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Beyond the barriers: Racial discrimination and use of complementary and alternative medicine among Black Americans

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ABSTRACT

This article examines whether self-reported racial discrimination is associated with greater use of complementary and alternative medicine (CAM) and assesses whether the effects of reported racial discrimination are specific to the setting in which the unfair treatment occurred (i.e., medical or nonmedical settings). Data were drawn from the National Survey of Midlife Development in the United States (MIDUS) of Black adults aged 25 and older at baseline ($N = 201$). Analyses account for multiple forms of discrimination: *major* lifetime discriminatory events and *everyday* discrimination (more commonplace negative occurrences). Using logistic and negative binomial regression, results reveal that racial discrimination was associated with a higher likelihood of using any type of CAM as well as using more modalities of CAM. Also, both discrimination in health care and discrimination in nonmedical contexts predicted greater use of CAM. The findings underscore the tenet that health care choices, while influenced by health status and availability of health care resources, are also shaped by perceived barriers. The experience of racial discrimination among Black people is associated with greater use of alternative means of health care, as a way to cope with the barriers they experience in institutional settings in the United States.

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Introduction

Despite targeted federal initiatives and legislation, Black people in the United States continue to experience numerous forms of disadvantage in medical care. A 2003 report by the Institute of Medicine concluded that Black adults fare worse than White adults in a wide range of medical care settings (Smedley, Stith, & Nelson, 2003), and recent research offers little evidence that these patterns are abating (Krieger, 2011). Many scholars contend that the racial disparities in health care stem largely from deep-seated and institutionalized patterns of racial prejudice and discrimination rather than overt discriminatory acts by health care providers (Williams, 1999; Williams & Sternthal, 2010). Consistent with this premise, an extensive body of research has documented that Black Americans are dissatisfied with conventional medical care (Smyser & Ciske, 2001) and are less likely to trust their physicians than White Americans (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003).

The health care challenges faced by Black Americans who have experienced racial discrimination may be an impetus to venture outside the realm of conventional medicine in addressing health needs. Complementary and alternative medicine (CAM) represents a potential means of expanding, supplementing, or diversifying health care options to include more patient-focused approaches. CAM is a diverse array of treatments that exist outside of conventional medicine, including (1) complete systems of alternative care (e.g., homeopathy), (2) mind-body medicine (e.g., tai chi), (3) biologically based practices (e.g., herbal remedies), (4) manipulative and body-based practices (e.g., chiropractic), and (5) energy medicine (e.g., energy therapy; National Center for Complementary and Alternative Medicine, 2007).

A growing number of Americans report using these treatments, with recent estimates suggesting that about two out of five adults have used CAM at least once (Barnes, Bloom, & Nahin, 2008; Board on Health Promotion and Disease Prevention, 2005; Ni, Simile, & Hardy, 2002). Overall, CAM users in the general population have been found to be predominantly female, middle-aged, White individuals, with higher-than-average education and income, more chronic conditions, and poorer health than the general population

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(Astin, 1998; Barnes et al., 2008; Ni et al., 2002). Some studies find that African Americans have the lowest rates of seeing a CAM provider compared to other ethnic groups (Barnes et al., 2008; Keith, Kronenfeld, Rivers, & Liang, 2005). Results from the 2007 National Health Interview Survey indicate that Native American (50.3%) and White (43.1%) individuals reported higher rates of CAM use; about 26% of African Americans reported using CAM (Barnes et al., 2008). Although the overall rate is generally lower for African Americans than for other racial/ethnic groups (Barnes et al., 2008; Keith et al., 2005), relatively little is known about why Black people use CAM. We propose that marginalization resulting from perceived racial discrimination—both in and outside the medical context—is an underexamined factor that affects patterns of alternative health care usage among Black Americans. Thus, we ask: Does racial discrimination increase the likelihood that Black adults will use CAM?

Racial discrimination

Discrimination is a marginalizing, disempowering experience that takes various individual and institutional forms and that can have a lifelong impact on attitudes and behavior (Becker & Newsom, 2003). This study focuses on self-reported racial discrimination, which captures both the explicit appraisal of being mistreated and a causal attribution for the basis of the mistreatment (Carr & Friedman, 2005; Kessler, Mickelson, & Williams, 1999). Most important for this study, self-reported discrimination is significant because it influences behavior as well as health-related outcomes (Kessler et al., 1999). We conceptualize racial discrimination as occurring when members of subordinate racial or ethnic groups are treated differently by members of dominant racial or ethnic groups because of their race (Bobo & Fox, 2003). We focus on the experiences of self-reported racial discrimination among Black individuals because racial discrimination is a more potent gauge of experience than race alone; it captures heterogeneity within the Black population, including how institutional and interpersonal encounters may shape or redirect lives (D'Anna, Ponce, & Siegel, 2010; Williams & Rucker, 2000).

Racial discrimination and CAM use

Racial and ethnic discrimination within the American health care system is well documented (Boulware et al., 2003). A common refrain throughout much of this literature is that the prejudice and discrimination stemming from pervasive and systemic racist ideology are integral to disparities in health and health care. Williams and Rucker (2000) articulate this view cogently: "Understanding racial disparities in medical care requires an appreciation of the ways in which racism has operated and continues to operate in society" (p. 76). Most prior studies have examined how discrimination affects use of conventional medical care, revealing that perceived discrimination can erode compliance (van Houtven et al., 2005), reduce trust in physicians (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004), and abate preventive care among minority individuals (Trivedi & Ayanian, 2006). Also, experiences with discrimination are associated with delays in seeking medical care, even when controlling for demographic and clinical predictors (Casagrande, Gary, LaVeist, Gaskin, & Cooper, 2007; Lee, Ayers, & Kronenfeld, 2009).

