Race Attribution Modifies the Association Between Daily Discrimination and Major Depressive Disorder Among Blacks: the Role of Gender and Ethnicity

Shervin Assari · Daphne C. Watkins · Cleopatra H. Caldwell

Abstract

Objective Although the association between discrimination and depression among Blacks is well-known, we do not know if this effect is influenced by race attribution. In this current study, we investigated the effect modification of race attribution on the association between everyday discrimination and major depressive disorder (MDD) among Blacks in the United States, and whether this effect modification is influenced by the intersection of ethnicity and gender.

Methods With a cross-sectional design, this study used data from the National Survey of American Life (NSAL), 2001–2003. The study included a nationally representative sample of Blacks ($n=5,008$), composed of 3,570 African Americans and 1,438 Caribbean Blacks. Everyday discrimination, two single-item measures of race attribution (race as the major barrier against upward social mobility, and race as the main cause for being discriminated against) and 12-month MDD were measured. In the first step, we fit logistic regressions to the pooled sample. In the next step, we ran regressions specific to the intersections of ethnicity and gender. Interaction

between race attribution and discrimination were also entered into the models.

Results Among Caribbean Black men, the belief that race is a major barrier against one's own upward social mobility modified the association between exposure to daily discrimination and MDD. In this group, the association between discrimination and MDD was weaker among those who believed that race is a major barrier against one's own upward social mobility. Race attribution did not modify the association between discrimination and MDD among African American men, African American women, and Caribbean Black women. The other measure of race attribution (race as the main cause of being discriminated against) did not modify the association between discrimination and MDD in any ethnicity by gender subgroups.

Conclusions Among Caribbean Black men, the link between everyday discrimination and depression may depend on seeing race as the main barrier against upward social mobility. Among African American men and women, however, the link between discrimination and MDD does not depend on race attribution. Our results suggest that ethnicity, gender, and race attribution may alter the association between discrimination and risk of MDD among Blacks.

Keywords Ethnicity · Gender · Depression · Discrimination · Race attribution

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Introduction

Previous studies suggest that exposure to discrimination is associated with poor mental health [1–6]. It has been suggested that everyday discrimination is a major factor that may contribute to poor health and well-being of marginalized groups [6, 7]. Depression is among the many health outcomes that are directly linked to discrimination [1, 3, 8]. Williams

and colleagues reported that though the link between discrimination and poor health is clear, moderators of this association are not well-explored. They argued that the living and working conditions that may alter such linkages between discrimination and health should be explored [3, 9].

Several health factors have reportedly been associated with discrimination. For example, the health effects of discrimination have been connected to individual factors such as parenting [10], race socialization [11], social support [3], and intraindividual factors such as mastery [12], coping [13], masculinity beliefs [13, 14], acculturation [3], ethnic identity [15, 16], and skin tone [12]. Ethnicity and gender are also associated with frequency of exposure to, interpretation of, and vulnerability to discrimination [17, 18]. Although not confirmed by all studies [19], there is some evidence suggesting that ethnicity [20], gender [16], and their intersection [21] may alter the effect of discrimination on depression and other health outcomes.

Based on the diathesis-stress model, explanatory style of an individual may alter the effect of exposure to stressors on mental health outcomes [22]. Race attribution—which reflects cognitive style associated with race—may also determine how individuals' exposure to stressful life events and discriminatory experiences influence mental health [9]. For instance, in a study of adolescents, attribution style moderated the relationship between negative life events and depressive symptoms [9].

In the current study, we were interested in testing if race attribution modifies the association between exposure to discrimination and the risk of 12-month major depressive disorder (MDD) among a nationally representative, ethnically diverse sample of Blacks in the USA. We also compared ethnicity by gender subgroups for the above effect modification. We hypothesized that discrimination would be associated with MDD, above and beyond sociodemographic characteristics. We also hypothesized that the link between exposure to daily discrimination and 12-month MDD would vary based on the intersection of ethnicity and gender.

