30 years of age. Of the 81 employed men, all of whom worked in other small towns nearby, only 2 (2.5%) could be ranked in the highest two classes on the Hollingshead two-factor Index of Social Position (Hollingshead and Redlich, 1958). All of the remaining workers were semiskilled or unskilled. In addition, 50% of the sample was married.

Table II. Select Personal Characteristics of the Sample

Age (years)	*N*	%	Annual income (thousands of dollars)	*N*	%
17–19	20	15	NA (students)	15	11
20–29	41	31	< 3	16	12
30–39	33	25	3–5	15	11
40–49	20	15	5–7	9	7
50–60	18	14	7–10	23	17
Total	132	100	10–15	40	30
			15–20	11	8
			20–25	2	2
			> 25	1	1
			Total	132	100
Education (years completed)	*N*	%	Employment status	*N*	%
0	2	2	NA (students)	15	11
1–6	17	13	Disabled	5	4
7–9	17	13	Unemployed	31	23
10–12	78	59	Employed, part time	3	3
13–15	16	12	Employed, full time	78	59
16–18	2	2	Total	132	100
Total	132	100			

Thirty-one (23%) were judged to be hypertensive, either because the average of their second and third diastolic readings exceeded 90 mm Hg or because they were taking antihypertensive medication. Ten (32%) of these 31 hypertensive men were on medication; and 7 (23%) treated hypertensives were controlled.

To test the research hypothesis that high John Henryism—in combination with low education—would be associated with higher blood pressures, four contrast groups were considered: High JH-Low Education; High JH-High Education; Low JH-Low Education; and Low JH-High Education. For both variables, a median split was used to determine membership in the high and low groups. The median value for education was 11 years of formal schooling, with a low of zero and a high of 18.[5] The median score on the John Henryism Scale was 20, with a low of 14 and a high of 24. Assuming reasonable content validity and minimal social desirability influences, the strong shift in John Henryism scores toward high values indicates that most of these men perceived themselves to have considerable mastery over their environment.[6]

Following the median splits, 70 men were assigned to the low-education group ($\leqslant 11$ years) and 61 men were assigned to the high-education group. For John Henryism, 66 men were assigned to the high group (JH scores $\geqslant 21$), and 65 men to the low group. When the four contrast groups were formed, cell membership was as follows: High JH-Low Education ($N = 35$); High JH-High Education ($N = 31$); Low JH-Low Education ($N = 35$); and Low JH-High Education ($N = 30$).

The John Henryism hypothesis was tested, separately, for systolic and diastolic blood pressures. In both instances, blood pressure was scaled as a continuous variable, making no adjustments, initially, for the 10 treated hypertensives. The research question was tested using a 2 X 2 analysis of covariance design, with the first factor consisting of the two levels of the John Henryism variable and the second factor consisting of the two levels of education. The covariates included age, Quetelet index (wt/h^2), time of day, and number of cigarettes smoked daily.

[5]As shown in Table II, 15 respondents (11% of the total sample) were still in school. All were high-school seniors.

[6]One disabled man, moderately depressed because of a recent diagnosis of cancer, was unable to complete the John Henryism Scale satisfactorily. This reduced the N for the John Henryism analyses to 131.

RESULTS

The results of this investigation are presented in two parts. The first part deals with the combined effects of education and John Henryism on blood pressure, and the second part focuses on the empirical meaning (i.e., preliminary construct validity) of John Henryism Scale scores in this sample of men.

Education, John Henryism, and Blood Pressure

Consistent with the findings of other investigators, education and blood pressure were inversely correlated in this study population. Main effects were observed for both systolic and diastolic blood pressures. However, following adjustments for age, body mass, time of day, etc., the differences in systolic blood pressure were no longer statistically significant at the 0.05 level. Figures 1 and 2 summarize the data, for education, for both unadjusted and adjusted mean values of blood pressure.

