

JOHN HENRY ACTIVE COPING, EDUCATION, AND BLOOD PRESSURE AMONG URBAN BLACKS

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The John Henryism hypothesis posits that individuals who actively cope with psychosocial stressors in the face of low socioeconomic resources are more likely to exhibit higher blood pressure levels than those with greater socioeconomic resources. It has been proposed that John Henryism may contribute to the disproportionately high rates of hypertension among blacks. Previous studies which support the John Henryism hypothesis have been conducted among blacks who reside in primarily southern rural settings. However, more recent studies conducted among urban blacks, have yielded contrasting results. This study examined the John Henryism hypothesis in a middle-aged urban sample of blacks in south Florida. The results of the study confirmed that there is indeed a relationship among John Henry Active Coping, years of education, and blood pressure among urban blacks in south Florida. Upon closer examination, higher John Henry Active Coping scores were associated with higher systolic and diastolic blood pressure among higher educated men, and John Henry Active Coping scores were associated with higher systolic and diastolic blood pressure among women with lower levels of education. The findings are discussed in terms of sociocultural factors that may influence the coping styles of black men and women in different communities and environments. (*J Natl Med Assoc.* 2004;96:246–255.)

Key words: John Henryism ♦ education
♦ blood pressure ♦ blacks

INTRODUCTION

Population-based surveys indicate that black adults in the United States experience disproportionately higher rates of hypertension than their white counterparts, with 38.0% of black men compared to 28.9% of white men, and 41.0% of black women compared to 24.7% of white women suffering from hypertension¹. Consequently, a variety of

hypotheses have been proposed to account for this disparity in hypertension prevalence, including biological and genetic factors,²⁻⁶ which have not consistently provided support for the disparity.

James and colleagues⁷ proposed a psychosocial construct, “John Henryism”, to explain the ethnic disparity in hypertension prevalence. These researchers developed the John Henry Scale for Active Coping (JHAC12) to assess an individual’s predisposition to cope actively with psychosocial stressors. The JHAC12 is a 12-item trait-based scale based upon the legend of John Henry that incorporates the following themes: 1) efficacious mental and physical vigor, 2) a strong commitment to hard work, and 3) a single-minded determination to succeed.

John Henryism is an interactive construct which suggests that individuals of low socioeconomic status (SES) who frequently address psychosocial stress by actively coping have sustained high blood pressure levels. This idea is controversial because it opposes extensive literature which suggests that

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Table 1. Descriptive Statistics for the Entire Sample and for Men and Women

Variables	Total Sample (N=124)	Men (N=69)	Women (N=55)
Systolic blood pressure (mmHg)	125.4(±18.41)	126.1(±18.87)	124.5(±17.96)
Diastolic blood pressure (mmHg)	79.8(±15.26)	80.4(±15.51)	78.9(±15.04)
Age (years)	35.6(±6.28)	34.8(±6.05)	36.6(±6.46)
BMI**	27.1(±6.18)	25.2(±4.67)	29.4(±7.03)
Education (years)	13.6(±2.48)	13.5(±2.24)	13.8(±2.77)
JHAC12	30.1(±3.30)	30.2(±3.41)	30.0(±3.19)
Income* ¹ (dollars)	17,803(±12,771)	13,671(±8,977)	21,418 (±14,585)

*Men and women differ, p=0.0359
** Men and women differ, p=0.0002
¹Note: Due to different assessment techniques in the measurement of this variable across cohorts total n=45; n=24 for men and 21 for women.

active coping is adaptive and health promoting⁸⁻¹⁶. However, John Henryism is associated with negative health outcome, because it includes both an individual's active coping style as well as limited economic resources to control a stressor. Thus, it should be kept in mind that John Henryism involves persistent active striving in the face of socioeconomic hardship or inequity, resulting in adverse health behaviors, status, and/or outcomes.