Methods

Sample

Data came from the National Survey of American Life (NSAL), collected between 2001 and 2003. The study protocol was approved by the University of Michigan Institutional Review Board. All participants provided written consent. Participants received compensation for participating in this study. The study included a nationally representative sample of 5,008 Blacks, including African Americans ($n=3,570$) and Caribbean Blacks ($n=1,438$). The Blacks in this study were nationally representative of noninstitutionalized African Americans and Caribbean Blacks who resided in the USA at the time of the survey. Additional details about the study

design and sampling have been described in detail elsewhere [23–25].

Interview Procedure

Interviews lasted an average of 140 minutes. Most interviews were face-to-face and conducted within participants' homes. The response rate was 70.7 % for African Americans and 77.7 % for Caribbean Blacks.

A computer-assisted personal interview (CAPI) was used for data collection among 86 % of the individuals. In CAPI, respondents use a computer to answer the questions. CAPI is a preferred method of interview when the questionnaires are long and complex. A major advantage of CAPI is reduction of potential interviewer and respondent error. CAPI ensures capturing more complete data and reduced "nonresponses." CAPI has made feasible much higher level of questionnaire complexity than when questionnaires were administered in person using paper forms [26]. De Leeuw et al. [29] reviewed the evidence of the effect of CAPI on data quality and found that there are clear advantages of CAPI in two main areas: survey data quality and acceptance of the computer by respondents and interviewers [27]. CAPI improves survey data quality, especially when complex questionnaires are used, or data is sensitive [28–31].

Measures

Everyday Discrimination Individuals were asked if they have experienced any of 10 episodes of unfair treatment in their daily life. Items included "called names or insulted," "people act afraid of you," "people act as if they are better," "threatened or harassed," "treated with less courtesy," "people act as if you are not smart," "followed around in stores," "people act as if you're dishonest," "treated with less respect," and "receive poorer service" [12]. Response scales ranged from 1 (never) to 6 (almost every day). Thus the total score range was from 10 to 60. Higher scores indicated more discrimination. The alpha coefficient was 0.88. This measure of discrimination captures perception of chronic everyday discrimination in life rather than major forms of unfair treatment such as being denied a job [12]. It has been shown that chronic day-to-day discrimination may be more closely associated to mental health and psychological well-being, compared to lifetime discrimination [32, 33].

Major Depressive Disorder Twelve-month MDD was measured using the World Mental Health Composite International Diagnostic Interview (CIDI) [34], a fully structured diagnostic interview schedule designed to evaluate a wide range of DSM-IV mental disorders. This interview schedule was originally developed for the World Mental Health project initiated in 2000 [34]. It is designed for use by trained lay interviewers

and generates diagnoses of lifetime, 12-month, and 30-day disorders [35]. Clinical reappraisal studies have documented generally good concordance between CIDI diagnoses and blinded clinical diagnoses [36, 37]. The CIDI uses extensive skip logic to reduce interview length [38]. Excellent concordance [based on area under the receiver operating characteristic curve (AUC)] has been found between the CIDI and DSM-IV/SCID diagnoses of MDD. CIDI versus SCID prevalence differences have been shown to be insignificant at the optimal CIDI diagnostic thresholds. Individual-level diagnostic concordance at these thresholds is also substantial (AUC 0.81–0.86), with sensitivity of 68.0–80.2 % and of specificity 90.1–98.8 %. As a result, CIDI-SC operating characteristics are equivalent for MDD to those of the best alternative screening scales [38]. This measure is believed to provide valid findings for Blacks and ethnic groups of Blacks [39–42].

Race Attribution We used two single-item measures of race attribution: 1) the belief that race is a major barrier against one's own upward social mobility, and 2) the belief that race is a major cause of one's own exposure to discrimination.
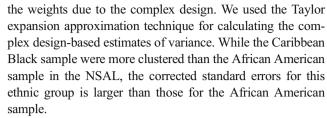
Race as a Major Barrier Against Upward Social Mobility We used the MacArthur Scale of Subjective Social Status to study subjective social status and race as a possible barrier for upward mobility [43, 44]. This measure uses a symbolic ladder with 10 steps that measures common sense of social status in life. Individuals are asked about their current and desired social status (place on the ladder reflects position in the social hierarchy) [43, 44]. Individuals were asked what factor might prevent them from achieving their goal, and one of the response options was race. Thus, this item determines whether the respondents believe that race is a major barrier against their upward social mobility.