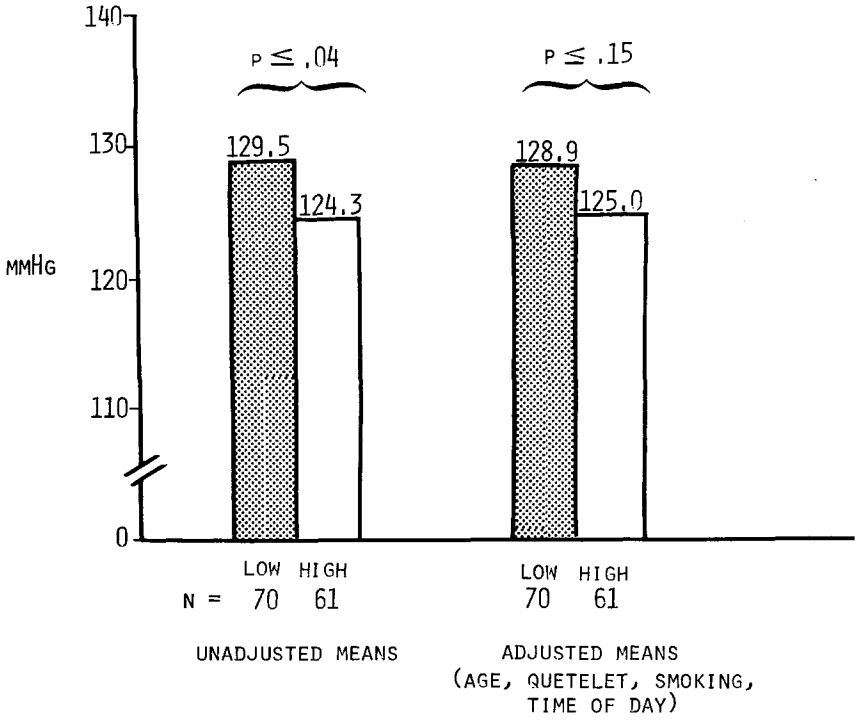

Fig. 1. The effects of education on systolic blood pressure (mm Hg).

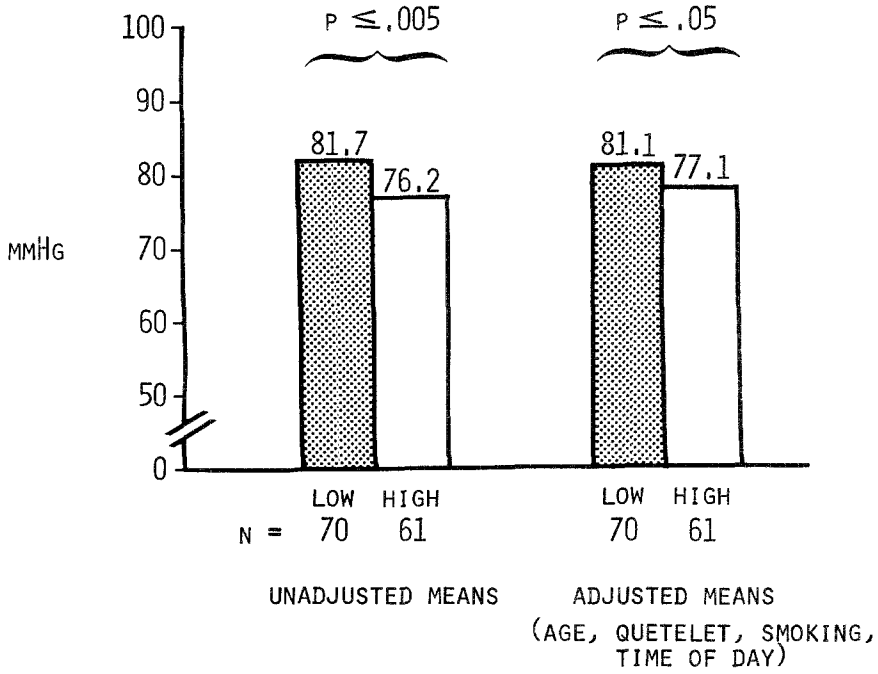

Fig. 2. The effects of education on diastolic blood pressure (mm Hg).