At the same time, medical care represents a diverse institutional world. Though much has been written about racial prejudice in conventional medical settings, research is only beginning to assess the implications of racial discrimination for CAM use. Among the few studies that have examined the issue, Bazargan et al. (2005) demonstrated that minority individuals in underprivileged areas in California who reported racial discrimination were more likely than their White counterparts to use CAM. Also, a study of Asian Americans' use of CAM found that in addition to education and English proficiency, perceived discrimination was a significant predictor of CAM use (Choi & Kim, 2010). Similarly, self-reported discrimination in traditional health care settings is related to CAM use among lesbian women (Matthews, Hughes, Osterman, & Kodl, 2005; Smith et al., 2010). Although this research on CAM use has helped clarify how barriers in conventional medicine increase the likelihood of pursuing alternate genres of health care, the extant literature is limited by its reliance on nonrepresentative samples and inattention to differentiating between types of discrimination. By contrast, we believe the present study is the first to use a nationally representative sample to examine how discrimination in different settings influences CAM use among Black adults.

From prior literature, we anticipate that CAM may be used by Black individuals who have experienced discrimination, particularly as a way of meeting health needs amid perceived barriers to adequate care in conventional venues. There are at least three reasons that CAM may be sought out by Black persons facing discrimination. First, CAM may offer new ways to manage frustration stemming from discriminatory environments, such as meditation and anxiety-relieving techniques (Feagin & McKinney, 2003). Second, CAM users tend to be less reliant on and more questioning of their physicians' authority (Astin, 1998), a disposition that could stem from a sense of marginalization among Black Americans (although personality also may play a role; see Hildreth & Elman, 2007). In a related sense, some evidence indicates that distrust in conventional medicine can affect CAM use (Insaf, Jurkowski, & Alomar, 2010). Third, the uncomfortable legacy of institutionalized racism in American medicine has given the Black community an incentive to develop strategies of resistance to mainstream institutions (Shorter-Gooden, 2004). Indeed, historical mistreatment by the medical establishment may be embedded in collective memory (e.g., the Tuskegee experiments), and this shared sensibility may influence orientations to mainstream medical institutions (Jones, 1993), although there is conflicting evidence on this point (Brandon, Isaac, & LaVeist, 2005; Malat & van Ryn, 2005). Thus, CAM use may represent an effort by Black people to manage their health care choices (Astin, 1998; Sirois & Gick, 2002), an appealing alternative to the mainstream institutions—both medical and otherwise—where discrimination has occurred.

Major versus everyday discrimination

In assessing the impact of race-based mistreatment, this study follows the recommendation of discrimination scholars by differentiating between two forms of discrimination: *major* lifetime discriminatory events and *everyday* discrimination (e.g., Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005; Williams, Yu, Jackson, & Anderson, 1997). Major discrimination tends to be institutional and to have long-term economic and personal consequences, involving acute mistreatment in public arenas such as being denied a loan by a bank employee, not being hired for a job, or being given unequal treatment in school. Everyday discrimination refers to more chronic, day-to-day maltreatment in social situations, such as being called names and being treated with less courtesy than others. As with major discrimination, the contexts for everyday discrimination span medical and nonmedical settings.

The differences between major and everyday discrimination may have implications for their impacts on CAM use. Major racial discrimination, owing to its embeddedness in social institutions (e.g., the educational system), may have long-term effects on access to goods, services, and opportunities (Williams et al., 1997), reverberating across one's life circumstances. Everyday discrimination,

however, commonly reflects interpersonal mistreatment under current conditions. Therefore, although the chronic stress of everyday mistreatment may play some role in CAM use, we give special attention to major discrimination as it relates to institutional contexts.

Concerning the potential influence of major discrimination on health care behavior, we draw attention to the various contexts in which it can occur. In a study of medical care, it is certainly important to examine discrimination in the care setting itself (D'Anna et al., 2010); yet it is also crucial to examine the role of negative experiences in other settings (Williams & Williams-Morris, 2000). Inequalities arising from discrimination in one setting can shape expectations of poor treatment in other settings. Accordingly, members of minority racial groups may develop negative attitudes toward establishments in response to past incidents of discrimination (National Research Council, 2004). These dispositions can be short-term or long-term and may lead to withdrawal from a setting where one experienced discrimination (Feagin, 1991), collective action against discriminating institutions (Thoms & Ron, 2007), or avoidance of social institutions in general as a part of group identity (Leonardelli & Tormala, 2003). Pertaining to medical care, experiencing discrimination in multiple settings may lead patients toward noncompliance with physician recommendations (Casagrande et al., 2007). Indeed, Casagrande et al. (2007) argue that "mistrust or fear" of the medical establishment, especially when reinforced by perceived mistreatment across various institutions, has the potential to shape interactions with the medical system. Essentially, the issue is one of generalization or diffusion: does perceived mistreatment in settings such as banking and lending or the workplace shape compensatory action in *other* actor/institution interfaces? We expect that it does, at least in the case of medical care. Individuals may use established medical care despite discrimination, but they could also choose to alter their treatment options if they feel underserved or otherwise marginalized in society.

Two hypotheses guide the analysis:

H1. Perceived racial discrimination is associated with greater likelihood of CAM use for Black adults.

H2. Major racial discrimination is associated with greater likelihood of CAM use among Black adults, whether the discrimination occurred in a medical or nonmedical setting.

Methods

Sample

To test our two hypotheses, we use data from the National Survey of Midlife Development in the United States (MIDUS; Brim et al., 2000). The MIDUS data are well suited for the current study because the survey included detailed questions on numerous types and causes of discrimination as well as information on CAM use.