Race as a Major Cause of Discrimination To ascertain information about respondents' thoughts about race as a major cause of discrimination, we used a single item (that preceded the discrimination questions) that asked participants about possible causes of discrimination against them. Individuals could select race as a response option. Other responses include gender, age, skin tone, and body size.

Control Variables The study also measured sociodemographic factors such as age, gender, employment status, education, marital status, and country region as covariates.

Statistical Analysis

The NSAL uses a complex survey design with multistage sampling design, involving clustering and stratification. All percentages reported represent weighted proportions based on the weights due to the complex design. We used the Taylor expansion approximation technique for calculating the complex design-based estimates of variance. While the Caribbean Black sample were more clustered than the African American sample in the NSAL, the corrected standard errors for this ethnic group is larger than those for the African American sample.

Logistic regression was used for multivariable analysis, by considering 12-month MDD as the main outcome. Gender, ethnicity, region, marital status, education, employment, and race attribution were operationalized as categorical variables, while age and discrimination were continuous measures. First, we fitted our logistic regressions to the pooled sample. In the next step, we fitted our models specific to groups based on the intersections of ethnicity and gender. We used Stata 12.0 for data analysis. Adjusted odds ratios (OR) and 95 % confidence intervals (CIs) were reported. *P* values less than 0.05 were considered statistically significant.

Results

Table 1 shows sociodemographic characteristics for African Americans and Caribbean Blacks. Our distribution of gender and education were comparable; however, annual income was $8,000 higher among Caribbean Blacks than African Americans. Most of the African American respondents reported living in the South, while Caribbean Blacks were mostly sampled from the Northeast.

In the pooled sample, everyday discrimination (but not race attribution) was associated with a higher risk of 12-month MDD. In addition, female gender, living in the South, and being divorced/separated/widowed were associated with higher risk of MDD, while high education was associated with lower risk of MDD. Old age and never married were marginally associated with a higher risk of MDD. Race attribution was not directly associated with the 12-month MDD in the pooled sample of Blacks. Race attribution did not modify the association between discrimination and MDD (Table 2).

As Tables 3, 4, 5 and 6 show, with the exception of Caribbean Black women, discrimination was associated with higher risk of MDD among all ethnicity by gender subgroups. Race attribution was not associated with the risk of 12-month MDD among any of the groups. As Table 3 shows, there was a significant interaction between discrimination and race attribution on MDD among Caribbean Black men (adjusted OR 0.825, 95 % CI 0.710–0.958). This finding suggests that among Caribbean Black men, endorsement of the belief that race is a major barrier against their upward social mobility was associated with weaker association between discrimination and MDD, compared to individuals who did not endorse such

Table 1 Demographic data among African Americans and Caribbean Blacks

	Ethnicity	
Demographic data	African American (N=3,570)	Caribbean Black (N=1,438)
	n (%)	n (%)
Sex		
Male	1,271 (44.03)	643 (50.87)
Female	2,299 (55.97)	978 (49.13)
Marital Status		
Married	960 (32.91)	559 (37.56)
Partner	260 (8.74)	131 (12.58)
Separated	286 (7.16)	128 (5.37)
Divorced	524 (11.75)	178 (9.29)
Widowed	353 (7.90)	78 (4.29)
Never married	1,170 (31.55)	542 (30.92)
Region		
Northeast	411 (15.69)	1,135 (55.69)
Midwest	595 (18.81)	12 (4.05)
South	2,330 (56.24)	456 (29.11)
West	234 (9.25)	18 (11.14)
	Mean (SD)	Mean (SD)
Education	12.43 (2.23)	12.93 (1.00)
Age (years)	42.33 (14.50)	40.28 (5.78)
Household income ($ US)	36,846 (33,236)	47,017 (15,242)

Weights have been applied

SD standard deviation

belief. Such interaction could not be found among Caribbean Black women (Table 4), African American men (Table 5), and African American women (Table 6).

Among Caribbean Black women (OR 0.961, 95 % CI 0.928–0.995) and African American women (OR 0.979, 95 % CI 0.960–0.998) but not Caribbean Black or African American men, age was negatively associated with risk of MDD (Tables 3, 4, 5 and 6).

