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The Epidemiology of Coping in African American Adults in the Jackson Heart Study (JHS)

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Abstract

Differences in coping within the African American population are not well understood, yet these differences may be critical to reducing stress, improving health and reducing racial health disparities. Using a descriptive, exploratory analysis of the Jackson Heart Study (N= 5,301), we examine correlations between coping responses, and associations between coping and demographic, socioeconomic, psychosocial and neighborhood factors. Overall, coping responses were not strongly correlated and patterns of associations between covariates and coping responses were largely inconsistent. The results suggest that coping varies substantially within this African American population and is driven mainly by psychosocial factors such as spirituality and interpersonal support. Understanding these complex relationships may inform strategies by which to intervene in the stress process to mitigate the effects of stress on health, and to identify vulnerable subgroups of African Americans that might need targeted interventions to reduce exposure to stressors and improve coping capacities.

Sharon Wyatt (deceased)

Conflict of Interest

The authors of this paper have no conflicts of interest to declare.

Compliance with Ethical Standards

Ethical Approval

The JHS was approved by the institutional review boards of Jackson State University, Tougaloo College, and the University of Mississippi Medical Center. All participants provided informed consent.

Keywords

Coping; stress; African American; discrimination; disparities; health

Despite the extensive body of research on coping, less is known about variation in coping within racial or ethnic groups [1, 2], and how characteristics of the individual and of the individual's socio-ecological context influences coping [3, 4]. There is a critical need for research that examines factors associated with variation in coping within racial/ethnic groups, as limited research suggests that coping methods used to regulate stressors vary by race/ethnicity and lived experience [2, 5]. These differences in coping patterns could have implications for understanding the drivers of health disparities. In particular, research that examines factors associated with differences in coping within African Americans – who are often exposed to high levels of stressors – is needed.

BACKGROUND

Coping is an integral element of the stress process [4, 6], in which individuals manage, or avoid the negative effects of an internal or external stimuli that is appraised as stressful [3]. In addition to modulating the impact of stressors, coping may have direct effects on health [7]. The most commonly used strategies have been classified as active or passive, and/or problem- or emotion-focused. Active, problem-focused coping (e.g., making a plan) has been identified as an effective strategy for avoiding distress in situations where people feel that they have control over the stressor. Passive, or emotion-focused coping (e.g., avoidance) is more often utilized in situations where individuals feel that the stressor is highly threatening, and where they have little control [8]. While this general understanding of coping is useful for determining how individuals might respond to stressors; coping is complex and is influenced by available coping resources, which vary based on individual, social and contextual factors [3, 6, 4].

Coping may be related to lived experiences and socializations that are established early in life [9]. Research suggests that African Americans may be more likely to cope with stressors by seeking social support [10, 5], relying on religion or prayer [11], or avoiding the stressor than White Americans [1]. Few studies have explored intra-group variation in coping [1, 12–14], which could help to identify coping responses that contribute to health among African Americans. This limited research has focused almost exclusively on adolescents or college students, or very small samples of adults [14, 15, 12, 13, 1]. In a small convenience sample of African American youth, for example, Scott et al. [13] found that problem solving coping strategies varied based on spirituality and optimism. Thus, psychological resources that vary within groups are likely to influence an individual's coping response. In addition, few researchers have examined differences in coping based on whether the stressor was due to race (e.g., racism, discrimination) or other sources (e.g., family, work). Brown and colleagues [1] found that individuals used a greater variety of strategies to cope with non-racial stressors than with racism, and that there was little overlap in these coping strategies. To combat non-racial stressors, individuals relied on more active coping strategies, while in response to racism they used forms of social and emotional support, religion and venting [1].

These results emphasize the importance of considering coping responses both to general and race-based stressors.

Establishing a more comprehensive understanding of coping among African American adults is important for several reasons. First, African Americans are exposed to more stress, and to more severe stressors over the life course than Whites [16, 17]. Second, most of the current research on coping in African Americans focuses on youth, which is not generalizable to older adults who may experience more frequent and severe stressors as they age, and may also perceive these stressors differently than younger individuals [18]. Third, in addition to experiencing greater exposure to chronic and acute stressors [19, 20], African Americans also endure the added burden of racism and discrimination, increasing their total stress burden over their lifetime [21, 22]. This may be particularly true for African American women who experience a dual burden of racism and sexism as described in theories of intersectionality [23]. Finally, African Americans also have worse health across a variety of health outcomes compared to other racial/ethnic groups [22]. These health disparities may be partially attributed to differences in exposure to stressors, maladaptive behavioral coping to handle stress, psychological distress, and physiological wear on the body (i.e., weathering) [24, 25].

We examine variation in coping responses, and explore the extent to which individual and socio-ecological characteristics are associated with coping responses in a large, population-based sample of African American adults in the Jackson Heart Study (JHS). Our specific research objectives are to: 1) describe the broad range of coping responses used by African Americans, including general coping and coping with discrimination; and 2) examine the patterning of coping by demographic and socioeconomic characteristics, psychosocial factors, experiences of discrimination, and neighborhood context. This exploration of coping will not be exhaustive, test formal hypotheses, or address all types of stressors and factors associated with coping. Rather, our objective is to begin to lay the groundwork to better understand coping responses among African American adults and to inform future hypothesis-drive research in this area.

DATA AND METHODS

Study population and design

Data from the JHS, a population-based cohort study of cardiovascular disease in African Americans, were used for this analysis. Data were collected from 5,301 non-institutionalized adults aged 20–94 living in the Jackson, Mississippi metropolitan statistical area during the 2000 and 2004 baseline examination. Data were collected at home and in clinic-based interviews, and more sensitive information was collected via a take-home questionnaire. Details of recruitment, study design, and data collection are described in detail elsewhere [26]. The JHS was approved by the institutional review boards of Jackson State University, Tougaloo College, and the University of Mississippi Medical Center. All participants provided informed consent.

Measures

Outcomes—*Problem- and emotion-focused engagement and disengagement coping* were assessed at baseline using the Coping Strategies Inventory Short Form (CSI-SF) [27], which consists of four 4-item subscales capturing problem-focused engagement (e.g., I make a plan of action and follow it) (α=0.67), emotion-focused engagement (e.g., I try to let my emotions out) (α=0.72), problem-focused disengagement (e.g., I hope the problem will take care of itself) (α=0.61), and emotion-focused disengagement (e.g., I tend to blame myself) (α=0.58). The 16-item measure was validated with populations in Jackson, MS [27]. Participants determined how often they typically handled or coped with stress using response options ranging from "never" to "almost always". The four subscales were created by summing the individual items within each dimension (range=0–20).

Religious coping was assessed by a single item at baseline. Participants were asked "To what extent is your religion or spiritual tradition involved in understanding or dealing with stressful situations in any way?" They responded using a 4-point Likert like scale ranging from "very" to "not at all", and responses were reverse coded with higher values represent a stronger reliance on religion for coping with stress (range=0–3).

High effort coping was assessed at baseline using the John Henryism for active coping scale [28]. The 12-item scale includes questions like "hard work has really helped me get ahead in life" and "when things don't go the way I want them to that just makes me work even harder." Participants responded using a 4-point Likert like scale ranging from "completely true" to "completely false. Responses were summed and reversed to create a total John Henryism score, with higher values representing a higher degree of coping (Cronbach's α=0.76; range= 0–36).