Data collection was undertaken from 1995 to 1996 by the MacArthur Foundation's Network on Successful Midlife Development. The survey first used random digit dialing to obtain a sampling frame of all English-speaking noninstitutionalized adults aged 25–74 in the contiguous 48 states. Next, the investigators used disproportionate stratified sampling to oversample males between ages 65 and 74. The response rate from these initial telephone interviews was 70%. The final stage included a two-part follow-up questionnaire mailed to those who participated in the telephone interview, yielding an 86.6% response rate. Thus, the overall response rate was 61% ($0.70 \times 0.87 = 0.61$). Consistent with this study's focus on racial discrimination against Black adults, we restricted our sample to participants who identified as Black ($N = 200$), after using multiple imputation for missing data in Stata (Royston, 2007). We did not attempt analyses with the Hispanic subsample for comparison, despite its minority status, because of the small number of Hispanic persons ($N = 112$), likely due to how ethnicity was asked. Data were publically available and the study was exempt from Institutional Review.

Racial discrimination

This study uses measures of self-reported discrimination originally developed by Williams et al. (1997). The questions were developed from in-depth qualitative studies of discrimination (Essed, 1991) and have been used by others (e.g., Kessler et al., 1999). Following the conceptualization set by Williams et al. (1997), we operationalize self-reported discrimination as consisting of major lifetime discrimination and everyday discrimination.

Major discrimination involves acute mistreatment in public and institutional arenas such as being denied or given inferior medical care, being denied a loan by a bank employee, or not being hired for a job. The study included a total of 11 events tapping unfair treatment: not hired for a job, not given a job promotion, fired from a job, discouraged by teacher from continuing education, denied a scholarship, prevented from renting or buying a home, denied a bank loan, forced out from neighborhood by neighbors, denied or given inferior medical service, denied or given inferior service, and hassled by police. Individuals could report each type multiple times. These items were used to create medical and nonmedical measures of major racial discrimination.

First, we define *major racial discrimination* as the sum of the number of times respondents reported discrimination across all 11 settings, ranging from 0 to 100. Values were top-coded to 29, as 99.4% of the cases reported 28 incidents or fewer. Because this summed variable was positively skewed, the values were subsequently log transformed (with skewness decreasing from 12.1 to 1.09). Second, we created dummy variables for different *types* of major racial discrimination the participant had experienced. *Medical discrimination* denotes respondents who reported being denied or given inferior medical care. *Nonmedical discrimination* includes respondents who experienced any form of mistreatment, excluding discrimination in the medical context.

Everyday racial discrimination refers to chronic day-to-day maltreatment during the past year. MIDUS includes a scale of nine day-to-day experiences, asking whether respondents face these experiences (1) often, (2) sometimes, (3) rarely, or (4) never. The specific items include the following: people act as if you are inferior, people act as if you are not smart, people act as if they are afraid of you, treated with less courtesy than others, treated with less respect than others, receive poor services in stores/restaurants, people act as if you are dishonest, you are called names or insulted, and you are threatened or harassed. The individual measures were reverse-coded (to $1 =$ never, $2 =$ rarely, $3 =$ sometimes, and $4 =$ often) and summed, so that higher scores in the summed scale correspond with higher reported levels of everyday discrimination ($\alpha = 0.9$). To account for the highly skewed distribution of the variable, the index was square-root transformed for use in multivariate modeling (skewness changed from 4.1 [untransformed] to 1.4 [transformed]). In sensitivity analyses, we considered alternate coding schemes, such as dummy variables for different levels of everyday discrimination. None of these approaches changed the substantive conclusions.

The MIDUS survey followed the discrimination questions with a query about the basis of the discriminatory experiences. Those respondents who indicated that they had faced either major or everyday discrimination were asked, "What was the main reason

for the discrimination you experienced?" Respondents could choose from a list of reasons, including age, gender, race, ethnicity/nationality, religion, height and weight, appearance, physical disability, and sexual orientation. Self-reported discrimination was coded as racial if respondents reported race as one of the reasons for such treatment. Only 10% of Black respondents attributed discrimination to a cause that was *not* related to race, and these responses were thus coded as 0 on the *racial* discrimination variables.

Outcome variables for CAM use

The outcome variables are based on 14 CAM modalities: acupuncture, biofeedback, chiropractic, energy healing, exercise or movement therapy, herbal therapy, high-dose megavitamins, homeopathy, hypnosis, imagery techniques, massage therapy, relaxation or meditation techniques, special diets, and any other nontraditional remedies. (Although the survey also asked about prayer and spiritual healing, we excluded that modality so as to not inflate estimates of CAM use. Supplementary analyses including prayer and spiritual healing resulted in higher rates of CAM use but did not alter the conclusions presented below.)

Two variables were used to operationalize CAM use. First, a binary variable measured whether the respondent reported any type of *CAM use* during the past 12 months, so that respondents who reported using any of the alternative medical modalities were scored 1 and all other response patterns were 0. The second variable, *number of CAM modalities*, captured the extent of a respondent's use of the 14 modalities (see above) in the past 12 months, scored as a count of the total reported modalities. Thus, the possible range was 0–14, while the observed range was 0–10.

Covariates

Female and currently *married* were included as dummy variables. *Age* was a continuous variable ranging from 25 to 74. *Education* was coded with dummy variables (high school degree/GED completion and bachelor's degree, with less than high school education as the omitted referent in regression analyses). *Income* was measured by a series of categories, ranging from 1 to 36 (with 1 equal to income loss and 36 equal to one million or more). We added the subject's personal income with income from his or her spouse and from anyone else living in the household, which produced a range from 3 to 93. The mean value of 32 represents roughly $45,000. Dummy variables indicated whether respondents had *private health insurance* or *government health insurance* (with *uninsured* as the reference category). Private insurance included insurance (1) from the insurer, (2) through one's employer, (3) through a spouse's/partner's employer, (4) through one's union, and (5) through spouse's or partner's union. Government insurance consisted of Medicare, Medicaid, and other programs based on financial need, as well as insurance for military personnel or veterans (Brim et al., 2000).