No main effects were observed for John Henryism. The adjusted means for diastolic blood pressure were 79.7 (Low JH) and 78.4 (High JH). Adjusted systolic values were also highly similar—127.1 (Low JH) and 126.8 (High JH). However, when blood pressure means were compared among the four contrast groups, the results were in line with the prediction; i.e., the High JH–Low Education men had the highest adjusted values, for both systolic and diastolic blood pressure. Using standard, pairwise *t* tests to compare the blood pressure values of this group of men with those of each of the other three groups, statistically significant differences were observed for contrasts involving High JH–Low Education men versus High JH–High Education men. For systolic blood pressures, means for the two groups differed at the 0.05 level, while for diastolic pressures, group means differed at the 0.03 level.[7] When these significance levels were corrected by the Bonferroni multiple comparisons test (see Neter and Wasserman, 1974),

[7]Exclusion of the treated hypertensives and the full-time students did not substantially change these results; hence, all respondents were retained in the analyses to enhance the generality of the study findings.

Table III. Mean[a] Systolic and Diastolic Blood Pressures (mm Hg) for the Four Education–John Henryism Groups

Group	N	Education	John Henryism	SBP	DBP
(1)	35	Low	Low	127.3	80.6
(2)	35	Low	High	130.5	81.5
(3)	30	High	Low	126.9	78.9
(4)	31	High	High	123.1	75.2

SBP, joint significance level			DBP, joint significance level		
Group	$\alpha \leq 0.05$	$\alpha \leq 0.10$	Group	$\alpha \leq 0.05$	$\alpha \leq 0.10$
2 vs 1	ns	ns	2 vs 1	ns	ns
2 vs 3	ns	ns	2 vs 3	ns	ns
2 vs 4	ns	ns	2 vs 4	ns	Significant

[a] Means adjusted for age, Quetelet index (wt/h^2), time of day, and smoking.

however, only differences in diastolic pressures reached joint statistical significance at $P \leq 0.10$. The mean blood pressure values for the four groups are shown in the top half of Table III. The results of the Bonferroni multiple comparisons test are shown in the bottom half of the table.

Correlates of John Henryism

An assessment of simple, bivariate correlations for the total sample ($N = 131$) revealed that John Henryism Scale scores were positively and significantly correlated with age and a host of age-related variables. These included being married, having children, being employed, holding a higher-status and better-paying job, and being a frequent church attender. It was thus not too surprising when scale scores were also found to be negatively correlated with education since, in many rural, Southern communities, education and age are inversely correlated.

To obtain a clearer picture of the independent contributions made by age, education, and related life-style variables to John Henryism scores in this sample, a general linear model was constructed wherein scale scores were regressed upon select demographic, health, and psychosocial variables[8] for the 131 men. The full model was significant ($F(13, 117) = 2.78$,

[8] The demographic predictors were age, education, and employment status (students were considered to be unemployed). The health predictors included number of cigarettes smoked daily, frequency of alcohol consumption, their doctor's view of their health (very good . . . very poor), and single item measures of life satisfaction and, given their age, self-perceived physical shape. The psychosocial predictors included frequency of church attendance, marital status, number of children, number of close friends, and a single item measure of how often they have trouble making ends meet (i.e., income adequacy).

$P \leq 0.002$, $R^2 = 0.24$) but only the standardized beta for education (-0.13) approached statistical significance ($P \leq 0.06$). As the negative sign indicates, education and John Henryism remained inversely correlated even after controlling for the influence of age and other variables.

Since the work situation, generally, and the motivational theme of hard work, in particular, played such an important role in the formulation of the John Henryism concept, it might be anticipated that a regression model which included more specific information on the individual's psychological involvement with his job might prove to be more illuminating than the model presented above. Since detailed information on the work situation (e.g., perception of job success, job security, etc.) was collected only for the 81 currently employed men, this subgroup provided the data for an exploration of the relationship between John Henryism Scale scores and the work environment.

After deletion of employment status as a variable, eight job-related variables were added to the list of predictors (see footnote 8) of John Henryism Scale scores. These were (1) how often the man's job brings out the best in him; (2) how often the job tests his mental and physical skills (job challenge); (3) how often he worries about losing his job (job security); (4) how highly he rates his job skills in comparison to those of other workers; (5) his perceptions of his job success; (6) the importance he attaches to job success; (7) his annual income; and (8) his Hollingshead job status score (a measure of occupational prestige).

Given the large number of predictors in relationship to the sample size, a series of step-wise forward and backward regression analyses was conducted to identify, in a preliminary way, the most important ($P \leq 0.10$) predictors of John Henryism. Subsequently, the entire set of 20 predictors was subjected to a general linear models procedure in order to obtain standardized regression coefficients. The results from the two regression analyses were virtually identical. Using the standardized betas, Table IV summarizes the strength of the association between each of the most important predictors and John Henryism Scale scores.