Coping with lifetime discrimination measures were adapted from a previously validated perceived racism scale [29]. Questions on lifetime experiences of discrimination were followed by a question about coping. Participants who experienced at least one instance of discrimination in their lifetime (86%) were asked to positively or negatively endorse 12 coping responses to lifetime discrimination in the baseline questionnaire. Active and passive coping discrimination subscales were created by grouping the items into two categories based on a framework suggested by Mellor (2004). Active coping was a sum of the following: speak up, try to change it, work harder to prove them wrong and get violent (range=0–4; Cronbach's α=0.63). Passive coping was a sum of the following: accept it, ignore it, blame yourself, keep it to yourself, avoid it, pray, and forget it (range=0–7; Cronbach's α=0.56). Higher values represented more reliance on the particular coping style.

Psychological factors—*Depressive symptomatology* was assessed at the baseline exam using the Center for Epidemiologic Studies Depression Scale CES-D (20 items) [30]. Participants were asked to report how often in the past week they felt or behaved in particular ways (e.g., I felt fearful, I had crying spells). Response options ranged from "rarely or none of the time" to "most or all of the time" and the items were summed to create a total symptomatology scale, with higher values representing more depressive symptoms (positive items are reverse coded) (Cronbach's α=0.82; range=0–60).

Global stress was measured by a Global Perceived Stress Scale (GPSS) that was created specifically for the JHS and was adapted from a recent life exposures scale by Kohn and MacDonald [31]. The GPSS is an eight-item scale that assessed the severity of chronic stressors over the past year in domains such as employment, health, and relationships [32]. Participants were asked to report the amount of stress they experienced over the past year for 8 chronic stressors, and responded on a 4-point Likert scale ranging from "not stressful" to "very stressful". An average of the responses for the 8-items was computed and used as the GPSS score (Cronbach's α=0.72; range 0–4).

Everyday discrimination was adapted from the David Williams' scale [33]. Participants were asked how often on a day-to-day basis they had various experiences of discrimination (e.g., treated with less courtesy, receiving poorer service than others at restaurants). Participants were asked to attribute this discrimination to age, gender, height/weight, race or something else. We did not limit our analysis to a particular attribution. Responses ranged from "never" to "several times a day" and the mean of the nine items was used as the everyday discrimination score, with higher values denoting more discrimination (Cronbach's α=.88). *Lifetime discrimination* was adapted from the scale by Krieger and Sidney [21]. Participants were asked to report occurrences of unfair treatment over the lifetime (yes/no) across nine domains (e.g., school, getting a job, at work). Like everyday discrimination, we did not restrict our sample to participants who reported discrimination based on race alone, and approximately 62% reported discrimination based on their race. The total count of experiences of unfair treatment was used as the lifetime discrimination score, where higher values denoted more discrimination (Cronbach's α=0.62; range=0–9).

Optimism was assessed using the revised version of the Life Orientation Test (LOT-R) [34] during the second annual follow-up exam, which occurred approximately two years after the baseline examination (2002–2006). Participants were asked to determine whether each of six statements were "a lot like me" to "not at all like me" based on a 4-point Likert like scale. Items included statements such as "I hardly ever expect things to go my way" and "in uncertain times I expect the best." Positively expressed items were reverse coded and the 6 responses were averaged to create an optimism score, such that higher values represent more optimism (Cronbach's α=0.64; range=1–4).

Cultural and Social resources—*Spirituality* was assessed using a six-item scale adapted from the Daily Spiritual Experience Scale (DSES), [35]. This item has been validated in the JHS, with high internal consistency (α>0.80) and adequate concurrent validity [36]. The DSES includes questions about the frequency ("never" to "many times a day") with which participants feel God's presence, feel deep inner peace and harmony, and are spiritually touched by the beauty of creation. The DSES score was created by summing the items (range = 0–30), such that higher values denote more daily spiritual experiences (Cronbach's α=0.85).

Interpersonal support was assessed using 16 items adapted from Cohen et al.'s [37]. Interpersonal Support Evaluation List (ISEL), which was designed to measure the perceived availability of tangible, appraisal, self-esteem, and belonging support. Four items reflected each type of support (e.g., "when I feel lonely, there are several people I can talk to," "most

of my friends are more successful at making changes in their lives than I am"). Negatively worded items were reverse coded such that higher values in the scale/subscales reflect more social support. The overall support scale was created by taking the mean of the 16 items (Cronbach's α=0.83; range=1.3–4).

Neighborhood characteristics—*Neighborhood socioeconomic status (SES)* was assessed at the census tract level using data from either the U.S. 2000 Census or the 2005–2009 American Community Survey (ACS), depending on which data source was closer the participant's baseline exam date. A principal factor analysis with orthogonal rotation of the 16 census variables reflecting education, occupation, income, wealth, employment, poverty and housing was conducted. The first factor retained (27% variance explained) was used as a measure of neighborhood SES in this analysis and includes: % bachelor degree, % managerial occupation, median home value, % high school (HS) education, median household (HH) income, and % HH income >$50,000. Higher values denote a worse neighborhood SES (range= −2.23-1.65).

Neighborhood social cohesion and *violence* were assessed using data from a neighborhood survey collected from JHS participants as part of annual follow ups between 2004 and 2008 and linked to JHS participant addresses at baseline. A total of 4,538 participants completed the survey. Neighborhood social cohesion and violence scales were created by conducting a factor analysis (maximum likelihood) on all 16 neighborhood survey items, which resulted in a social cohesion (5 items, α=0.77, range=2.57–3.25) and violence scale (4 items, α=0.78, range=1.03–1.89). Similar to prior work in the JHS [38], unconditional empirical Bayes estimates were calculated from the crude means of each scale at the census tract level, and adjusted for the age and gender distribution of the census tract, resulting in a more valid and reliable measure.

Demographic and socioeconomic factors—Participant age and sex were assessed at baseline. Income and educational attainment were assessed at the home induction interview. Participants were asked to select the appropriate income category for their total combined family income before taxes in the current year. Response options ranged from less than $5000 to $100,000 or more, and were grouped in dollar amounts that increased with increasing income (e.g., $12,000-$15,999 and $35,000-$45,999). The midpoint dollar amount of the income category was used as a continuous measure of annual family income ($112,500 used for >$100,000). Education was assessed by asking participants about the highest degree or years of school they completed, and education was categorized into less than HS, HS/some college and college/associates degree or higher. Marital status was created by combining categories of the original responses into married/single. Wealth was included as a measure of economic security and was assessed by creating a composite variable that included home ownership, car ownership, family assets (total money in all checking and savings accounts, cars, jewelry, other possessions, stocks, bonds, and real estate not including main home) and income from investments in the last year (yes/no). A confirmatory factor analysis was conducted on the four standardized wealth items to ensure that they loaded adequately onto a single wealth factor and to derive factor scores to weight the items prior to creating a wealth measure (range= −0.62–2.4).

Analysis

We first computed descriptive statistics for the sample characteristics (Table 1). We also computed Spearman's Rank (ordinal) and Pearson (continuous) correlation coefficients for all pairwise correlations between the coping measures (Table 2). Correlations between coping responses and predictors are included in an appendix (Appendix A). Next, multivariable regression models were used to assess the association between each coping mechanism and the risk factors. First, in demographic adjusted models we examined associations of socioeconomic factors and coping responses (Tables 3–6, Model 1). Next, we examined associations of psychosocial factors and coping and neighborhood factors and coping in separate models adjusted for demographic and socioeconomic factors (Models 2–3, Appendix B–E). Finally, all risk factors were simultaneously included in a full model (Tables 3–6, Model 2). Linear regression was used to examine associations between covariates and general coping strategies, and coping with discrimination. Ordinal regression was used to examine associations between the covariates and religious coping and John Henryism. All analyses were conducted in Stata [39].