Early research on the John Henryism hypothesis focused exclusively on rural southern populations and supported a relationship among high JHAC12 scores, low SES (usually operationalized as education), and higher blood pressure levels^{7,17}. More recent studies conducted among urban and/or non-southern populations have been inconsistent.¹⁸⁻²³ For example, James and colleagues¹⁹ examined a large sample of blacks in eastern North Carolina and did not find significant differences in blood pressure levels between low and high SES groups with high JHAC12 scores. Instead, they found that for subjects scoring low on the JHAC12, hypertension prevalence was greatest among those in the high SES category relative to any other JHAC12 score by socioeconomic group. In a study conducted in the Raleigh-Durham-Chapel Hill area of North Carolina researchers found that black and white women who had high John Henry active coping and high-status jobs exhibited higher on-the-job and laboratory blood pressure than other women.²⁰ They also observed that the majority of high-SES women exhibited the trait of John Henry active coping. The researchers, however, did not observe an inverse relationship between SES and blood pressure. The lack of an inverse relationship between SES and

blood pressure may have contributed to their inability to replicate findings of other studies conducted among samples from a similar geographical area.^{7,17}

Reasons why other studies have failed to support the John Henryism may be due to a variety of factors, such as failure to include a socioeconomic indicator, failure to control for risk factors of hypertension, and inappropriate samples (i.e., subjects within an inappropriate age range).²¹⁻²⁵ In the most recently published study on John Henryism and blood pressure among an urban sample of southern blacks²⁶, researchers did not find support for an association between the interaction of SES (utilizing education as a proxy for SES) and John Henry active coping on blood pressure (controlling for age and body mass index). However, they did find support for an interaction between gender and John Henry active coping on blood pressure, such that there was a positive correlation between John Henry active coping and blood pressure in men; whereas increases in John Henry active coping were associated with decreases in blood pressure in women. A reason for the failure of Dressler and colleagues to establish a relationship between John Henry active coping and education on blood pressure may have been their inclusion of subjects diagnosed with hypertension who were on hypertensive medication (mean systolic blood pressure of 134.5 mmHg and mean diastolic blood pressure of 87.7 mmHg). Including subjects whose blood pressure was controlled by antihypertensive medications may have restricted the range of blood pressure values examined—thus limiting their ability to find differences between groups.

This study sought to address whether healthy subjects with low levels of education and high

Table 2. Correlations of Descriptive Variables for Men

	BMI	JH	Age	Education	SBP	DBP
BMI	1.00					
JH	-0.29*	1.00				
Age	-0.13	-0.14	1.00			
Education	-0.11	0.05	-0.03	1.00		
SBP	0.31**	0.06	0.03	0.09	1.00	
DBP	0.30**	-0.05	-0.05	0.07	0.79**	1.00

*p<0.05 ** p<0.01

JHAC12 scores would exhibit higher blood pressure levels than other JHAC12 scores by education groups in an urban sample of middle-aged black men and women from the urban area of south Florida. Focusing on an urban sample of middle-aged adults is most relevant to the John Henryism hypothesis, because it is often within the urban arena and during mid-life where one's struggle to succeed within a social environment on a micro- as well as macro level is most felt and the opportunities and resources to succeed are most available. Thus, examining the John Henryism hypothesis within this population should provide a better understanding of the contextual framework under which John Henryism operates.

METHODS

Subjects

This study used a sample constructed by a merging of two cohorts from studies examining risk factors for hypertension conducted from 1986 to 1991. Subjects were recruited from Miami-Dade County, FL, through community blood pressure screenings and advertisements in newspapers. All subjects were healthy native English speakers. If a subject was taking a prescribed blood pressure medication, they were weaned off (under the guidance of a physician) for a minimum of two weeks to be eligible to participate in the study. Participants were excluded if they were taking other prescription medication and had a history of medical problems, such as diabetes, heart disease, cancer, kidney disease, dizziness, and/or any other cardiovascular disease or chronic physical

illness. One-hundred-forty-seven black subjects (83 men and 64 women) ranging in age from 25 to 54 served as potential subjects.

John Henry Active Coping Scale

The JHAC12 is a 12-item Likert-type scale that measures a behavioral or strong personality predisposition to cope actively with psychosocial stressors in one's environment¹⁸. The John Henry active coping score is the sum of the values assigned to each of the 12 responses. In keeping with the scale's guidelines, scores are dichotomized at the median to categorize respondents into high and low John Henry active coping groups. Scores that fall above the sample median connote mental and physical vigor, tenacity, and a strong sense of personal efficacy when confronting psychosocial environmental stressors. Reliability coefficients for the JHAC12 from community-based adult samples range from the low 0.70s to the low 0.80s^{18,26}. Scores tend to increase modestly with age, plateauing in the late 40s and early 50s. Blacks have been observed to score higher than whites on John Henryism; however, among blacks, men and women tend to score similarly (James, personal communication, April 7, 2001).