Models also controlled for self-reported *spirituality*, as identified by Hildreth and Elman (2007) to influence CAM use. This variable ranged from 1 to 4, with higher values indicating greater levels of spirituality. In supplemental analyses, we also included controls for individual dispositions, including *openness to new experiences* and *health control*. The findings did not change (for parsimony, we did not include these variables in final models).

Medical care choices, including CAM, are shaped by health needs, so it is important to control for the presence of disease (Hildreth & Elman, 2007). MIDUS asked respondents whether they had experienced or been treated for a list of ailments during the past 12 months, including asthma, bronchitis, or emphysema; urinary or bladder problems; migraine headaches; ulcers; piles or hemorrhoids, and hypertension. Because various illnesses may lead to different patterns of care seeking, we separated the conditions by type: *life-threatening conditions* and *chronic conditions*. A count of life-threatening conditions included five: cancer, diabetes, hypertension, heart problems, and stroke. A count of chronic conditions included 23 that are not life threatening, such as back problems, stomach problems, and skin problems. Whereas the count of chronic conditions was skewed, the values were also natural log transformed (model fit improved with the log transformation, and skewness changed from 1.7 to 0.263).

Finally, to account for the fact that conventional medicine is often associated with an increased likelihood of using CAM (Astin, 1998), we controlled for *physician use* during the last year (1 = saw a physician in the last 12 months; 0 = did not).

Analysis

All analyses used weights to adjust for differential probabilities of selection and differential nonresponse. To test this study's two hypotheses, we modeled the influence of self-reported racial discrimination on CAM use and number of CAM modalities among Black adults. We used binary logistic regression to analyze CAM use. Because number of CAM modalities is a count variable with a low mean relative to its range and with a highly skewed distribution, we used negative binomial regression to account for overdispersion of the dependent variable (Long, 1997).

As a second stage of the analysis, we differentiated major discriminatory experiences among Black respondents to better understand whether the effects of discrimination on CAM use were specific to a given setting (i.e., medical versus nonmedical). The regression models described above were estimated according to this alternative specification.

Results

Descriptive statistics for the MIDUS sample of Black respondents are shown in Table 1. About 32% of Black respondents reported any CAM use (mean of 0.6 modalities). Participants reported an average of almost five instances of major discrimination and a score of 16 on everyday racial discrimination (for the variables prior to transformation). Of note, the average level of major racial discrimination was about double for CAM users compared to CAM nonusers (8.6 and 3.36, respectively). Significant differences also existed for everyday racial discrimination by CAM use.

About 24% of Black respondents had a college degree, the majority had private insurance (22% had government insurance), and about half were married. Most reported high spirituality (3.3 out of 4). Most respondents had one or more diseases, and African Americans who used CAM were more likely to have multiple chronic conditions ($p < .05$). About 88% of the respondents saw a physician in the last year.

CAM use and count of CAM modalities

Table 2 considers the two study outcomes and consists of two models that differentiate key aspects of racial discrimination. Separate regression models examined the relationship between any CAM use and number of CAM modalities as a function of severity (the total count of major discriminatory events and everyday racial discrimination as the key predictors) and type of discrimination, medical and nonmedical.

Table 1
Means and standard deviations of variables for Black respondents, national survey of Midlife Development in the United States (MIDUS).

	Range	Mean (SD)	Percent	CAM use (yes)		CAM use (no)	
				Mean (SD)	Percent	Mean (SD)	Percent
Dependent variables							
CAM use	0/1		31.84				
Number of CAM modalities	0–10	0.60 (1.24)		1.98 (1.56)			
Independent variables							
Major racial discrimination[a]	0–29	4.88 (8.21)		8.6*** (10.30)		3.36 (6.65)	
	0		51.61		31.11		60
	1–5		20.65		24.44		19.09
	6–29		27.74		44.45		20.91
Everyday racial discrimination[b]	9–36	16.374 (7.23)		19.86*** (6.96)		14.71 (6.764)	
	9		37.88		17.19		47.76
	10–20		29.29		29.69		29.10
	21–36		32.83		53.12		23.14
Age	25–74	45.14 (12.61)		46.34 (12.59)		44.57 (12.61)	
Female	0/1		62.68		65.63		61.31
High school degree[b]	0/1		58.20		45.31*		64.23
College degree[b]	0/1		24.38		45.31***		14.6
Income[c]	5–89	32.74 (21.76)		35.65 (21.50)		31.38 (21.82)	
Private insurance[d]	0/1		68.15		78.13*		63.5
Government insurance[d]	0/1		22.18		18.75		23.36
Married	0/1		48.25		45.31		49.63
Life-threatening conditions	0–4	0.55 (0.79)		0.65 (0.84)		0.50 (0.78)	
	0		60.7		51.56		64.96
	1		26.37		35.94		21.90
	2		10.45		9.38		10.95
	3+		2.48		3.12		2.19
Chronic conditions[a]	0–16	2.09 (2.66)		2.81* (2.75)		1.75 (2.56)	
	0		33.33		15.63		41.61
	1		20.90		25		18.98
	2		16.42		20.31		14.6
	3+		29.35		39.06		24.82
Spirituality	1–4	3.34 (0.69)		3.41 (0.73)		3.31 (0.68)	
Physician use	0/1		87.93		94.7		84.62

Notes: N of cases varies because of missing values. $N = 64$ for CAM users and $N = 137$ for CAM nonusers. All dichotomous variables are scored zero and one (0 = no or otherwise). Standard deviations appear in parentheses for continuous variables.
$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$ (two-tailed tests).
[a] Everyday and major racial and nonracial discrimination and chronic conditions were transformed in multivariate analyses (i.e., square root of the everyday discrimination and log of major racial discrimination and chronic conditions).
[b] Less than high school is the reference group.
[c] Income is a sum of personal income and those of other household members (measured in categories). The range is from 3 (no money) to 93 (over a million). Mean value of 32 represents roughly $45,000.
[d] Uninsured is the reference group.