RESULTS

On average, participants were 55 years old (36.6% male) and reported an annual family income of $43,000. Forty-four percent of participants had completed high school and 59% were married. The mean wealth of participants was approximately $35,000 and 42% of participants reported receiving additional income from investments in the past year (Table 1).

In general, coping responses were not strongly correlated (Table 2), and the highest correlations were between problem and emotion-focused engagement (ρ=0.36) and problem-focused engagement and religious coping (ρ=0.25). As expected, engagement and disengagement coping were significantly negatively correlated (ρ=-0.17). Engagement coping strategies and passive coping with discrimination were also negatively correlated (ρ=-0.10), and disengagement coping was negatively correlated with religious coping (ρ=−0.06). John Henryism was weakly positively correlated with engagement coping (ρ=0.08) and coping with discrimination (ρ=0.07 active; ρ=0.03 passive coping).

Problem and Emotion-focused engagement and disengagement coping (general coping)

Problem- and emotion-focused engagement and disengagement emerged as four distinct styles of coping; patterns of associations of the covariates and the four types of coping were largely inconsistent (Tables 3 & 4). Being male was associated with more problem-focused engagement and less emotion-focused engagement coping (Table 3). Male sex was also associated with less disengagement coping (Table 4). Age and marital status were largely not associated with engagement and disengagement coping strategies, and socioeconomic covariates were more consistently associated with disengagement versus engagement coping. Higher income and education were associated with higher levels of emotion-focused disengagement and lower levels of problem-focused disengagement.

Coping varied by psychological attributes of the individual. Individuals who reported higher levels of engagement coping had fewer depressive symptoms, higher levels of optimism, more daily spiritual experiences, and more interpersonal support (Table 3). Disengagement coping was associated with more depressive symptoms and having less interpersonal support (Table 4). Specifically, adults who reported more global perceived stress also used more emotion-focused disengagement; and more discrimination over the lifetime was associated with problem-focused disengagement coping (Table 4). Neighborhood factors were not associated with the coping strategies examined.

Coping with discrimination

Associations between individual and neighborhood factors and coping with discrimination are presented in Table 5. Younger age and male sex were associated with higher levels of active coping with discrimination. Being married was associated with lower levels of passive coping with discrimination. Overall, associations of socio-demographics and active coping with discrimination were in opposite directions of those between socio-demographics and passive coping with discrimination. Being more educated, and having higher wealth were associated with higher levels of active coping with discrimination. Higher income was associated with lower levels of passive coping with discrimination. Most psychosocial factors were associated with coping with discrimination. Individuals who reported fewer depressive symptoms and more stress used higher levels of active and lower levels of passive coping with discrimination. A greater number of experiences of discrimination over a lifetime were associated with both active passive coping responses. Being more optimistic and spiritual was associated with passive coping strategies. Neighborhood context was not associated with coping with discrimination.

Religious coping

Associations between individual and neighborhood factors and religious coping are presented in Table 6. Older age and being female were associated with more religious coping, and individuals who were college educated had 40% higher odds of using a higher level of religious coping than individuals with less than a HS education. Participants who reported more occurrences of discrimination over their lifetime, more daily spiritual experiences, and had more interpersonal support reported higher levels of religious coping. Neighborhood context was not associated with religious coping.

Active Coping

Being older, female, and wealthier was associated with higher John Henryism scores, although sex and wealth became non-significant after accounting for psychosocial factors (Table 6). Individuals with more wealth reported greater odds of using higher levels of John Henryism. Everyday discrimination was the only psychosocial factor that was associated with John Henryism. Individuals with more occurrences of everyday discrimination had 15% greater odds of reporting a higher level (vs. lower level) of John Henryism to cope with stressors. Living in a lower SES neighborhood was marginally associated with higher odds of more John Henryism, but this association became nonsignificant after further adjustment.

DISCUSSION

In this exploratory analysis we sought to describe the associations of demographic, psychosocial, and neighborhood factors with coping responses in a population sample of African Americans. We did not test formal models of coping as a moderator of stress and health, but instead addressed a limitation in our knowledge of how coping varies within an adult African American population. As we expected, there was large variation in coping within our sample, which highlights the importance of considering the larger context of coping. Surprisingly, although many of the coping responses were correlated, the correlations were relatively weak; this suggests that coping responses may be unique to the situation and specific stressor, and operate differently to ameliorate the effects of stressors. Gender and education/income were most consistently associated with coping among the demographic and socioeconomic predictors, and education and income were primarily associated with problem and emotion focused coping, but not with coping with discrimination, religious coping or John Henryism. Results for the associations between psychosocial factors and coping were largely inconsistent, and associations varied substantially across coping responses. We found little evidence for associations between neighborhood context and coping in our sample. Although we did not compare the frequency with which different coping responses were used, our results suggest that African American adults used a wide variety of coping resources. Previous research supports the idea that coping is “culturally transmitted” [9], and coping responses are likely to vary by factors such as culture, family, community and past experience, even within a racial group [12]. Thus, our results suggest that using multiple measures of coping is necessary to fully characterize how African American adults cope with general and race-related stressors.

Patterns of associations among coping responses

We found that associations of demographic, socioeconomic, and psychosocial factors with coping varied widely across coping outcomes. Although it is difficult to make broad generalizations about how these factors are associated with coping due to the variation, our results can help guide the next set of research questions. Our results imply that it may not be appropriate or adequate to only use general measures of coping such as problem and emotion focused coping, as the wide variation in associations of demographic, socioeconomic, and psychosocial factors with coping responses highlights the uniqueness of different types of coping. For instance, while individuals with more depressive symptoms reported more disengagement and passive coping with discrimination, they reported less problem-focused engagement and active coping with discrimination. Our results highlight the state dependency of coping. Coping is not a static trait of an individual, and is likely shaped by psychological factors such as depressive symptoms, optimism and spirituality. Results of this exploratory analysis echo the complexity of coping previously demonstrated by researchers [9, 2, 5, 1, 15]. An individual’s coping response will evolve over time as a product of psychological states, availability of interpersonal support, exposure to discrimination, and other stressful life conditions. Thus, our results support testing research questions that address whether specific coping responses are more or less beneficial among African Americans based on the specific source of stressor exposure. This type of research

question might warrant real time data collection that can capture exposure to daily and life stressors, current psychological and social context, and coping responses simultaneously.

This research also underscores the importance of using measures of coping that are chosen to reflect the types of stressors to which individuals may be exposed, and to the specific study population. Coping is not a one-size-fits-all construct, and general measures of coping may not accurately reflect the coping responses undertaken by individuals in the population in consideration. Although nationally representative surveys are designed to most broadly assess exposures of different sub-populations, they may not be sufficient for thoroughly assessing variation in coping. While more generic coping questions (e.g., emotion/problem-focused coping) may be appropriate in some populations, they may not best characterize coping responses used in others. Researchers could consider testing whether individuals with a more varied toolbox of coping responses have better mental and/or physical health outcomes in response to stressors, for example. Considering a full range of coping responses will better address issues of how African American adults successfully cope with stressors to avoid maladaptive health and wellbeing outcomes, in order to facilitate interventions and prevention to improve coping and health.