The risk of MDD was higher among divorced/separated/widowed African American women (OR 2.084, 95 % CI 1.045–4.155) and African American men (OR 3.362, 95 % CI 1.282–8.818), and among Caribbean Black women who had never married (OR 3.227, 95 % CI 1.176–8.857). Marital status was not associated with depression among Caribbean Black men. Among Caribbean Black men, not being in the labor force was associated with higher odds of MDD (OR 9.120, 95 % CI 2.220–37.467). This association could not be found in any of the other groups (Tables 3, 4, 5 and 6).

Only among Caribbean Black men was high education levels associated with lower risk of MDD. Such association could not be found among Caribbean Black women, African American men, and African American women (Tables 3, 4, 5 and 6).

Discussion

The purpose of this study was to test whether race attribution [race as a major barrier against upward social mobility and race a major cause of being discriminated against] moderate the association between exposure to daily discrimination and 12-month MDD among Blacks in the USA, and if such moderation varies among ethnicity by gender subgroups.

Based on our results, the belief that race is a barrier against upward social mobility modifies the association between daily discrimination and 12-month MDD among Caribbean Black men. In this group, the association between discrimination and 12-month MDD may be weaker among those who see race as a barrier against upward social mobility, compared to Caribbean Black men who do not endorse such belief. Among Caribbean Black women, African American men, and African American women, the link between discrimination and MDD seems to be independent of race attribution.

Caribbean Black men showed a unique set of associated factors of 12-month MDD, when compared to other ethnicity by gender subgroups of Blacks. For only the Caribbean American men, not being in the workforce and low education levels were associated with higher risk of 12-month MDD.

Table 2 Additive and multiplicative effects of discrimination and race attribution on depression among Blacks

	Odds ratio	Std. Err.	*t*	*P*>*t*	95 % CI	
African American ethnicity	0.727	0.194	−1.2	0.237	0.426	1.240
Age	0.983	0.009	−1.98	0.053	0.966	1.000
Female gender[a]	1.708	0.279	3.28	0.002	1.231	2.370
Employment[b]						
Unemployed	1.164	0.310	0.57	0.571	0.682	1.985
Not In Labor Force	1.255	0.278	1.02	0.31	0.805	1.956
Education[c]						
12 years	0.588	0.135	−2.32	0.024	0.371	0.931
13–15 years	0.570	0.146	−2.2	0.032	0.342	0.952
16 years or more	0.772	0.219	−0.91	0.365	0.437	1.363
Region[d]						
Midwest	1.250	0.268	1.04	0.302	0.813	1.922
South	0.696	0.121	−2.09	0.041	0.491	0.986
West	1.244	0.377	0.72	0.474	0.678	2.282
Marital status[e]						
Divorced/separated/ widowed	2.224	0.677	2.63	0.011	1.208	4.095
Never married	1.484	0.316	1.85	0.069	0.968	2.275
Discrimination	1.060	0.010	6.2	<0.001	1.040	1.080
Race attribution	1.035	0.320	0.11	0.912	0.557	1.922
Discrimination * race attribution	0.985	0.015	−1.01	0.317	0.955	1.015
Intercept	0.070	0.037	−5.03	<0.001	0.024	0.202

[a] Reference Group=Male

[b] Reference Group=Education less than 12 years

[c] Reference Group=Employed

[d] Reference Group=Married

[e] Reference Group=Northeast

SE Standard error, *CI* Confidence interval

This finding might suggest that individual aspiration and efforts to succeed in education and career may be very important for the mental health of this subgroup of Black men. Caribbean Black men may be more vulnerable to the effect of discrimination on depression if they do not believe their ability to succeed is limited because of their race. Thus, Caribbean Black men may be at highest risk of depression if they are not in the workforce and have low education level and encounter high levels of discrimination while do not believe that their race is a major barrier against their upward social mobility. The finding that Caribbean Black men who are unable to achieve high levels of education and sustain employment are at very high risk of MDD could guide future research that includes social positioning of this subgroup of Black men. Among this group, instead of a direct association, race attributions may exacerbate the association between discrimination and risk of depression.