Any CAM use

As shown in the *severity* model, the count of reported events of major racial discrimination was associated with a greater likelihood of using CAM. Everyday racial discrimination was likewise a significant positive predictor. We also tested an interaction between major and everyday racial discrimination, but it was not significant. Having a bachelor's degree and more chronic conditions were likewise related to using CAM in the last year. In contrast to several prior studies (e.g., Astin, 1998; Ni et al., 2002), the relationship between physician use and CAM use was nonsignificant. This divergence likely owes to the fact that our sample is reduced to Black adults only; indeed, supplementary analyses with the entire MIDUS sample (i.e., Whites and other races) produce findings that correspond closely with those reported by Astin, Ni, and others.

The model including *type* of discrimination examines the effect of medical and nonmedical types of racial discrimination on CAM use. Discrimination in medical settings and discrimination in nonmedical settings were both significant positive predictors of CAM use. Older adults, those with a bachelor's degree, and those with more life-threatening and chronic conditions were more likely to use CAM.

Number of CAM modalities

Shifting to number of CAM modalities as the dependent variable, the model including severity of discrimination shows that the count of major racial discrimination was associated with more CAM modalities. The count of everyday experiences of discrimination was also a significant positive predictor. Those with a bachelor's degree and more life-threatening and chronic conditions used more CAM modalities.

The model including type of discrimination shows that discrimination in medical settings and discrimination in nonmedical settings had a positive association with number of CAM modalities. Other significant predictors included having a bachelor's degree and having more life-threatening and chronic conditions.

We also completed three sets of supplementary analyses to check the robustness of the results and to aid interpretation. First, we estimated the variance inflation factors of our predictors to test for multicollinearity (in OLS models). None was problematic (most were less than 2, averaging 1.49 as a set). Specifically, the VIF for major and daily discrimination was 1.34; college education and high school degree were the only variables with VIF above 2 (2.38 and 2.25, respectively). All correlations between variables were below 0.4 except between everyday and major racial discrimination (correlation = 0.5).

Second, we performed power analyses of individual predictors for multivariate regression (using powerreg in Stata), taking into account the number of covariates and change in model fit between full and reduced models. We estimated that at 0.8 power, with 14 variables in the model, we would need a sample size of 88 to find

Table 2
Unstandardized regression coefficient (standard errors) for utilization of any complementary or alternative medicine and number of any complementary or alternative medicine modalities for Black adults as a function of severity (major, everyday) and type (medical/nonmedical) of discrimination.

	Any CAM use		Number of CAM modalities	
	Severity of discrimination	Type of discrimination	Severity of discrimination	Type of discrimination
Severity of major racial discrimination				
Major racial discrimination (count)	0.659* (0.289)		0.631*** (0.190)	
Everyday racial discrimination (count)	0.717* (0.287)		0.379* (0.186)	
Types of major racial discrimination				
Medical discrimination		1.851** (0.662)		1.810*** (0.431)
Nonmedical discrimination		1.295* (0.533)		1.404*** (0.426)
Status characteristics				
Age	0.027 (0.018)	0.035* (0.018)	−0.006 (0.012)	−0.001 (0.014)
Female	0.977 (0.560)	0.569 (0.478)	0.697 (0.417)	0.613 (0.366)
High school degree[a]	−0.457 (0.625)	−0.314 (0.651)	0.176 (0.575)	0.166 (0.617)
Bachelor's degree[a]	1.663** (0.614)	1.568* (0.691)	1.606** (0.517)	1.363* (0.638)
Income	0.004 (0.011)	0.001 (0.011)	0.001 (0.008)	0.003 (0.008)
Private insurance[b]	0.978 (0.514)	0.722 (0.516)	0.378 (0.461)	0.254 (0.444)
Government insurance[b]	−0.022 (0.644)	−0.253 (0.607)	0.223 (0.595)	0.024 (0.580)
Married	−0.288 (0.452)	−0.346 (0.443)	−0.419 (0.393)	−0.519 (0.377)
Spirituality	0.275 (0.346)	0.211 (0.327)	0.312 (0.249)	0.246 (0.241)
Health controls				
Life-threatening conditions	0.468 (0.283)	0.381 (0.239)	0.428* (0.201)	0.468* (0.191)
Chronic conditions	0.424** (0.158)	0.435** (0.138)	0.279* (0.115)	0.303** (0.107)
Physician use	0.245 (0.906)	0.755 (1.028)	0.371 (0.715)	0.374 (0.689)
Constant	−9.62 (2.411)	−5.88 (1.918)	−6.66 (1.518)	−4.12 (1.261)
Observations	201	201	184	184

Notes: models on severity of discrimination examine the effects of major and everyday racial discrimination count on.
CAM use. Model on type of discrimination examines the effects of medical and nonmedical major racial discrimination (compared to those who did not experience racial discrimination) on CAM use.
Logistic regression was used to estimate any CAM use. Negative binomial regression was used for modalities.
Everyday and major racial discrimination and chronic conditions were transformed.
We restricted the analyses to all valid/nonmissing cases for each dependent variable.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed).
[a] Less than high school is the comparison group.
[b] Uninsured is the comparison group.

significance for major and daily discrimination for any CAM and 122 for number of CAM modalities. Alternatively, for medical and nonmedical racial discrimination, we would need a sample of 240 for any CAM (192 at power of 0.7) and 148 for number of CAM modalities. These estimates suggest that we had sufficient power to identify significant effects for the key independent variables.

Third, to better understand the breadth of nonmedical discrimination's effects, we examined the relationship between each of the 11 types of major racial discrimination and CAM use. Results showed that discrimination in a wide range of settings was associated with greater CAM use. Participants who reported being denied a scholarship were most likely to be CAM users (71% reported using at least one modality), followed by those who were fired from a job (68%) and discouraged from continuing education (63%). About 47% of Black respondents who reported being denied or given inferior medical service reported using CAM. As a point of reference, only 14% of Black adults who reported *no* racial discrimination were CAM users.