One pattern that emerged from our results was the association of gender and coping. As previous research has indicated, we found that gender is likely to be an important predictor of how African Americans cope with stressors [15, 40]. Gender was more consistently associated with coping responses than other predictors. Men favored more problem-focused and active coping strategies than women. Men were also less likely to use religious coping than women. While we did not test gender differences in coping, several theories (e.g., weathering, Sojourner Syndrome, intersectionality) and previous research highlight differences in coping for African American women who must navigate stressors shaped by dual minority identities [41–43]. In addition, there is evidence that men and women perceive general and race related stressors differently [44, 5], which may influence coping. In one study, researchers found that women used religion, and emotional/instrumental support to cope with stressors, while men used acceptance, active coping and planning [5]. In accordance with previous work, our research supports conceptualizing the coping process uniquely for men and women, as well as considering gender-specific interventions related to mitigating stress. Research hypotheses related to the the variation in relationships between stress, coping, and health by gender are supported by our results.

The other consistent relationships that emerged from our analysis were associations between interpersonal support and coping, and spirituality and coping. These two psychosocial factors were most consistently correlated with multiple coping responses. Higher levels of interpersonal support were associated with more engagement and religious coping, and less disengagement coping. Social support has consistently been found to be a critical resource for coping with stress [45, 4], although it is also sometimes conceptualized as a separate coping response [10, 5]. Spirituality, which has also been examined as a coping resource [15, 46] that may be particularly meaningful for African Americans, was consistently associated with coping responses. Spirituality was positively associated with engagement coping, problem-focused disengagement and passive coping with discrimination. In a qualitative study, African American women identified spirituality as a resource integral to approach

coping (efforts to master and resolve stressors versus avoid stressors) such as mentally preparing for the day [15]. Thus, while the patterns of associations between interpersonal support and spirituality with coping responses are inconsistent across coping responses, they are likely influential psychosocial resources in the stress process. Our results imply that a useful next step might be to determine whether relationships between various coping responses to stressors, and health, vary based on an individual's spirituality and interpersonal/social support. It might be, for example, that these resources are more beneficial for certain coping responses, which would help identify the most effective types of intervention related to reducing the effect of stress on health.

Notably, both of these factors may be amenable to intervention. Thus, by strengthening psychosocial resources such as interpersonal support, spirituality and optimism, it may be possible to improve coping with stressors. There is some evidence, for example, that interventions targeted at increasing social support can reduce depressive symptoms and improve health behaviors [47]. There is also a growing body of research that supports associations between religion/spirituality and cardiovascular, immune and neuroendocrine functioning [48]; although researchers have not formally tested coping as the primary mechanism through which religion/spirituality benefits health. Thus, our results indicate that research aimed at identifying psychosocial resources to strengthen coping for African Americans may be a critical first step in intervening to alleviate the harmful effects of exposure to stressors on health and health disparities.

John Henryism stands out among the coping responses as being distinct in its relationship with demographic and psychosocial factors. John Henryism was one of the few coping response that was associated with age; older age resulted in a greater odds of using more high effort coping. Additionally, John Henryism was associated with only one of the psychosocial factors we examined. Individuals who reported more everyday discrimination had higher odds of using more John Henryism. These differences are consistent with the rich, yet separate literature on John Henryism and health, in which high effort coping has been identified as a distinct type of effortful coping that is associated with hypertension and cardiovascular disease [49, 28]. Few of the resources we examined were associated with John Henryism in our sample, which further highlights the uniqueness of this coping response. We did find, however, that individuals who experienced more everyday discrimination had higher odds of using higher levels of John Henryism. Research that further elucidates the specific situations in which John Henryism is used, and whether other coping responses are used in combination with John Henryism, could help determine how to help individuals successfully cope with stressors, while avoiding the potentially harmful physical effects of high effort coping.

We found little evidence that the aspects of the neighborhood context we examined in this analysis are associated with coping in JHS participants. There was a significant association between neighborhood socioeconomic status and John Henryism, such that individuals living in neighborhoods with lower SES had higher odds of using more John Henryism. This is consistent with research that finds a stronger association between SES and blood pressure among African Americans who use more high effort coping [50, 28]. More research that investigates how the neighborhood context influences coping is needed to better understand

these relationships. It is possible that the neighborhood context interacts with psychosocial resources to jointly influence coping with stressors, as the neighborhood has been identified as a moderator of psychosocial factors and stress [51]. Given that the neighborhood shapes individuals' access to economic, social, and health-related resources [52], and that these resources also influence stress and coping [53], this may be an important area of future research.

General coping versus coping with discrimination

Overall there was little consistency in the patterns of how individual and neighborhood factors were associated with coping with discriminatory versus general stressors. Interpersonal support, which was strongly associated with problem- and emotion-focused coping, and religious coping, was not associated with coping with discrimination. Several researchers have compared coping with general versus race-based stressors in African Americans, and the results are mixed. Brown et al. (2011) found that among African American youth, coping strategies employed for general stressors were different from those employed for racism-related stressors. Additionally, using religion and venting were more common for coping with race-related stressors. Other researchers found that in response to race-related stressors, Blacks were more likely to use emotion-focused coping [5]. They also concluded that Blacks drew on fewer coping strategies to cope with race-related versus general stressors. This is in line with stress and coping theory, which supports a more limited range of coping in response to highly salient and uncontrollable stressors [54]. Although we did not examine coping in response to general versus race-related stressors, the majority of our sample attributed experiences of discrimination to race (62%). Even in the face of other forms of discrimination (e.g., weight, age), our results support the conclusion that coping with discrimination is distinct from coping with general stressors. It will be critical that future research assesses coping responses to specific types of stressors, as well as the individual and contextual factors that may influence these relationships.

Limitations

This most notable limitation of this study is its exploratory and correlational nature. Although the purpose of this analysis was not to draw an overall conclusion based on research hypotheses, our results can be used to inform the next set of studies of stress, coping and health among African American adults. Overall, our results support future research that extends deeper into stress and coping, to determine how to best support people in coping with various stressors, and how this support may vary based on the social, emotional and psychological context of the individual.

Coping was not assessed in relation to specific stressful events. Instead participants were asked how they typically cope with stressors, which limits our understanding of how coping responses vary in response to different types of stressors (e.g., chronic health problems vs. daily hassles vs. work stress). The coping with discrimination outcomes were more specifically connected to particular stressors, although we did not restrict the sample to participants who attributed discrimination to race. Thus, coping responses to discrimination may vary based on the attribution and we did not examine these differences. Lastly, because we examined simple correlations and associations, we likely missed important interactions

between coping and individual and contextual factors on distress and health outcomes. We did not consider a health outcome in these analyses, but instead sought to explore relationships between coping and coping resources and risk factors. Hypothesis-based research is necessary to begin to unpack these mechanisms.

Conclusions

Our research is an initial step towards understanding the patterns of coping mechanisms across demographic, socioeconomic, psychosocial, and neighborhood characteristics in African American adults. Clarifying these relationships may help inform strategies by which to intervene in the stress process to mitigate or alleviate the effects of exposure to stressors on health. Such knowledge may also help researchers and practitioners identify vulnerable subgroups that might need targeted interventions to reduce exposure to stressors and improve coping capacities. Specifically, we draw three general conclusions. First, coping responses that are typically assessed in research are vastly different in their relationship with demographic, socioeconomic and psychosocial attributes of the individual. Thus, it is difficult to make generalizations about the significance of factors such as religion or optimism for coping, as these relationships are likely specific to the type of coping response. Even within a broad coping response such as problem- or emotion- focused coping, the effect of different assets, risks, and resources will vary. Second, although we did not compare coping between African Americans and Whites, our results support previous conclusions that Black/African Americans draw from a wide variety of coping mechanisms [5]. This may be driven primarily by need; African Americans are exposed to more frequent and severe stressors than Whites and may develop a more diverse set of tools for handling these stressors. Understanding all of the different coping resources used by African Americans, and factors that might modify the stressor-coping relationship, is critical in developing interventions to reduce the harmful health effects of stress. Lastly, our results provide more evidence of the complexity of coping. They also emphasize the need for primary data collection in which exposure to stressors and coping responses or reactions to stressors is assessed in real time. Studies could include not only general and discriminatory stressors, but could also prompt participants to consider policy- and structural-level stressors, that are persistent and pervasive, and are likely to require numerous coping responses over time.