Our study also showed that being unmarried is associated with depression risk in all subgroups of Blacks except Caribbean Black men. Protective role of marriage on depression has been shown previously among ethno-racially diverse samples [45–47]. Our findings, however, suggests that mental health of Caribbean Black men may not benefit from marriage, possibly due to a particular emphasis on educational/work success. Future research should further examine ethnic and gender differences in additive and multiplicative effects of marital and career status on mental health of Blacks.

The current study showed a complex pattern of association between ethnicity, gender, discrimination, and race attribution on MDD. Previous studies have shown that ethnicity, gender, and their interactions may modify the additive and multiplicative effects of risk and protective factors. In this view, instead of one size fits all, subpopulations may vary based on determinants of health and their susceptibility and resilience to the known risk factors [48–53]. Thus, our study

Table 3 Additive and multiplicative effects of discrimination and race attribution on depression among Caribbean Black men

	Odds ratio	Std. Err.	t	P>t	95 % CI	
Age	1.034	0.036	0.97	0.341	0.963	1.110
Employment[b]						
Unemployed	0.190	0.270	−1.17	0.254	0.010	3.595
Not in labor force	9.120	6.229	3.24	0.004	2.220	37.467
Education[a]						
12 years	0.109	0.078	−3.09	0.005	0.025	0.481
13–15 years	0.147	0.190	−1.48	0.151	0.010	2.125
16 years or more	0.052	0.081	−1.88	0.073	0.002	1.344
Region[d]						
Midwest	1.000					
South	1.829	0.809	1.37	0.185	0.733	4.569
West	124.556	156.644	3.84	0.001	9.237	1679.647
Marital status[c]						
Divorced/separated/widowed	1.261	1.215	0.24	0.812	0.172	9.247
Never married	3.237	1.952	1.95	0.064	0.930	11.268
Discrimination	1.252	0.057	4.97	<0.001	1.140	1.374
Race attribution	2.734	4.149	0.66	0.514	0.118	63.112
Discrimination * race attribution	0.825	0.060	−2.66	0.014	0.710	0.958
Intercept	0.001	0.002	−3.57	0.002	0.000	0.058

[a] Reference Group=Education less than 12 years

[b] Reference Group=Employed

[c] Reference Group=Married

[d] Reference Group=Northeast

SE Standard error, *CI* Confidence interval

revealed that gender by ethnicity subgroups differ in the associations between demographic and social factors and risk of MDD. Age was associated with MDD only among African American and Caribbean Black women. Race, ethnicity, gender, and socioeconomic status may have complex interactions in their effect on health. Racial and ethnic differences in health have been reported among groups with comparable levels of socioeconomic status [54]. Further, previous studies have also suggested that the protective effect of educational attainment on health and functioning was stronger for Whites than Blacks, while the effect of financial resources was larger among Blacks [55].

In the pooled model, and almost all ethnicity by gender subgroups, discrimination was associated with higher odds of 12-month MDD. Garcia Coll and colleagues argue that the American society stratifies individuals on the basis of social position variables such as race, ethnicity, and gender. They believe that discrimination is embedded within the US society and shapes health and well-being of minority groups including Blacks. Both general and racial discrimination place racial and ethnic minorities at higher risk for undesired physical and mental health outcomes [56]. Our study did not show a direct association between attribution of race and 12-month

depression in any of the race by gender subgroups. Some [57, 58] studies have documented the moderating effects of cognition on the association between stressful exposures and health outcomes. Most studies, however, have focused on the "main effect" of cognitive and explanatory style of race on health [59].

Although race attribution did not moderate the link between discrimination and depression, among Caribbean Black women, African American men, and African American women, race attribution did moderate the association between discrimination and 12-month MDD among Caribbean Black men. Not only exposures to stressors but also cognitive factors that interfere with the interpretation of the stressful exposures determine the vulnerability or resistance of an individual to undesired health outcomes. Conley and colleagues showed that attribution style shapes interpretation of the individuals and also health outcomes following exposure to stressful life events [60].