Likert-type scale response options for the JHAC12 were different for the two project cohorts included in the study: 1) the original 12-item three-option Likert-type version with the response options of "not true", "somewhat true", and "very true"; and 2) a 12-item four-option Likert-type version with the response options of "I disagree a lot", "I disagree a little", "I agree a little", and "I agree a lot". To be consistent with the most recently published study on

Table 3. Correlations of Descriptive Variables for Women

	BMI	JH	Age	Education	SBP	DBP
BMI	1.00					
JH	-0.14	1.00				
Age	0.30*	0.02	1.00			
Education	-0.27*	-0.10	0.10	1.00		
SBP	0.33*	0.14	0.16	-0.34**	1.00	
DBP	0.30*	0.07	0.18	-0.27	0.83**	1.00

*p<0.05 ** p<0.01

John Henryism,²⁵ the responses for the four-point response option version were collapsed into a three-point response. Thus, subjects who selected the response, “I disagree a little” or “I agree a little” on the four-option response version of the scale were transformed to “somewhat true” on the three-option response version of the scale. The responses of “I disagree a lot” and “I agree a lot” from the four-option scale were respectively transformed to “not true” and “very true” on the three-item response version of the scale. This procedure did not markedly affect the reliability of the scale, as the internal consistency reliability in the present study is consistent with other reports Cronbach’s $\alpha=0.69$. (Fernander et al.²⁷ examined the psychometric properties of the scale among 75 African Americans and 129 white Americans and found support for the use of this scale in an urban south Florida population).

Procedure

On the first day of each research protocol, after providing informed consent and following their physical examination and measurement of height and weight, each subject’s blood pressure was assessed in the medical unit of a research laboratory. After resting initially for five minutes, three blood pressure readings were taken on the right arm by a nurse at two-minute intervals using a mercury sphygmomanometer. The average of each subjects’ blood pressure readings served as their casual resting blood pressure. Subjects completed the JHAC12 and a demographic questionnaire, including an assessment of years of education, on the second day of the research study.

Preliminary Analyses

The data set was examined to determine which specific data fields were missing. Analyses included those subjects who had complete data for the JHAC12, casual systolic and diastolic blood pressure, and level of education. Twenty-three participants had missing data on at least one of the above listed variables, and 124 subjects with complete data were included in the study.

Results

Descriptive statistics for the entire sample, split by gender, are shown in Table 1. T-tests revealed a significant difference on BMI between men and women, with women exhibiting greater BMI. There were no other significant differences found on any of the other descriptive variables measured on a continuous scale. The majority (86%) of the sample reported a positive family history of hypertension, and 53% reported they were smokers. Due to the lack of correspondence between the two cohorts in assessing marital status, we provide information on marital status only for descriptive purposes: of the 66 subjects (38 men and 28 women) with data on marital status, 37% of the men and 25% of the women reported they were married.

As can be seen in Tables 2 and 3, Pearson correlations revealed an inverse relationship between education and systolic and diastolic blood pressure for women but not for men. BMI was significantly positively correlated with age and blood pressure and negatively correlated with education among women. However, among men, BMI was significantly positively associated with blood pressure and negatively

Table 4. Summary of Regression Models

	DF	Type I SS	F	P-value
<i>Systolic Blood Pressure</i>				
BMI	1	3265.66	11.43	0.00
Gender	1	886.86	3.10	0.08
Education	1	91.39	0.32	0.57
JH	1	1081.00	3.78	0.05
Education x Gender	1	1064.14	3.72	0.06
JHAC12 x Gender	1	24.52	0.09	0.77
Education x JHAC12	1	22.70	0.08	0.79
Education x JHAC12 x Gender	1	2407.04	8.42	0.00
<i>Diastolic Blood Pressure</i>				
BMI	1	1911.57	9.08	0.00
Gender	1	617.95	2.93	0.09
Education	1	30.04	0.14	0.71
JH	1	106.66	0.51	0.48
Education x Gender	1	438.26	2.08	0.15
JHAC12 x Gender	1	63.34	0.30	0.58
Education x JHAC12	1	239.81	1.14	0.29
Education x JHAC12 x Gender	1	1018.61	4.84	0.03
Note: error df = (115)				

correlated with JHAC12 scores. As expected, there were significant correlations between diastolic and systolic blood pressure among both men and women.