Discussion

The objective of this study was to test whether racial discrimination—a marginalizing, disempowering experience in the lives of many Americans—is associated with CAM use among Black adults. Consistent with our first hypothesis, racial discrimination was associated with greater CAM use. This finding is consistent with several earlier studies on the topic (Bazargan et al., 2005; Smith et al., 2010), supporting the argument that the lived experiences and disadvantages endured by racial minorities are important considerations for understanding patterns of health care use. A large body of descriptive literature has noted the dissimilarity between Black and White Americans in the use of CAM, suggesting that CAM is largely a middle-class phenomenon underused by Black Americans (Grzywacz et al., 2005). Clearly, socioeconomic factors, worldviews, and spirituality may predispose people to use CAM (Hildreth & Elman, 2007), but the experience of racial discrimination may also exert an important influence on Black Americans' use of CAM. Building on prior studies that used geographically defined, nonrepresentative samples (Bazargan et al., 2005; Smith et al., 2010), this is the first study of which we are aware to examine multiple forms of racial discrimination in a nationally representative sample of Black adults.

One of the emerging developments in the literature on health care disparities in the United States is an emphasis on how minorities navigate and adapt to unfavorable circumstances. Recent studies document that personal experiences of discrimination lead to stronger preferences for same-race health care providers (Malat & van Ryn, 2005), lower levels of patient satisfaction (Lee et al., 2009), avoidance or delay of health care (van Houtven et al., 2005), and noncompliance with treatment (Casagrande et al., 2007; Lee et al., 2009). Our study extends this line of research by demonstrating that racial discrimination can also affect health care-seeking behavior beyond conventional medical care. We examine different types of discrimination—major versus everyday manifestations of maltreatment—as well as the institutional context in which it occurred.

Major versus everyday discrimination

Both major and everyday racial discrimination predicted CAM use. Research shows that everyday, interpersonal discrimination may pose the strongest detriment to mental well-being (Kessler

et al., 1999; Williams et al., 1997), but major discrimination is related to long-term effects on life chances. Indeed, discrimination has the most influence if it has been a cumulative experience in one's life course (Feagin, 1991). The current study suggests that as discriminatory experiences accumulate, Black people are more likely to seek alternative systems of health care. Many factors influence when and where adults seek health care, and the findings from the present study suggest that both everyday and major discrimination affect CAM use for health needs. Since everyday discrimination could occur both within and outside of medical care (just as can major discrimination), the findings bolster our conclusions about the importance of varied social contexts for influencing health care behaviors.

Is the effect of discrimination specific to the setting?

We also found that discrimination in settings both within and outside of medical care was influential for CAM use. This suggests a spillover of discrimination's effects. After differentiating medical from nonmedical major discrimination, we found that Black adults who reported discrimination in settings such as work, education, law enforcement, and the service sector were also more likely to use CAM. Also, discrimination in nonmedical settings increased Black adults' CAM use compared to those who did not experience any major racial discrimination. These findings reveal that major discrimination in any institutional context has an important effect on health care behavior, including the choice to look beyond conventional sources of health care. Essentially, *major discrimination's relationship to CAM use is not domain-specific*: The decision to use CAM is not limited to unfair treatment in the setting most similar to CAM—conventional health care. Rather, maltreatment from other established institutions predisposes individuals to use CAM (providing support for hypothesis 2).

CAM as a response to discrimination

Marginalization can have a long-term impact on attitudes and behavior, and CAM use represents an effort by Black individuals who have experienced discrimination to reassert control and self-direction over their health (Sasagawa, Martzen, Kelleher, & Wenner, 2008; Sirois & Gick, 2002). Our special interest in Black individuals stemmed from the fact that race is a prevalent basis of discrimination in the United States (Kessler et al., 1999). In addition, Black Americans have been historically disadvantaged in medical care settings (Williams, 1999). As can be seen from Table 1, the prevalence of racial discrimination among Black adults was high, although some did not report any instances of everyday or major racial discrimination. For Black adults who did not report any discrimination, it is possible that some of them may not have attributed unfair treatment to their racial identity (Krieger, 2003). Individuals may indeed be mistreated but intentionally overlook, rationalize, or deny the discrimination or attribute it to other factors (e.g., gender or age). Research in this area continues to address challenges associated with measuring discrimination, especially biases that could occur because of the self-reported nature of discrimination (Krieger, 2011).

Moreover, the cumulative nature of inequality implies that disadvantage often diffuses across different domains of social life (Ferraro, Shippee, & Schafer, 2009); hence, we investigated the effects of major discrimination across different institutional settings. Multiple settings for discrimination predicted CAM use, but the accumulation of such experiences may be particularly important. We posit that seeking CAM represents agentic action—an effort to reassert control over health care choices for Black persons who feel marginalized by discrimination in various settings.

Study limitations

Though this analysis sheds fresh light on how discrimination influences medical care choices, there are several limitations that must be kept in mind. First, we did not have a sufficient number of respondents to permit detailed examination of the effects of discrimination on each type of CAM. Although overall CAM use is a crude outcome, the dichotomy nonetheless represents a crucial divide between those who venture beyond the conventional medical system to manage their health needs and those who do not. In addition, by counting the number of CAM modalities, we observe the extent of respondents' participation in multiple types of CAM. The consistency across the findings bolsters our conclusion of how racial discrimination is related to CAM use.

Second, although we focused on Black Americans use of CAM, the growing ethnic and racial diversity of the United States demands that attention be paid to other groups. One of the major limitations of the MIDUS data was the underrepresentation of Asian, Native, and Hispanic Americans. In and of itself, the rather small number of Black adults ($N = 201$) in the MIDUS sample is unfortunate, though the limited number of Black participants buttresses the robustness of our findings because significant effects were observed in a relatively small group.

