Social inequalities, stressors and self reported health status among African American and white women in the Detroit metropolitan area

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Abstract

This article examines the cumulative effects of multiple stressors on women’s health, by race and area of residence. Specifically, we examine socioeconomic status, experiences of unfair treatment and acute life events by race and residential location, and their cumulative effects on the health status of African American and white women living within the city of Detroit and in the surrounding metropolitan area. African American women, regardless of whether they live inside or outside the city, report more frequent encounters with everyday unfair treatment than white women. African American women who live in the city report a greater number of acute life events than white women who live outside the city. Regression analyses used to examine the cumulative effects of exposure to these stressors by race and area of residence show that: (1) socioeconomic status, everyday experiences with unfair treatment and acute life events each make a significant contribution to differences in health status; and (2) the contribution of each of these variables to explaining variations in health status varies by area of residence. We suggest that differences in socioeconomic status, exposure to unfair treatment or discrimination and experiences of acute life events make significant contributions to racial differences in women’s health status. © 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Self-reported health; Social inequality; Women; African American; Stress; USA

Introduction

Differentials in morbidity and mortality between African American and European American women in the United States are persistent and well documented in the social science and epidemiological literatures.

African American women experience greater morbidity and mortality at younger ages, and are more likely to experience the death of an infant, than are white women in the same age range (Collins & David 1990; Kreiger, Rowley, Herman, Avery & Phillips, 1993; Geronimus, 1992; Hummer, 1993). These differentials follow general and well-established relationships between socioeconomic position and morbidity and mortality, with lower socioeconomic status consistently
related to higher levels of morbidity and mortality (Duleep, 1995; Kaplan, Pamuk, Lynch, Cohen & Bal- 
four, 1996; LaVeist, 1996; Lilie-Blanton, Parsons, Gayle & Dievler, 1996; Pappas, Queen, Hadden & 
Fisher, 1993). However, some disparities remain 
between, as well as within, racial groups after adjusting 
for socioeconomic status with commonly used indi-
cators such as individual level education or household 
income (Geronimus, Bound, Waidmann, Hillemeier & 
Burns, 1996; Lilie-Blanton et al., 1996; Polednak, 
1993; Williams & Collins 1995).

Public health researchers have increasingly ques-
tioned the utility of race as an explanatory research 
variable, urging that attention be shifted toward under-
standing the impact of social and economic divisions 
of populations based on systems of racial classifi-
cations on health (Fullilove, 1998; LaVeist, 1996; Wil-
liams, 1997). Women’s experience of these racial 
classifications may differ from those experienced by 
men, that is, the forms of discrimination experienced 
by African American men may differ qualitatively 
from those experienced by African American women 
(Collins & David, 1990; Crenshaw, 1993, 1995; Kreiger 
et al., 1993). Understanding the ways that the particu-
lar stressors experienced by women may differ by Afri-
can American and white racial categories can 
contribute to an understanding of the pathways 
through which these differences contribute to racial 
disparities in health. In this paper we focus on under-
standing racial differences in subjective experiences of 
unfair treatment, household income and exposure to 
acute life events by African American and white 
women living in the Detroit metropolitan area. We 
examine the distribution of these experiences and their 
implications for health across four groups of women: 
African American women living in an economically 
marginalized area of Detroit, African American 
women living in the city of Detroit as a whole, and 
African American and white women living in Detroit 
metropolitan area but outside of the city of Detroit.

**Stressors and health**

The research presented here draws upon a concept-
tual model of the stress process (Avison & Gotlib, 
1994; House, 1981; Israel, House, Schurman, Heaney 
& Mero, 1989; Israel & Schurman, 1990; Katz & 
Kahn, 1978) that identifies the contributions of mul-
tiple factors to health outcomes. This model is a com-
prehensive framework that focuses attention on stressors, conceptualized as “environmental demands 
(that) tax or exceed the adaptive capacity of an organ-
isms resulting in psychological and biological changes 
that may place persons at risk of disease” (Cohen, 
Kessler & Gordon, 1997 p.3). The experience of stres-
sors may produce short term responses, which may be 
manifest as behavioral (e.g. smoking), physiological 
(e.g. elevated blood pressure), or psychological (e.g. 
tension) outcomes. These short term responses, if 
repeated over time, may lead to irreversible negative 
health effects. The relationships among stressors, short 
term responses and long term health outcomes may be 
modified by what are sometimes referred to as “con-
ditioning variables” (Israel et al., 1989). These include 
individual factors, such as coping behaviors, as well as 
social factors, such as access to material resources or 
social support (Cohen et al., 1997; House, Landis 
& Umberson, 1988; Parker & Eng, 1997; Sarason et al., 
1994; Turner & Roszell, 1994).