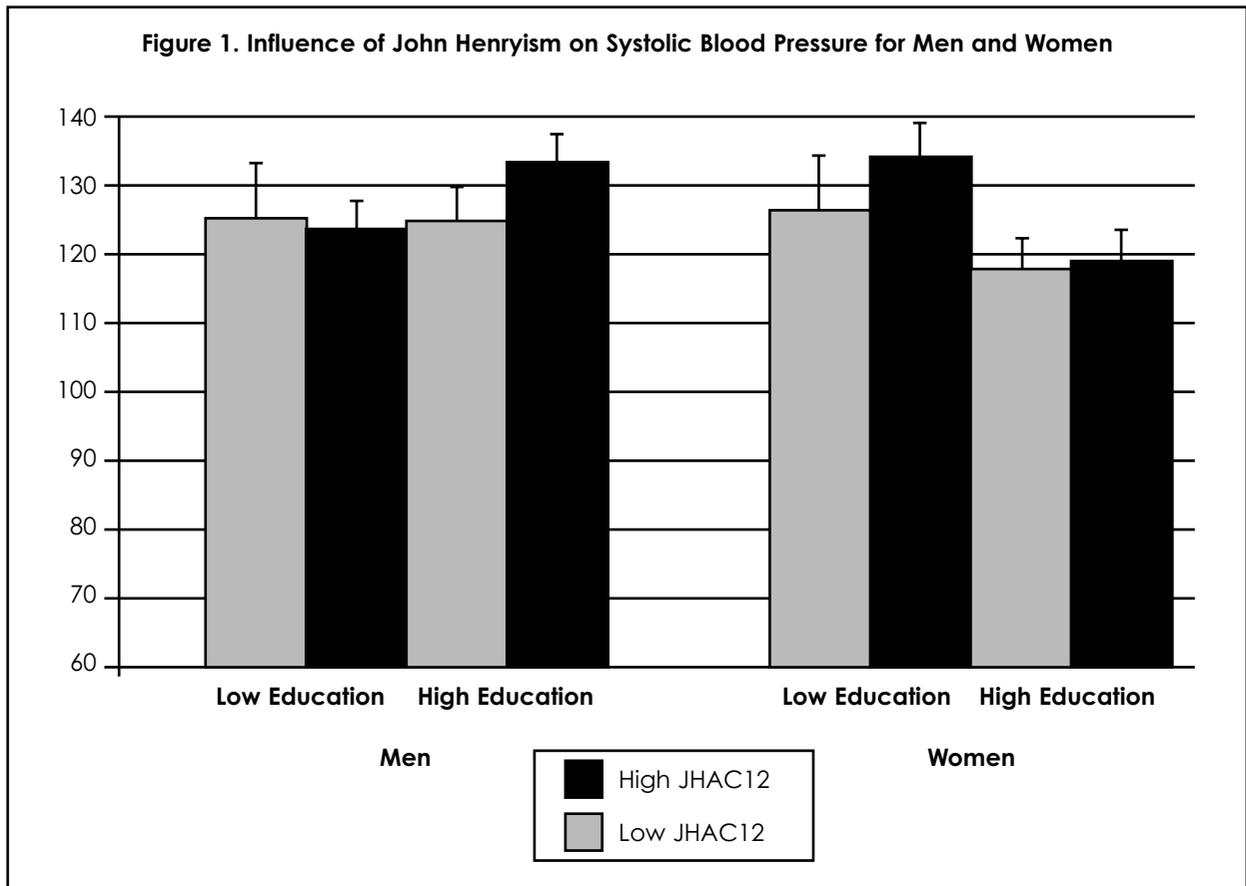
To test the John Henryism hypothesis, we used multiple regression approaches to the general linear model. Consistent with early studies on the John Henryism hypothesis, SES was operationalized as educational level. For the analyses, the dependent variables were average systolic and diastolic blood pressure. The study also controlled for BMI (a well-known risk factor for hypertension) to determine whether the combination of active coping and educational level yielded significant differences in blood pressure. Independent variables were BMI, gender, years of education, and JHAC12 score. Interaction terms entered into the model included education x gender, JHAC12 score x gender, JHAC12 score x years of education, and JHAC12 score x years of education by gender (see Table 4). The interaction term of education x JHAC12 x sex was significant for both systolic and diastolic blood pressure ($p=0.00$ and $p=0.03$, respectively).