Neither negative life events nor attribution style explain depression alone [61, 62]; rather, the interaction between negative life events (i.e., stress) and cognitive styles (i.e., diathesis) is a clear pathway to the next steps. Although discrimination and other stressful life events occur in the lives

Table 4 Additive and multiplicative effects of discrimination and race attribution on depression among Caribbean Black Women

	Odds ratio	Std. Err.	t	P>t	95 % CI	
Age	0.961	0.016	−2.35	0.028	0.928	0.995
Employment[a]						
Unemployed	0.671	0.471	−0.57	0.575	0.157	2.864
Not in labor force	1.800	1.008	1.05	0.305	0.565	5.734
Education[b]						
12 years	0.836	0.647	−0.23	0.818	0.169	4.143
13–15 years	1.826	1.189	0.92	0.365	0.475	7.024
16 years or more	0.869	0.509	−0.24	0.812	0.258	2.921
Region[c]						
Midwest	1.000					
South	0.825	0.569	−0.28	0.783	0.198	3.434
West	1.783	2.084	0.49	0.625	0.159	20.011
Marital status[d]						
Divorced/separated/widowed	2.578	2.692	0.91	0.374	0.297	22.358
Never married	3.227	1.575	2.4	0.025	1.176	8.857
Discrimination	1.002	0.035	0.06	0.956	0.931	1.078
Race attribution	0.485	0.518	−0.68	0.505	0.053	4.421
Discrimination * race attribution	1.058	0.075	0.79	0.439	0.913	1.226
Intercept	0.089	0.094	−2.29	0.031	0.010	0.789

[a] Reference Group=Education less than 12 years

[b] Reference Group=Employed

[c] Reference Group=Married

[d] Reference Group=Northeast

SE Standard error, *CI* Confidence interval

of many people, only a percentage of the individuals who experience such events may develop depression. Such vulnerability may partly depend on the cognitive style of the person. Thereby, the results from this study also have implication for understanding the process of resilience at the presence of risk factors [63].

More recently, the interest of researchers has shifted from the association between discrimination and mental health to searching for factors that may buffer such an association. Our findings help us understand who is at highest risk for undesired outcomes, and what can be done to enhance resilience and reduce vulnerability of individuals and populations to discriminatory exposures in a world that is full of discrimination. Our results may also inform interventions that promote resilience factors such as coping and race attributes [64].

This study showed that ethnicity and gender of Blacks in the USA might influence the association between discrimination and their mental health. These kinds of effects, particularly those that include ethnicity and gender, may begin early, and occur often, as suggested by previous studies. For example, one study using the adolescent sample from the NSAL to compare 810 African American and 360 Caribbean Black youth and showed that both among African Americans and

Caribbean Blacks, males perceived more discrimination than their female counterparts. Although perceptions of discrimination were positively linked to depressive symptoms and negatively linked to self-esteem and life satisfaction among both ethnic groups, Caribbean Blacks were more vulnerable to high levels of discrimination than African Americans [20].

Based on the findings of the current study, race attribution may function as a resilience factor, while discrimination may be conceptualized as the risk factor. In line with the definition of resilience [65], race attribution determines depression of Caribbean Black men who experience daily life discrimination [65]. In line with the resilience literature [54, 66], race attribution may have an indirect effect and may buffer the effect of stressors on undesired outcomes. Race attribution did not function as a resilience factor for other groups of Blacks, however.

Though the findings of this study underscore the intersections of race, ethnicity, and gender among Blacks in the USA, the findings should be interpreted in the context of a few limitations. First, the causal direction among race attribution, discrimination, and depression could not be determined; as depression may also influence attribution style or self-reported frequency of discrimination. It has been shown that

Table 5 Additive and multiplicative effects of discrimination and race attribution on depression among African American Men