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Appendix A

Bivariate correlations between coping responses and covariates, Jackson Heart Study (2000–2004)

	PFE	EFE	PFD	EFD	Religious coping	John Henryism	Coping with discrimination, active	Coping with discrimination, passive
Age	0.10	0.04	0.05	−0.10	0.08	0.18	−0.09	0.03
Male	0.08	−0.15	−0.13	−0.10	−0.12	−0.03*	0.01*	−0.00*
Income	0.15	0.02*	−0.22	0.02*	0.02*	−0.03*	0.08	−0.07
Education level	0.10	0.03*	−0.19	0.14	0.05	−0.03*	0.14	−0.09
Married	0.05	−0.03*	−0.09	−0.07	0.02*	0.04*	0.03*	0.03*

	PFE	EFE	PFD	EFD	Religious coping	John Henryism	Coping with discrimination, active	Coping with discrimination, passive
Wealth	0.14	0.04	−0.07	−0.04	0.06	0.09	0.03	−0.01 *
Depressive symptoms	**−0.31**	−0.15	**0.21**	**0.28**	−0.12	0.01 *	0.02 *	0.11
Global stress	−0.17	−0.07	0.06	0.25	−0.06	−0.03 *	0.19	0.05
Everyday discrimination	**0.23**	−0.05	0.01 *	0.17	−0.05	0.05	**0.26**	0.14
Lifetime discrimination	0.08	−0.02 *	−0.08	0.13	0.04 *	0.03 *	**0.50**	**0.25**
Optimism	**−0.27**	0.09	−0.14	−0.07	0.10	−0.04	0.02 *	−0.14
Spirituality	**0.32**	**0.22**	0.05	−0.12	**0.43**	0.06	0.02 *	−0.02 *
Interpersonal	**0.40**	**0.35**	−0.19	**−0.31**	**0.22**	0.02 *	0.01 *	−0.09

PFE=Problem-focused engagement, EFE=Emotion-focused engagement, PFD=Problem-focuseddisengagement, EFD=Emotion-focused disengagement

* Denotes non-significant correlation, correlations > ±0.20 are bolded to designate strongest correlations

Appendix B

Mean differences in scores (standard errors) for the association of demographic, psychosocial and neighborhood factors with engagement coping subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Problem focused engagement				Emotion focused engagement			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Age	**0.02 (0.00)**	**0.02 (0.00)**	**0.02 (0.00)**	**0.02 (0.00)**	0.00 (0.00)	−0.00 (0.01)	0.00 (0.00)	0.00 (0.01)
Male	**0.40 (0.09)**	**0.55 (0.11)**	**0.40 (0.09)**	**0.55 (0.11)**	**−0.94 (0.10)**	**−0.87 (0.13)**	**−0.94 (0.10)**	**−0.88 (0.13)**
Married	−0.19 (0.10)	−0.21 (0.11)	−0.21 (0.10)	−0.21 (0.11)	−0.15 (0.11)	−0.06 (0.13)	−0.14 (0.11)	−0.05 (0.13)
Socioeconomic factors								
Income (per $10,000)	**0.09 (0.02)**	0.02 (0.02)	**0.08 (0.02)**	0.00 (0.00)	**0.05 (0.02)**	0.01 (0.02)	**0.04 (0.02)**	0.00 (0.00)
Education level [c]								
HS degree	−0.23 (0.14)	−0.30 (0.17)	−0.25 (0.14)	−0.31 (0.17)	**−0.54 (0.15)**	**−0.70 (0.20)**	**−0.54 (0.15)**	**−0.69 (0.20)**
College and higher	**0.30 (0.15)**	0.04 (0.18)	0.27 (0.15)	0.01 (0.18)	−0.25 (0.17)	**−0.57 (0.21)**	−0.25 (0.17)	**−0.57 (0.21)**
Wealth	**0.12 (0.04)**	0.03 (0.04)	**0.12 (0.04)**	0.03 (0.04)	0.07 (0.04)	0.01 (0.05)	0.07 (0.04)	0.01 (0.05)
Psychosocial factors								
Depressive symptoms (per 10 unit change)		**−0.36 (0.07)**		**−0.36 (0.07)**		0.00 (0.08)		0.01 (0.08)
Global stress		0.00 (0.10)		0.01 (0.10)		0.03 (0.13)		0.03 (0.13)
Everyday discrimination		−0.03 (0.06)		−0.03 (0.06)		0.06 (0.07)		0.06 (0.07)
Lifetime discrimination		0.02 (0.02)		0.02 (0.02)		−0.00 (0.02)		−0.00 (0.02)
Optimism		**0.47 (0.10)**		**0.46 (0.10)**		0.00 (0.12)		−0.00 (0.12)
Spirituality		**0.11 (0.01)**		**0.11 (0.01)**		**0.07 (0.01)**		**0.07 (0.01)**
Interpersonal support		**1.49 (0.13)**		**1.49 (0.13)**		**2.22 (0.15)**		**2.22 (0.15)**

	Problem focused engagement				Emotion focused engagement			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Neighborhood factors [d]								
Economic disadvantage			0.02 (0.08)	−0.08 (0.09)			−0.02 (0.09)	−0.06 (0.11)
Social cohesion			0.50 (0.72)	0.11 (0.81)			0.13 (0.80)	−0.48 (0.97)
Violence			−0.21 (0.88)	0.03 (0.97)			0.01 (0.98)	−0.40 (1.17)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Models 2, 3 also adjusted for socioeconomic factors; Model 4 is fully adjusted