In order to describe the findings and discuss the shape of the three-way interactions, it was necessary to dichotomize subjects into high and low JHAC12 scores and high and low educational levels. To be consistent with previous operationalizations of John

Henryism as well as to try to avoid “aggregation bias”²⁶, relative median splits were used to dichotomize subjects into high and low groups for each variable. The median split for education was 13 years or less, whereas the median split for the JHAC12 was a score of 30 or less for both men and women. For both systolic and diastolic blood pressure, the regression analyses revealed a statistically significant three-way interaction (education x JHAC12 x gender). The shape of the above interaction is graphically depicted in Figures 1 and 2. Higher JHAC12 scores were associated with higher blood pressure levels for men with high levels of education and for women with low educational levels.

DISCUSSION

This study examined the John Henryism hypothesis on blood pressure in an urban population of middle-aged black men and women. The population in which James and colleagues first demonstrated the importance of John Henryism on blood pressure was located in the rural south, where it was demonstrated that less educated John Henry active copers had higher blood pressure levels than more educated John Henry active copers.^{7,17} The current study’s findings must be considered in light of the fact that early studies in support

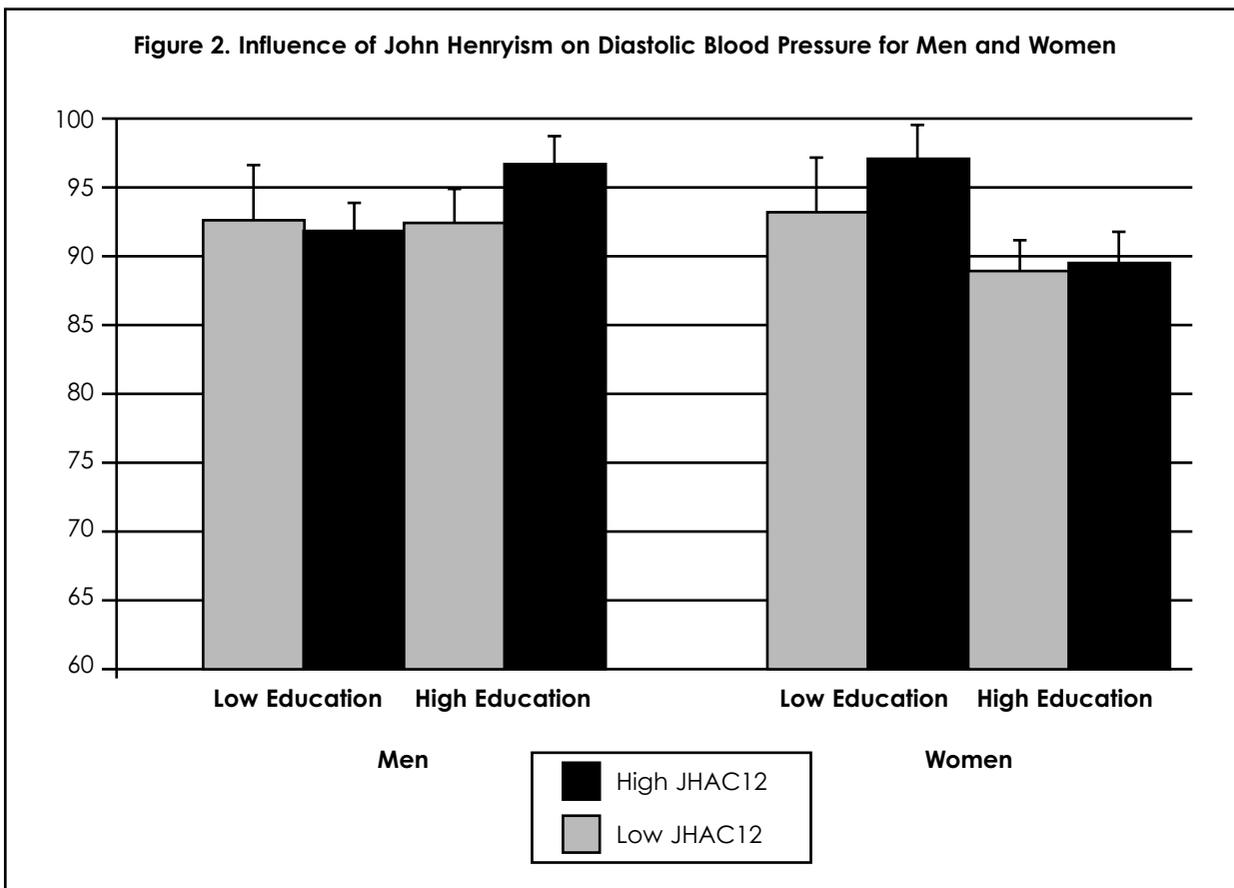


of the John Henryism hypothesis were almost exclusively conducted among southern, rural, relatively low SES men. The present study included a middle-aged sample drawn from the urban south Florida area. The present study revealed that high John Henry active coping is related to higher blood pressure levels in women with lower levels of education (consistent with the hypothesis); whereas for men, high John Henry active coping is related to elevated blood pressure levels only among those with higher levels of education (inconsistent with the initial proposed John Henryism hypothesis).

Why the differential effects of John Henryism by gender? It is noteworthy that in the current study, support for the John Henryism hypothesis was found among women for whom an inverse association between blood pressure and education was found, and not among men, for whom an inverse association among blood pressure and education was not found. The John Henryism hypothesis proposes to contribute to the delineation of disparity over and above other established risk factors in the rates of hypertension among blacks compared to

whites. It has been well established that there is an inverse association between SES and blood pressure. That is, all other things being equal, those of a lower SES are more likely to have higher blood pressure levels than those of a higher SES. The current findings, in addition to Light et al.²⁰, where an inverse association between blood pressure and SES was not found and, thus, support for the John Henryism hypothesis was not found, help to establish that John Henry active coping moderates the impact of SES (in this case, education) on blood pressure.

Another explanation for the differential findings by gender is that the social realities of discrimination, negative representation in the media, and racism appear to impact black males more than black females and may be significant contributing factors to negative health behaviors and status (i.e., unemployment, stress, adaptation, substance abuse, and violence). Furthermore, it could be suggested that the higher a nonmajority individual's social status, the more of a threat that individual presents to those within the majority. In addition, the assessment of and the expectations for behavior are rarely