Third, although we found an important link between discrimination and CAM, there may be many specific mechanisms that account for this relationship. For instance, it is possible that individuals who have lifelong histories of discrimination are more likely to live in areas where CAM providers are more abundant or to seek CAM for other reasons that our data do not allow us to explore (e.g., quality of care, dissatisfaction with care). We hope that future research will be able to isolate the precise mechanisms for why discrimination is related to CAM use among Black people.

Finally, our analyses are limited in their causal interpretations because of the cross-sectional design. One problem with this method is that it prevents us from using a fixed-effects model specification—an ideal tactic for controlling unmeasured personal dispositions that could underlie both CAM use and the proclivity to report discrimination. Thus, we are confronted with the possibility of a spurious relationship. Fortunately, we were able to control for education and income, which are factors most likely to confound the observed associations; CAM users tend to be more highly educated, on average (Astin, 1998), and highly educated adults are most likely to report discriminatory treatment (Feagin & Sikes, 1994). Our findings, nonetheless, are robust to the inclusion of education and income in multivariate models. Other unobserved variables, however, such as political orientation or worldview, also could be important. We attempted to address this possibility by using additional control variables in supplementary analyses, including openness to experience and worldview. None of the variables included, however, rendered spurious the association between discrimination and CAM use. We also tried to extend the analyses to the 10-year follow-up survey of MIDUS, but studying racial differences in CAM is impractical because of a lack of statistical power (only 44% of the Black participants with self-reported discrimination data responded to that portion of the survey in the second wave). It is also possible that the findings could have changed in the last decade, although we do not expect that the prevalence of racial discrimination decreased significantly during this time.

Despite these study limitations, the findings reveal that the experience of major racial discrimination increases both the probability of using any CAM and the number of CAM modalities used by African Americans. The findings underscore the position that health care choices, while influenced by health status and availability of health care resources, are also shaped by socially structured barriers and attempts to go beyond them.

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References

Astin, J. A. (1998). Why patients use alternative medicine. Results of a national study. *Journal of the American Medical Association, 279*(19), 1548–1553.

Barnes, P. M., Bloom, B., & Nahin, R. L. (2008). Complementary and alternative medicine use among adults and children: United States, 2007. *National Health Statistics Report, 12*, 1–23.

Bazargan, M., Norris, K., Bazargan-Hejazi, S., Akhanjee, L., Calderon, J. L., Safvati, S. D., et al. (2005). Alternative healthcare use in the under-served populations. *Ethnicity and Disease, 15*, 531–539.

Becker, G., & Newsom, E. (2003). Socioeconomic status and dissatisfaction with health care among chronically ill African Americans. *American Journal of Public Health, 93*(5), 742–749.

Board on Health Promotion and Disease Prevention (HPDP). (2005). *Complementary and alternative medicine in the United States*. Washington, DC: Institute of Medicine, National Academies Press.

Bobo, L. D., & Fox, C. (2003). Race, racism, and discrimination: bridging problems, methods, and theory in social psychological research. *Social Psychology Quarterly, 66*(4), 319–333.

Boulware, L. E., Cooper, L. A., Ratner, L. E., LaVeist, T. A., & Powe, N. R. (2003). Race and trust in the health care system. *Public Health Reports, 118*(4), 358–365.

Brandon, D. T., Isaac, L. A., & LaVeist, T. A. (2005). The legacy of Tuskegee and trust in medical care: is Tuskegee responsible for race differences in mistrust of medical care? *Journal of the National Medical Association, 97*, 951–956.

Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., et al. (2000). *National survey of midlife development in the United States MIDUS, 1995–1996* [Computer file]. ICPSR version. Ann Arbor, MI: Inter-University Consortium for Political and Social Research. [Distributor].

Carr, D., & Friedman, M. A. (2005). Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *Journal of Health and Social Behavior, 46*(3), 244–259.

Casagrande, S. S., Gary, T. L., LaVeist, T. A., Gaskin, D. J., & Cooper, L. A. (2007). Perceived discrimination and adherence to medical care in a racially integrated community. *Journal of General Internal Medicine, 22*(3), 389–395.

Choi, N. G., & Kim, J. (2010). Utilization of complementary and alternative medicine for mental health problems among Asian Americans. *Community Mental Health Journal, 46*(6), 570–578.

D'Anna, L. H., Ponce, N. A., & Siegel, J. M. (2010). Racial and ethnic health disparities: evidence of discrimination's effects across the SEP spectrum. *Ethnicity and Health, 15*(2), 121–143.

Essed, P. (1991). *Understanding everyday racism*. Newbury Park, CA: Sage.

Feagin, J. R. (1991). The continuing significance of race: anti-black discrimination in public places. *American Sociological Review, 56*(1), 101–116.

Feagin, J. R., & McKinney, K. D. (2003). *The many costs of racism*. New York: Rowman and Littlefield.

Feagin, J. R., & Sikes, M. P. (1994). *Living with racism: The black middle class experience*. Boston: Bacon Press.

Ferraro, K. F., Shippee, T. P., & Schafer, M. H. (2009). Cumulative inequality theory for research on aging and the life course. In V. L. Bengtson, M. Silverstein, N. M. Putney, & D. Gans (Eds.), *Handbook of theories of aging* (2nd ed.). (pp. 413–433) New York: Springer.

Grzywacz, J. G., Lang, W., Suerken, C., Quandt, S. A., Bell, R. A., & Arcury, T. A. (2005). Age, race, and ethnicity in the use of complementary and alternative medicine (CAM) for health self management: evidence from the 2002 national health interview survey. *Journal of Aging and Health, 17*(5), 547–572.