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at p<0.05

Appendix C

Mean differences in scores (standard errors) for the association of demographic, psychosocial and neighborhood factors with disengagement coping subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Problem focused disengagement				Emotion focused disengagement			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Age	−0.01 (0.00)	−0.01 (0.00)	**−0.01 (0.00)**	−0.01 (0.01)	−0.01 (0.00)	−0.00 (0.00)	**−0.01 (0.00)**	−0.00 (0.00)
Male	**−0.64 (0.10)**	**−0.58 (0.13)**	**−0.64 (0.10)**	**−0.59 (0.13)**	**−0.36 (0.08)**	**−0.24 (0.09)**	**−0.36 (0.08)**	**−0.25 (0.09)**
Married	0.16 (0.11)	0.17 (0.14)	0.15 (0.11)	0.16 (0.14)	**−0.19 (0.08)**	**−0.10 (0.08)**	**−0.19 (0.08)**	**−0.20 (0.10)**
Socioeconomic factors								
Income (per $10,000)	**−0.15 (0.02)**	**−0.08 (0.03)**	**−0.14 (0.02)**	**−0.07 (0.03)**	−0.01 (0.02)	**0.06 (0.02)**	−0.01 (0.02)	**0.06 (0.02)**
Education level [c]								
HS degree	**−0.72 (0.15)**	**−0.68 (0.21)**	**−0.70 (0.16)**	**−0.68 (0.21)**	**0.47 (0.09)**	**0.35 (0.14)**	**0.46 (0.12)**	**0.34 (0.15)**
College and higher	**−1.06 (0.17)**	**−0.76 (0.22)**	**−1.01 (0.17)**	**−0.75 (0.22)**	**0.94 (0.13)**	**0.91 (0.16)**	**0.94 (0.13)**	**0.91 (0.16)**
Wealth	0.02 (0.04)	0.01 (0.05)	0.02 (0.04)	0.02 (0.25)	−0.04 (0.03)	0.01 (0.04)	−0.04 (0.03)	0.01 (0.04)
Psychosocial factors								
Depressive symptoms (per 10 unit change)		**0.55 (0.09)**		**0.55 (0.08)**		**0.44 (0.06)**		**0.44 (0.06)**
Global stress		0.10 (0.13)		0.10 (0.13)		**0.44 (0.09)**		**0.45 (0.09)**
Everyday discrimination		−0.04 (0.07)		−0.04 (0.07)		0.06 (0.05)		0.06 (0.05)
Lifetime discrimination		**−0.06 (0.02)**		**−0.05 (0.03)**		0.00 (0.02)		0.00 (0.02)
Optimism		−0.22 (0.13)		−0.22 (0.13)		0.05 (0.09)		0.04 (0.09)
Spirituality		**0.05 (0.01)**		**0.04 (0.01)**		−0.02 (0.01)		−0.02 (0.01)
Interpersonal support		**−0.72 (0.16)**		**−0.72 (0.16)**		**−1.09 (0.11)**		**−1.09 (0.11)**

	Problem focused disengagement				Emotion focused disengagement			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Neighborhood factors [d]								
Economic disadvantage			0.16 (0.09)	0.04 (0.12)			0.03 (0.07)	0.04 (0.08)
Social cohesion			−0.13 (0.82)	0.91 (1. 01)			0.33 (0.61)	0.19 (0.71)
Violence			0.23 (0.99)	1.36 (1.21)			0.40 (0.74)	−0.11 (0.86)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Models 2, 3 also adjusted for socioeconomic factors; Model 4 is fully adjusted

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at p<0.05

Appendix D

Associations (Odds ratio, 95% Confidence Interval) between demographic, psychosocial and neighborhood factors, and coping with discrimination subscales, Jackson Heart Study (Exam 1, 2000–2004) [a,b]

	Active coping with discrimination				Passive coping with discrimination			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Age (per 10 years)	**−0.04 (0.02)**	−0.01 (0.02)	**−0.05 (0.02)**	−0.02 (0.02)	−0.00 (0.03)	0.04 (0.04)	−0.01 (0.03)	0.03 (0.04)
Male	**0.10 (0.04)**	**0.13 (0.05)**	**0.10 (0.04)**	**0.12 (0.05)**	−0.11 (0.06)	**−0.21 (0.08)**	−0.11 (0.06)	**−0.22 (0.08)**
Married	−0.05 (0.04)	**−0.13 (0.06)**	−0.05 (0.04)	**−0.13 (0.06)**	**0.24 (0.07)**	**0.28 (0.09)**	**0.24 (0.07)**	**0.27 (0.08)**
Socioeconomic factors								
Income (per $10,000)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)	**−0.04 (0.01)**	**−0.05 (0.02)**	**−0.03 (0.01)**	**−0.04 (0.02)**
Education level [d]								
HS degree	**0.30 (0.06)**	0.06 (0.08)	**0.30 (0.06)**	0.07 (0.08)	0.02 (0.09)	−0.00 (0.13)	0.02 (0.09)	−0.00 (0.13)
College and higher	**0.47 (0.06)**	0.08 (0.09)	**0.47 (0.06)**	0.09 (0.09)	−0.20 (0.10) *	**−0.30 (0.14)**	−0.20 (0.10) *	−0.27 (0.14) *
Wealth	0.03 (0.01)	**0.05 (0.02)**	**0.03 (0.01)**	**0.05 (0.02)**	−0.01 (0.02)	−0.05 (0.03)	−0.01 (0.02)	−0.05 (0.03)
Psychosocial Factors								
Depressive symptoms (per 10 unit change)		**−0.08 (0.03)**		**−0.08 (0.03)**		**0.13 (0.05)**		**0.13 (0.05)**
Global stress		**0.13 (0.05)**		**0.13 (0.05)**		**−0.20 (0.08)**		**−0.21 (0.08)**
Everyday discrimination		0.03 (0.03)		0.03 (0.02)		0.00 (0.04)		−0.00 (0.05)
Lifetime discrimination		**0.16 (0.01)**		**0.16 (0.01)**		**0.21 (0.02)**		**0.21 (0.02)**
Optimism		0.04 (0.05)		0.05 (0.05)		**−0.36 (0.08)**		**−0.34 (0.08)**
Spirituality		0.01 (0.01)		0.01 (0.01)		**0.03 (0.01)**		**0.02 (0.01)**
Interpersonal support		0.08 (0.06)		0.08 (0.06)		−0.18 (0.10)		−0.19 (0.09)
Neighborhood factors [d]								

	Active coping with discrimination				Passive coping with discrimination			
	Model 1 [b]	Model 2	Model 3	Model 4	Model 1 [b]	Model 2	Model 3	Model 4
Economic disadvantage			−0.02 (0.04)	−0.03 (0.05)			−0.02 (0.06)	0.03 (0.07)
Social cohesion			−0.29 (0.31)	0.11 (0.41)			0.10 (0.49)	0.47 (0.64)
Violence			−0.09 (0.37)	0.71 (0.49)			0.50 (0.59)	1.05 (0.77)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Models 2, 3 also adjusted for socioeconomic factors; Model 4 is fully adjusted

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at p<0.05;