The full regression model to which Table IV refers was highly significant ($F(20, 60 = 3.97$, $P \leq 0.0001$, $R^2 = 0.57$), with practically all of the variance being explained, as indicated in Table IV, by job-related variables rather than by age-influenced life-style variables. It is interesting to note, however, that even with these refined multivariate analyses, the association between education and John Henryism remained negative.

In combination with the results concerning the effects of education and John Henryism on blood pressure, these findings on the correlates of John Henryism provide some preliminary support for the validity of the scale. Predictive validity is indicated by the association of John Henryism with higher blood pressure levels when education is low. Preliminary construct validity is indicated by the fact that the work setting—the arena

Table IV. Variables Related to John Henryism Scale Scores Among Employed Men ($N = 81$)

Variable	Standardized beta	SE of beta	Partial F
Job brings out best	1.02	0.24	18.26****
Hollingshead job status score	0.57	0.19	8.82***
Education	−0.19	0.07	7.12**
Social comparison of job skills	0.47	0.22	6.84**
Physical shape, for age	0.51	0.26	3.83*
Job success important	0.53	0.28	3.68*

*** $P \leqslant 0.0001$.
*** $P \leqslant 0.005$.
** $P \leqslant 0.01$.
* $P \geqslant 0.05 < 0.10$.

which offers the major rewards for hard work and determination—also provides the strongest predictors of John Henryism in this sample of working-class, black males. On the negative side, internal consistency analyses performed on the scale indicate that it has an alpha coefficient (Cronbach, 1951) of only 0.45. This means that additional work is needed to improve the scale's content validity and to reduce the contribution of error variance to total scores.[9]

DISCUSSION

The results of this study provide confirmation that education protects against higher blood pressure levels in high-risk populations. In this instance, the population is a group of southern, semirural, working-class, black men. In addition, new data are presented which suggest that, at low education levels, self-perceptions of environmental mastery (i.e., John Henryism) are associated with higher blood pressure levels. While acknowledging that education can influence hypertension risk through dietary habits and weight control (Ostfeld and D'Atri, 1977) or through how anger is managed (Harburg *et al.*, 1979; Gentry *et al.*, 1982), one possible

[9]The relatively low alpha coefficient is attributed to three main factors: (1) an item heterogeneity which is too high, given the scale's brevity; (2) a restricted range of response options per item; and (3) a mixture of motivational and attitudinal content in scale items. These limitations have been addressed in a revised version of the scale which is now called the John Henryism Scale for Active Coping (JHAC). The JHAC contains the original eight items (some of which have been reworded), plus four new items. Also, the number of response options, per question, has been increased from three to five. The reliability and validity of the JHAC are now being tested under both laboratory and field conditions.

explanation for these results is that education actually minimizes excessive automatic arousal in day-to-day life. First, one could argue that higher levels of education enable the individual to appraise more accurately an environmental stimulus as potentially positive, irrelevant, or truly threatening to his well-being (see Lazarus and Launier, 1978). Second, in the event that the stimulus is appraised as threatening, education may equip the individual with intellectual and material resources which can be used to eliminate the threat through fight or flight behaviors, or through some flexible combination of the two (see Caplan, 1981). Thus, it seems reasonable to propose that a behavioral stressor will be viewed as more or less difficult to control in direct proportion to the availability of effective appraisal and coping resources. Objectively speaking, the more education an individual has, the more controllable the routine behavioral stressors in his environment should be, with the result that the ordinary life conditions described by Ostfeld and Shekelle (1967) as likely to give rise to pressor responses should occur with less frequency. In these circumstances, a strong sense of environmental mastery, as measured by the John Henryism Scale, seems fully justified and may confer additional protection against chronically high levels of autonomic arousal. This may be one reason why men who were high on both education and John Henryism had the lowest blood pressures of any group in this study population.