Hildreth, K. D., & Elman, C. (2007). Alternative worldviews and the utilization of conventional and complementary medicine. *Sociological Inquiry, 77*(1), 76–103.

Insaf, T. Z., Jurkowski, J. M., & Alomar, L. (2010). Sociocultural factors influencing delay in seeking routine health care among Latinas: a community-based participatory research study. *Ethnicity and Disease, 20*, 148–154.

Jones, J. (1993). *Bad blood: The Tuskegee syphilis experiment*. New York: Macmillan.

Keith, V. M., Kronenfeld, J. J., Rivers, P. A., & Liang, S. Y. (2005). Assessing the effects of race and ethnicity on use of complementary and alternative therapies in the USA. *Ethnicity & Health, 10*(1), 19–32.

Kessler, R. C., Mickelson, K. D., & Williams, D. R. (1999). The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior, 40*(3), 208–230.

Krieger, N. (2003). Does racism harm health? Did child abuse exist before 1962?—on explicit questions, critical science, and current controversies: an ecosocial perspective. *American Journal of Public Health, 93*, 194–199.

Krieger, N. (2011). *Epidemiology and the people's health: Theory and context*. New York: Oxford University Press.

Krieger, N., Smith, K., Naishadham, D., Hartman, C., & Barbeau, E. M. (2005). Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine, 61*, 1576–1596.

Lee, C., Ayers, S. L., & Kronenfeld, J. J. (2009). The association between perceived provider discrimination, healthcare utilization and health status in racial and ethnic minorities. *Ethnicity and Disease, 19*(3), 330–337.

Leonardelli, G. J., & Tormala, Z. L. (2003). The negative impact of perceiving discrimination on collective well-being: the mediating role of perceived in-group status. *European Journal of Social Psychology, 33*(4), 507–514.

Long, S. J. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.

Malat, J., & van Ryn, M. (2005). African-American preference for same-race healthcare providers: the role of healthcare discrimination. *Ethnicity and Disease, 15*, 740–747.

Matthews, A. K., Hughes, T. L., Osterman, G., & Kodl, M. M. (2005). Complementary medicine practices in community-based samples of lesbian and heterosexual women. *Health Care for Women International, 26*(5), 430–447.

National Center for Complementary and Alternative Medicine. (2007). *What is CAM?*. Retrieved 09.05.07, from. http://nccam.nih.gov/health/whatiscam/.

National Research Council. (2004). Measuring racial discrimination. Panel on Methods for Assessing Discrimination. In R. M. Blank, M. Dabady, & C. F. Citro (Eds.), *Committee on National Statistics, Division of Behavioral and Social Sciences and Education*. Washington, DC: The National Academies Press.

Ni, H., Simile, C., & Hardy, A. M. (2002). Utilization of complementary and alternative medicine by United States adults: results from the 1999 national health interview survey. *Medical Care, 40*(4), 353–358.

O'Malley, A. S., Sheppard, V. B., Schwartz, M., & Mandelblatt, J. (2004). The role of trust in use of preventive services among low-income African-American women. *Preventive Medicine, 38*, 777–785.

Royston, P. (2007). Multiple imputation of missing values: further update of ice, with an emphasis on interval censoring. *Stata Journal, 7*(4), 445–464.

Sasagawa, M., Martzen, M. R., Kelleher, W. J., & Wenner, C. (2008). Positive correlation between the use of complementary and alternative medicine and internal health locus of control. *Explore, 4*(1), 38–41.

Shorter-Gooden, K. (2004). Multiple resistance strategies: how African American women cope with racism and sexism. *Journal of Black Psychology, 30*, 406–424.

Sirois, F. M., & Gick, M. L. (2002). An investigation of the health beliefs and motivations of complementary medicine clients. *Social Science & Medicine, 55*, 1025–1037.

Smedley, B. D., Stith, A. Y., & Nelson, A. R. (Eds.). (2003). *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, D.C.: National Academy Press.

Smith, H. A., Matthews, A., Markovic, N., Youk, A., Danielson, M. E., & Talbott, E. O. (2010). A comparative study of complementary and alternative medicine use among heterosexually and lesbian identified women: data from the ESTHER project (Pittsburgh, PA, 2003–2006). *Journal of Alternative and Complementary Medicine, 16*(11), 1161–1170.

Smyser, M., & Ciske, S. (2001). Public health special report. Racial and ethnic discrimination in health care settings. Retrieved 10.05.07, from. www.metrokec.gov/health/phnr/eapd/reports/pubindex.htm.

Thoms, O. N. T., & Ron, J. (2007). Do human rights violations cause internal conflict? *Human Rights Quarterly, 29*(3), 674–706.

Trivedi, A. N., & Ayanian, J. Z. (2006). Perceived discrimination and use of preventive health services. *Journal of General Internal Medicine, 21*, 553–558.

van Houtven, C. H., Voils, C. I., Oddone, E. Z., Weinfurt, K. P., Friedman, J. Y., Schulman, K. A., et al. (2005). Perceived discrimination and reported delay of pharmacy prescriptions and medical tests. *Journal of General Internal Medicine, 20*, 578–583.

Williams, D. R. (1999). Race, socioeconomic status, and health. The added effects of racism and discrimination. *Annals of the New York Academy of Sciences, 896*, 173–188.

Williams, D. R., & Rucker, T. D. (2000). Understanding and addressing racial disparities in health care. *Health Care Financing Review, 21*(4), 75–91.

Williams, D. R., & Sternthal, M. (2010). Understanding racial-ethnic disparities in health: sociological contributions. *Journal of Health and Social Behavior, 52*, S15–S27.

Williams, D. R., & Williams-Morris, R. (2000). Racism and mental health: the African American experience. *Ethnicity and Health, 5*(3/4), 243–268.

Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial differences in physical and mental health: socioeconomic status, stress, and discrimination. *Journal of Health Psychology, 2*(3), 335–351.