	Odds ratio	Std. Err.	t	P>t	95 % CI	
Age	0.991	0.015	−0.61	0.543	0.960	1.022
Employment[a]						
Unemployed	1.481	0.786	0.74	0.465	0.503	4.358
Not in labor force	1.112	0.647	0.18	0.856	0.341	3.629
Education[b]						
12 Years	0.611	0.246	−1.22	0.230	0.269	1.387
13–15 Years	0.368	0.183	−2.01	0.052	0.134	1.009
16 years or more	0.678	0.504	−0.52	0.604	0.150	3.069
Region[c]						
Midwest	2.981	1.610	2.02	0.051	0.995	8.932
South	1.219	0.605	0.4	0.692	0.445	3.342
West	1.761	1.315	0.76	0.453	0.386	8.030
Marital Status[d]						
Divorced/separated/widowed	3.362	1.595	2.56	0.015	1.282	8.818
Never married	1.861	0.905	1.28	0.21	0.692	5.002
Discrimination	1.065	0.021	3.17	0.003	1.023	1.110
Race attribution	0.766	0.479	−0.43	0.673	0.215	2.728
Discrimination * race attribution	0.986	0.028	−0.5	0.617	0.932	1.044
Intercept	0.018	0.018	−3.97	<0.001	0.002	0.140

[a] Reference Group=Education less than 12 years, , , .

[b] Reference Group=Employed

[c] Reference Group=Married

[d] Reference Group=Northeast

SE Standard error, *CI* Confidence interval

individuals who have depression have a consistent style in which they make internal, stable, global attributions for negative events [67].

Other study limitations also include the use of multiple statistical tests that may have lead to significant findings due to large type I error. Also, we used single-item measures of race attribution, which may have presented some challenges in the way we interpreted race attribution. Ethnic identity was not included in the study; however, ethnic identity may also shape various aspects of adaptive or nonadaptive functioning of an individual following exposure to stress. Ethnic identity may be associated with positive attitude toward self, prosocial behaviors, or undesired behaviors (e.g., drug use and aggressive behaviors) [68, 69]. Future studies should test if ethnic identity explains the buffering effect of race attribution when discrimination and prejudice are encountered [68–71]. Ethnic identity and race attribution has been considered as modifiable factors among African Americans, and may be changed as a consequence of race socialization messages [72].

In conclusion, groups of Blacks based on the intersection of ethnicity and gender may differ in how race attribution buffers the association between discrimination and depression. Our findings suggested that the way discriminatory experiences relate to depression among Caribbean Black men might depend on their conceptualization of race as a barrier against upward social mobility. Caribbean Black women, African American men, and African American women, however, are vulnerable to discrimination regardless of their race attribution. Our results suggest that beliefs about race may be a modifiable target to reduce vulnerability of Caribbean Black men to daily discriminatory experiences. Further research is needed to understand what makes Caribbean Black men different from Caribbean Black women, African American men, and African American women in this regard.

Conflict of Interest Authors declare that they have no conflict of interest.

Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human

Table 6 Additive and multiplicative effects of discrimination and race attribution on depression among African American Women

	Odds ratio	Std. Err.	t	P>t	95 % CI	
Age	0.979	0.009	−2.27	0.029	0.960	0.998
Employment[a]						
Unemployed	1.151	0.329	0.49	0.627	0.643	2.059
Not in labor force	1.284	0.278	1.15	0.258	0.826	1.994
Education[b]						
12 years	0.622	0.164	−1.8	0.080	0.364	1.062
13–15 years	0.731	0.231	−0.99	0.329	0.385	1.390
16 years or more	0.899	0.274	−0.35	0.729	0.484	1.670
Region[c]						
Midwest	0.825	0.253	−0.63	0.534	0.442	1.537
South	0.512	0.112	−3.07	0.004	0.329	0.797
West	0.775	0.230	−0.86	0.396	0.424	1.417
Marital status[d]						
Divorced/separated/widowed	2.084	0.708	2.16	0.038	1.045	4.155
Never married	1.372	0.374	1.16	0.254	0.788	2.389
Discrimination	1.055	0.013	4.5	<0.001	1.030	1.081
Race attribution	1.104	0.440	0.25	0.806	0.491	2.483
Discrimination * race attribution	0.987	0.016	−0.82	0.418	0.956	1.019
Intercept	0.140	0.064	−4.29	<0.001	0.055	0.355

[a] Reference Group=Education less than 12 years, , , .

[b] Reference Group=Employed

[c] Reference Group=Married

[d] Reference Group=Northeast

SE Standard error, *CI* Confidence interval

experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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