In technologically developed societies such as the United States, men low on education but high on a sense of environmental mastery are in quite a different situation. They are likely to experience greater difficulty in appraising and controlling the routine behavioral stressors present in ordinary life experiences as a result of their lower levels of education. Even if they occasionally achieve success through hard work and determination (i.e., John Henryism), chronic uncertainty about the outcome of future encounters, combined with strenuous active coping to maintain a sense of control, could promote neuroendocrinal changes (e.g., discharge of catecholamines) which may increase the risk of becoming hypertensive. While this explanation is admittedly speculative, and limited by the cross-sectional nature of the study design, it is consonant with the theoretical positions outlined by Ostfeld and Shekelle (1967), Weiner (1979b), Light (1981), and Tyroler and James (1978).

For the employed men in this study, a strong sense that they can meet the demands of their environment through hard work and determination seems closely tied to their perceptions of their job situations. More specifically, men holding more highly skilled positions and men who felt that the daily challenges of their jobs have helped them to develop in personally valued ways scored higher on the John Henryism Scale. With the exception of education, demographic and life-style variables (including measures of life

satisfaction and social support) do not appear to be related to John Henryism. Considering that the central problem in the John Henry folktale (the major source of scale items) is man's relationship to his work, these results, in retrospect, are not too surprising. Moreover, contributions by Erikson (1950) and, more recently, Levinson (1978), Kohn and Schooler (1978), and Vaillant (1981) support the common-sense idea that meaningful work is extremely important for psychological health and for learning about and improving upon one's personal competencies. This point also helps to clarify why education and John Henryism were inversely correlated in this study population.

As suggested previously, younger men scored lower than older men on the John Henryism Scale; and, as is true for many rural communities and small towns in the South, the younger men in this community were also better educated than the older men. They were also less likely to be employed. In fact, the unemployment situation for younger men in the study community, and environs, was particularly acute during the time data for this study were collected (winter, 1980–1981). The economic situation was deteriorating rapidly throughout the region. Men without jobs had great difficulty finding work, and men with jobs were becoming increasingly concerned about their prospects for continued employment. Thus, men new to the job market, even though they might be better educated than older workers, were at a higher risk of being unemployed during the time of this community survey. This is probably the major reason why 43% of the nonstudents under 30 years of age in the study community were unemployed. If meaningful participation in the labor force is a major determinant of John Henryism, for men, then some of the better-educated men in this sample might have scored lower on the John Henryism Scale because they have not yet been able to immerse themselves in challenging life experiences which, given favorable outcomes, promote a sense of environmental mastery.

However, there is reason to suspect that lack of work experience is not the whole story. Among the 81 employed men, also, education was inversely correlated with John Henryism. This relationship is probably best explained by the fact that the strongest predictors of John Henryism among employed men in this sample, namely, a feeling that one's job brings out one's best qualities, was also inversely correlated with education. For reasons that must remain conjectural, the better-educated, working men in this sample felt less challenged by, and possibly more alienated from, their jobs than the less well-educated men. Of potential relevance to this issue is the fact that 98% of the working men were employed in semiskilled and unskilled occupations. It is likely that some of the better-educated men found the jobs currently available to them in the area to lack the challenge and the

opportunities for advancement that could promote a stronger sense of John Henryism. One might therefore hypothesize that the negative association between education and John Henryism observed in this study population has strong situational determinants. That is, the negative association could also be a consequence of certain historical and regional forces which, at least for the present, dictate that opportunities will be limited for rural, southern, black men to obtain jobs which match their educational preparation and aspirations. This perspective is intended to be dynamic rather than static. It anticipates that with increased industrialization of the rural South, opportunities for more highly skilled and challenging jobs for black workers will improve. This perspective also suggests that for employed members of the white majority in the United States, and for black Americans in more favorable employment situations, education and John Henryism should not be negatively correlated.

In conclusion, while efforts were made to control for variables which could have biased the results of this study, it is still possible that the four comparison groups were not comparable in some important way. They could have differed, for example, in the proportion of members with a positive family history of hypertension. In fact, family history data were collected, but too many of the older men expressed doubts about the accuracy of such data to justify using them in the analyses. Thus, a study which examines the contribution that John Henryism makes to predicting blood pressure level after stratifying on both education and family history of hypertension is one of the important topics for future research. The combined effects of education and John Henryism on blood pressure were the subject of this report. Future papers in this series shall examine the extent to which the relationship between John Henryism and blood pressure is mediated by social supports, the work environment, and anger-coping styles.

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