[*] p=0.05

Appendix E

Associations (Odds ratio, 95% Confidence Interval) between demographic, psychosocial and neighborhood factors with religious coping and John Henryism, and mean differences (standard errors) in scores for associations with coping with discrimination subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Religious coping [b]				John Henryism [b]			
	Model 1 [b, c]	Model 2	Model 3	Model 4	Model 1 [b, c]	Model 2	Model 3	Model 4
Age (per 10 years)	**1.15 [1.08,1.23]**	1.06 [0.96,1.17]	**1.16 [1.08,1.24]**	1.06 [0.96,1.17]	**1.14 [1.08,1.20]**	**1.32 [1.21,1.43]**	**1.13 [1.07,1.19]**	**1.31 [1.20,1.42]**
Male	**0.60 [0.52,0.69]**	**0.70 [0.57,0.87]**	**0.60 [0.51,0.69]**	**0.70 [0.57,0.87]**	**0.80 [0.71,0.90]**	0.91 [0.76,1.08]	**0.80 [0.71,0.90]**	0.90 [0.76,1.08]
Married	1.09 [0.93,1.27]	1.15 [0.92,1.43]	1.09 [0.93,1.28]	1.14 [0.91,1.43]	1.09 [0.96,1.24]	1.19 [0.99,1.44]	1.08 [0.95,1.23]	1.20 [0.99,1.45]
Socioeconomic factors								
Income (per $10,000)	1.01 [0.98,1.04]	0.98 [0.94,1.02]	1.01 [0.98,1.04]	0.98 [0.94,1.02]	0.98 [0.96,1.01]	0.98 [0.95,1.01]	0.99 [0.96,1.01]	0.99 [0.95,1.02]
Education level [d]								
HS degree	1.06 [0.85,1.32]	0.90 [0.64,1.26]	1.06 [0.85,1.32]	0.88 [0.63,1.24]	1.01 [0.85,1.20]	0.94 [0.71,1.25]	1.00 [0.84,1.20]	0.96 [0.72,1.27]
College and higher	**1.39 [1.09,1.77]**	1.08 [0.75,1.56]	**1.38 [1.08,1.76]**	1.05 [0.73,1.53]	1.06 [0.87,1.28]	0.98 [0.72,1.33]	1.08 [0.89,1.32]	1.02 [0.75,1.38]
Wealth	1.04 [0.98,1.10]	0.99 [0.91,1.07]	1.04 [0.98,1.10]	0.99 [0.91,1.07]	**1.07 [1.03,1.12]**	1.02 [0.94,1.04]	**1.07 [1.02,1.13]**	1.02 [0.95,1.10]
Psychosocial factors								
Depressive symptoms (per 10 unit change)		0.94 [0.83,1.07]		0.94 [0.83,1.07]		1.02 [0.90,1.14]		1.02 [0.90,1.14]
Global stress		1.05 [0.85,1.30]		1.06 [0.85,1.31]		1.03 [0.86,1.23]		1.02 [0.85,1.22]
Everyday discrimination		0.95 [0.85,1.07]		0.95 [0.85,1.07]		**1.15 [1.05,1.25]**		**1.14 [1.04,1.25]**
Lifetime discrimination		**1.07 [1.03,1.11]**		**1.07 [1.03,1.11]**		1.01 [0.98,1.04]		1.01 [0.98,1.04]
Optimism		1.08 [0.89,1.31]		1.08 [0.88,1.31]		0.87 [0.73,1.03]		0.87 [0.73,1.04]
Spirituality		**1.23 [1.19,1.26]**		**1.23 [1.20,1.26]**		1.02 * [1.00,1.04]		1.02 [1.00,1.04]
Interperson al support		**1.74 [1.36,2.23]**		**1.74 [1.35,2.23]**		1.09 [0.89,1.35]		1.09 [0.89,1.34]
Neighborhood factors [e]								
Economic disadvantage			0.93 [0.81,1.05]	0.98 [0.82,1.17]			**1.12 [1.00,1.24]**	1.10 [0.94,1.28]

	Religious coping [b]				John Henryism [b]			
	Model 1 [b,c]	Model 2	Model 3	Model 4	Model 1 [b,c]	Model 2	Model 3	Model 4
Social cohesion			1.82 [0.57,5.78]	2.22 [0.42,1.78]			0.88 [0.35,2.24]	0.46 [0.13,1.71]
Violence			1.89 [0.48,7.43]	1.62 [0.23,11.28]			0.98 [0.32,2.99]	0.64 [0.13,3.06]

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2010); models include unconditional Empirical Bayes' estimate for social cohesion and violence

[b] Model 1 adjusts for age, gender and marital status; Models 2, 3 also adjusted for socioeconomic factors; Model 4 is fully adjusted

[c] Odds ratios for ordinal models interpreted as a change in the predictor's association with the odds of being in a higher category of the coping method

[d] Reference group is less than high school education

[e] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented

Bolded coefficients are significant at $p<0.05$

Table 1

Descriptive statistics of Jackson Heart Study participants at Exam 1 (N=5,301), 2000–2004 [a]

	Mean (SD)/%	Range
Demographics		
Age (years)	55.0 (13.0)	20–95
Male (%)	36.6	
Income ($)	42,596 (31,244)	2,500–112,500
Education		
Less than high school	18.4	
High school	42.2	
College degree	39.4	
Married (%)	58.8	
Wealth	0 (1.5)	−6.2–2.4
Coping outcomes		
Problem focused engagement	3.79 (0.72)	1–5
Emotion focused engagement	3.26 (0.73)	1–5
Problem focused disengagement	2.78 (0.81)	1–5
Emotion focused disengagement	2.55 (0.92)	1–5
Religious coping	2.57 (0.66)	0–3
John Henryism	5.48 (9.23)	0–36
Coping with lifetime discrimination, active	1.52 (1.24)	0–4
Coping with lifetime discrimination, passive	2.46 (1.95)	0–7
Psychosocical factors		
Depressive symptom score	30.0 (8.5)	1–60
Global perceived stress	1.6 (0.55)	1–4
Everyday discrimination	1.08 (1.02)	0–6
Lifetime discrimination	4.14 (2.83)	0–11
Optimism	3.39 (0.53)	1–4
Social/cultural resources		
Spirituality	23.15 (4.71)	0–30
Interpersonal support	3.3 (0.46)	1.3–4
Neighborhood factors		
Economic disadvantage	0.63 (0.65)	−2.2–1.7
Social cohesion	3.00 (0.14)	2.58–3.28
Violence	1.27 (0.12)	0.99–1.59

[a] Neighborhood predictors assessed between Exams 1 and 2 (2004–2008)

Table 2

Bivariate correlations between coping responses, Jackson Heart Study (2000–2004)

	PFE [a]	EFE [b]	PFD [c]	EFD [d]	Religious coping	John Henryism	Active coping with discrimination	Passive coping with discrimination
PFE	1.0							
EFE	0.36	1.0						
PFD	−0.09	−0.05	1.0					
EFD	−0.15	−0.07	0.19	1.0				
Religious coping	0.24	0.16	−0.01 [e]	−0.04	1.0			
John Henryism	0.08	0.05 [e]	0.01 [e]	0.00 [e]	0.05	1.0		
Active coping with discrimination	0.06	0.07	−0.10	0.03	0.04	0.04	1.0	
Passive coping with discrimination	−0.08	−0.07	0.11	0.05	0.03 [e]	0.06	0.12	1.0

[a] Problem focused engagement

[b] Emotion focused engagement

[c] Problem focused disengagement

[d] Emotion focused disengagement

[e] Denotes non-significant correlation

Table 3

Mean differences in scores (standard errors) for the association of demographic, psychosocial and neighborhood factors with engagement coping subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Problem focused engagement		Emotion focused engagement	
	Model 1 [b]	Model 2	Model 1 [b]	Model 2
Age	**0.02 (0.00)**	**0.02 (0.00)**	0.00 (0.00)	0.00 (0.01)
Male	**0.40 (0.09)**	**0.55 (0.11)**	**−0.94 (0.10)**	**−0.88 (0.13)**
Married	−0.19 (0.10)	−0.21 (0.11)	−0.15 (0.11)	−0.05 (0.13)
Socioeconomic factors				
Income (per $10,000)	**0.09 (0.02)**	0.00 (0.00)	**0.05 (0.02)**	0.00 (0.00)
Education level [c]				
HS degree	−0.23 (0.14)	−0.31 (0.17)	**−0.54 (0.15)**	**−0.69 (0.20)**
College and higher	**0.30 (0.15)**	0.01 (0.18)	−0.25 (0.17)	**−0.57 (0.21)**
Wealth	**0.12 (0.04)**	0.03 (0.04)	0.07 (0.04)	0.01 (0.05)
Psychosocial factors				
Depressive symptoms (per 10 unit change)		**−0.36 (0.07)**		0.01 (0.08)
Global stress		0.01 (0.10)		0.03 (0.13)
Everyday discrimination		−0.03 (0.06)		0.06 (0.07)
Lifetime discrimination		0.02 (0.02)		−0.00 (0.02)
Optimism		**0.46 (0.10)**		−0.00 (0.12)
Spirituality		**0.11 (0.01)**		**0.07 (0.01)**
Interpersonal support		**1.49 (0.13)**		**2.22 (0.15)**
Neighborhood factors [d]				
Economic disadvantage		−0.08 (0.09)		−0.06 (0.11)
Social cohesion		0.11 (0.81)		−0.48 (0.97)
Violence		0.03 (0.97)		−0.40 (1.17)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Model 2 is also adjusted for psychosocial and neighborhood factors