the same across gender. For example, a black male coping in an assertive or persistently active manner in a majority-dominated occupational or social setting may appear more threatening than a similarly behaved female counterpart, leading to more external and internal discord. Thus, the higher a black male's level of education, perhaps the more detrimental the psychological and/or physical health consequences as a result of utilizing an active coping style in response to stressors. What has yet to be clearly delineated is what aspect(s) of active coping is (are) psychologically and/or physically detrimental for the black male with higher socioeconomic resources and in what environments.

Why did the present study's findings not replicate earlier studies conducted on the John Henryism hypothesis? An explanation for the failure to replicate findings by Dressler and colleagues³⁴ may be due to the sociocultural context from which the samples were drawn. Dressler and colleagues report that their sample was drawn from Tuscaloosa, AL, which is a typical southern community, whereas, urban south Florida is unique in that it is reflective of a

multinational community with sociodemographics that appear to be atypical of many southern states. South Florida is a melting pot of a variety of cultures, including Caribbean, South American, Latin, and European. Furthermore, the community within south Florida appears to be considerably more socioeconomically advantaged and more technologically advanced than typical southern communities. The JHAC12 may tap differently into the coping techniques among urban versus rural blacks. The social, economic, and cultural patterns may be quite diverse between rural and urban black environments, requiring quite different coping patterns. We agree with James and colleagues¹⁹ proposition that stressors due to social differences between urban versus rural communities may explain inconsistent findings across regions and assert that the demands between urban and rural communities will always be different, with both communities consistently making relative adjustments as advances come along. Dressler and colleagues²⁶ point out that cultural expectations dictate social behavior, which, in turn, attributes meaning to behaviors. The stressors and

pressures associated with fast-paced urban environments may cause individuals to tap into coping resources differently than those who live in rural communities. Schell²⁸ notes that among the socioeconomically disadvantaged in urban environments culture allocates risks disproportionately to some individuals and groups and in some urban environments culture may be seen as adding stressors to the environment. Williams²⁹ points out that urbanization is predictive of increases in blood pressure levels, and that stressors are related to the social, political, and economic structures in one's environment. Pearlin and Schooler³⁰ state that:

“... social structural conditions not only discriminate in placing more strain on some groups of people than others, but they seem well to cause the very segments of society that are under the greatest strain to have less effective coping repertoires. It is a striking fact that groups most exposed to hardship are also least equipped to cope with it gives some urgency to understanding better the processes by which people are led toward or away from various coping resources and responses” (p. 18).