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at $p<0.05$

Table 4

Mean differences in scores (standard errors) for the association of demographic, psychosocial and neighborhood factors with disengagement coping subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Problem focused disengagement		Emotion focused disengagement	
	Model 1 [b]	Model 2	Model 1 [b]	Model 2
Age	−0.01 (0.00)	−0.01 (0.01)	−0.01 (0.00)	−0.00 (0.00)
Male	**−0.64 (0.10)**	**−0.59 (0.13)**	**−0.36 (0.08)**	**−0.25 (0.09)**
Married	0.16 (0.11)	0.16 (0.14)	**−0.19 (0.08)**	**−0.20 (0.10)**
Socioeconomic factors				
Income (per $10,000)	**−0.15 (0.02)**	**−0.07 (0.03)**	−0.01 (0.02)	**0.06 (0.02)**
Education level [c]				
HS degree	**−0.72 (0.15)**	**−0.68 (0.21)**	**0.47 (0.09)**	**0.34 (0.15)**
College and higher	**−1.06 (0.17)**	**−0.75 (0.22)**	**0.94 (0.13)**	**0.91 (0.16)**
Wealth	0.02 (0.04)	0.02 (0.25)	−0.04 (0.03)	0.01 (0.04)
Psychosocial factors				
Depressive symptoms (per 10 unit change)		**0.55 (0.08)**		**0.44 (0.06)**
Global stress		0.10 (0.13)		**0.45 (0.09)**
Everyday discrimination		−0.04 (0.07)		0.06 (0.05)
Lifetime discrimination		**−0.05 (0.03)**		0.00 (0.02)
Optimism		−0.22 (0.13)		0.04 (0.09)
Spirituality		**0.04 (0.01)**		−0.02 (0.01)
Interpersonal support		**−0.72 (0.16)**		**−1.09 (0.11)**
Neighborhood factors [d]				
Economic disadvantage		0.04 (0.12)		0.04 (0.08)
Social cohesion		0.91 (1. 01)		0.19 (0.71)
Violence		1.36 (1.21)		−0.11 (0.86)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Model 2 is also adjusted for psychosocial and neighborhood factors

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at $p<0.05$

Table 5

Associations (Odds ratio, 95% Confidence Interval) between demographic, psychosocial and neighborhood factors, and coping with discrimination subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Active coping with discrimination		Passive coping with discrimination	
	Model 1 [b]	**Model 2**	**Model 1** [b]	**Model 2**
Age (per 10 years)	**−0.04 (0.02)**	−0.02 (0.02)	−0.00 (0.03)	0.03 (0.04)
Male	**0.10 (0.04)**	**0.12 (0.05)**	−0.11 (0.06)	**−0.22 (0.08)**
Married	−0.05 (0.04)	**−0.13 (0.06)**	**0.24 (0.07)**	**0.27 (0.08)**
Socioeconomic factors				
Income (per $10,000)	0.01 (0.01)	0.00 (0.01)	**−0.04 (0.01)**	**−0.04 (0.02)**
Education level [c]				
HS degree	**0.30 (0.06)**	0.07 (0.08)	0.02 (0.09)	−0.00 (0.13)
College and higher	**0.47 (0.06)**	0.09 (0.09)	−0.20 (0.10) *	−0.27 (0.14) *
Wealth	0.03 (0.01)	**0.05 (0.02)**	−0.01 (0.02)	−0.05 (0.03)
Psychosocial Factors				
Depressive symptoms (per 10 unit change)		**−0.08 (0.03)**		**0.13 (0.05)**
Global stress		**0.13 (0.05)**		**−0.21 (0.08)**
Everyday discrimination		0.03 (0.02)		−0.00 (0.05)
Lifetime discrimination		**0.16 (0.01)**		**0.21 (0.02)**
Optimism		0.05 (0.05)		**−0.34 (0.08)**
Spirituality		0.01 (0.01)		**0.02 (0.01)**
Interpersonal support		0.08 (0.06)		−0.19 (0.09)
Neighborhood factors [d]				
Economic disadvantage		−0.03 (0.05)		0.03 (0.07)
Social cohesion		0.11 (0.41)		0.47 (0.64)
Violence		0.71 (0.49)		1.05 (0.77)

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Model 2 is also adjusted for psychosocial and neighborhood factors

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at p<0.05;

* p=0.05

Table 6

Associations (Odds ratio, 95% Confidence Interval) between demographic, psychosocial and neighborhood factors with religious coping and John Henryism, and mean differences (standard errors) in scores for associations with coping with discrimination subscales, Jackson Heart Study (Exam 1, 2000–2004) [a]

	Religious Coping		John Henryism	
	Model 1 [b]	Model 2	Model 1 [b]	Model 2
Age (per 10 years)	**1.15 [1.08,1.23]**	1.06 [0.96,1.17]	**1.14 [1.08,1.20]**	**1.31 [1.20,1.42]**
Male	**0.60 [0.52,0.69]**	**0.70 [0.57,0.87]**	**0.80 [0.71,0.90]**	0.90 [0.76,1.08]
Married	1.09 [0.93,1.27]	1.14 [0.91,1.43]	1.09 [0.96,1.24]	1.20 [0.99,1.45]
Socioeconomic factors				
Income (per $10,000)	1.01 [0.98,1.04]	0.98 [0.94,1.02]	0.98 [0.96,1.01]	0.99 [0.95,1.02]
Education level [c]				
HS degree	1.06 [0.85,1.32]	0.88 [0.63,1.24]	1.01 [0.85,1.20]	0.96 [0.72,1.27]
College and higher	**1.39 [1.09,1.77]**	1.05 [0.73,1.53]	1.06 [0.87,1.28]	1.02 [0.75,1.38]
Wealth	1.04 [0.98,1.10]	0.99 [0.91,1.07]	**1.07 [1.03,1.12]**	1.02 [0.95,1.10]
Psychosocial factors				
Depressive symptoms (per 10 unit change)		0.94 [0.83,1.07]		1.02 [0.90,1.14]
Global stress		1.06 [0.85,1.31]		1.02 [0.85,1.22]
Everyday discrimination		0.95 [0.85,1.07]		**1.14 [1.04,1.25]**
Lifetime discrimination		**1.07 [1.03,1.11]**		1.01 [0.98,1.04]
Optimism		1.08 [0.88,1.31]		0.87 [0.73,1.04]
Spirituality		**1.23 [1.20,1.26]**		1.02 [1.00,1.04]
Interpersonal support		**1.74 [1.35,2.23]**		1.09 [0.89,1.34]
Neighborhood factors [d]				
Economic disadvantage		0.98 [0.82,1.17]		1.10 [0.94,1.28]
Social cohesion		2.22 [0.42,1.78]		0.46 [0.13,1.71]
Violence		1.62 [0.23,11.28]		0.64 [0.13,3.06]

[a] Neighborhood factors were assessed between Exams 1 and 2 (2004–2008)

[b] Model 1 adjusts for age, gender and marital status; Model 2 is also adjusted for psychosocial and neighborhood factors

[c] Reference group is less than high school education

[d] Between-neighborhood variance was equal to zero in mixed models so results from the individual-level model are presented; models include unconditional Empirical Bayes' estimate for neighborhood social cohesion and neighborhood violence

Bolded coefficients are significant at $p<0.05$;

* $p=0.05$