Limitations and Future Directions

The present study did not control for other known risk factors of hypertension, including alcohol use, physical activity level, family history of hypertension, and smoking status. In addition, a more rigid approach to blood pressure measurement would have contributed to the reliability of the study's findings (i.e., several blood pressure assessments on separate occasions, control for gender and ethnicity of the assessor, etc.).

Furthermore, the proxy variable of education as a primary SES indice may be limiting. Social class is not simply education, occupation, or income but incorporates many other social, cultural, and individual characteristics. A summary SES index that incorporates such factors (i.e., job status) may contribute to more consistent findings in the literature.

Another important issue is that of the cultural variation among the population of blacks in south Florida. Unfortunately, similar to other studies examining this construct among blacks in other regions across the United States, the study did not access the cultural diversity of the blacks represented in this community. It is possible that the sample studied included a widely heterogeneous group of

not just blacks but was reflective of the population of blacks who reside in Miami-Dade County, FL. This population includes relatively large communities of Caribbean blacks (Jamaicans, Haitians, Bahamians, and other West Indian groups), South American, Latino, and European blacks who may have different cultural assumptions regarding how African Americans cope with stressors in society. Future studies will need to examine whether there is cultural variability in the way that the diverse population of blacks in America utilize coping skills.

Given that the hypothesis proposes that individuals who attempt to cope actively with behavioral stress for prolonged periods of time under circumstances that are especially unfavorable to them, an assessment of the frequency of experiencing unfavorable stressors (i.e., racism) is also needed. Future research in this area might also examine whether different coping strategies are a result of variations in acculturation and assimilation into urban environments and technologically advanced communities. The relationship between blood pressure and John Henryism may be found only in communities with specific hypertension-related risk factors, particular age groups, particular SES and cultural mores, and geographical areas.

Coping cannot be examined without attention given to psychological resources and appraisals, such as internal locus of control, mastery, self-esteem, and other personality states and/or traits. “Instead of seeking universal ways of dealing with stress, they must consider individual differences in personality traits that affect the choice of optimal ways of coping”.³¹ It would be enlightening to further examine how other person variables, like trait and state anger, hardiness, anxiety, optimism, and perceived social support, influence John Henry active coping.

Folkman and colleagues³² note that it is not reasonable to discuss various forms of coping as adaptive versus nonadaptive without reference to the context in which it is used. The JHAC12 is a trait-based measure that assesses how individuals generally cope. It may be helpful to develop an ethnoculturally relevant measure that provides the opportunity to assess how people cope in a variety of stressful situations, including racially charged situations. Cooper³³ states that racism structures social and economic relationships. Thus, examining how blacks cope with the experience of racism, discrimination, prejudice, and their combined influence on blood pressure status may help to add insight into the relationship among SES, coping, and blood pressure among blacks.

Given the current study's limitations, the findings are noteworthy in that it has been commonly accepted that active coping and high SES are independent protective factors against negative health behaviors, status, and outcomes.³⁴⁻³⁷ Included among the study's strengths are control for risk factor of BMI, inclusion of males and females, determination of the direction and strength of the association between blood pressure and educational level, and examination of the hypothesis among a sample of middle-aged blacks, an appropriately aged population for whom the hypothesis was originally developed. What appears to be clear from the present study is that gender moderates the impact of John Henryism on blood pressure among urban blacks in south Florida. Clearly, research is revealing that an individual's sociocultural context is important in determining whether a coping style is efficacious.

FOOTNOTES

Key to the John Henryism hypothesis is that the vulnerability of lower SES individuals who persist with effortful active coping (John Henry active coping) are at increased risk for hypertension. Due to the inconsistent use of the term "John Henryism" in previous literature (some studies referring to the combined effect of John Henry active coping and a socioeconomic index, and others referring to John Henry active coping alone) we clarify that for the purposes of this study we use the term "John Henryism" to refer to the combined effect of John Henry Active coping and education on blood pressure and John Henry active coping to refer to active coping as measured by the JHAC12.

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