Stressors may be acute life events, such as the death 
of a loved one, or they may be chronic, ongoing life 
conditions, such as ongoing experiences with discrimi-
nation (Israel et al., 1989; Wheaton, 1994). Pearlin 
(1989) has suggested that the distribution of stressful 
life events and life circumstances reflect structural con-
texts, and there is considerable evidence to support 
this thesis. Lower status groups, for example women 
and African Americans, appear to be both more likely 
to experience stressful life conditions and to be more 
negatively affected by these stressors than higher status 
groups (Aneshensel, 1992; Kessler & Neighbors, 1986; 
Thoits, 1995; Turner, Wheaton & Lloyd, 1995). Rela-
tively little research has specifically examined the par-
ticular stressors experienced by women of different 
racial groups, the relationships of these stressors to 
social contexts, and the ways that differences in these 
experiences may contribute to racial differentials in 
women’s health.

**Socioeconomic status**

There is considerable evidence that links lower socio-
economic status with poorer health, and racial different-
ials in socioeconomic status are an important factor 
in accounting for racial differences in health status 
(Lilie-Blanton et al., 1996; Williams & Collins, 1995). 
However, racial disparities in health status often 
remain even after adjusting for household or individual 
income and education (Lilie-Blanton et al., 1996; 
O’Campo, Xue, Wang & O’Brien Coughy, 1997; Wil-
liams & Collins, 1995).

There are many potential explanations for these 
remaining differentials in health status. They include: 
limitations of current measures of social class, particu-
larly for women (Duncan, Brooks-Gunn & Klebanov, 
1994; Krieger & Fee, 1994; Krieger et al., 1993; McDo-
nough, Williams, House & Duncan, 1999; Sheak, 
1988); contributions of income inequalities to health 
disparities, as distinguished from the effects of material 
deprivation (Kaplan et al., 1996; Pappas et al., 1993); 
long term effects of childhood poverty on adult health
subjective discrimination and health

Experiences with unfair treatment or discrimination have been linked to multiple health outcomes. For example, individuals who experience unfair treatment or hate crimes, whether on the basis of race, gender or sexual orientation, experience feelings of powerlessness and fear (Barnes & Ephross, 1994; Essed, 1990; Feagin & Sikes, 1994). A substantial body of research has established links between subjective experiences with unfair treatment with a broad range of mental and physical health outcomes (Dion, 1975; Dion, Dion & Pak, 1992; James, 1993a, 1993b; Kessler, Mickelson & Williams, 1999; Krieger, 1990, 1999; Krieger & Sidney, 1996; Noh, Belser, Kaspar, Hou & Rummens, 1999; Ren, Amick & Williams, 1999; Williams, Yu & Jackson, 1997a; Williams, Yu, Jackson & Anderson, 1997b). To the extent that women are more likely than men to experience unfair treatment on the basis of gender, and that African Americans are more likely than whites to experience unfair treatment on the basis of race, both groups are more vulnerable to the health effects of such unfair treatment. African American women may experience unfair treatment on the basis of both race and gender, with subsequent implications for mental and physical health outcomes.

Systemic discrimination

In addition to subjective experiences with unfair treatment, social systems organized around racial and gender inequalities also influence health outcomes through pathways that may or may not be subjectively perceived by the individual. For example, social processes that contribute to the creation of racially segregated, economically marginalized communities with insufficient social, structural and economic resources (e.g. racially based housing discrimination), contribute to poorer health outcomes among residents of those communities (Collins, 1997; Massey & Denton, 1993; Polednak, 1993; Williams & Collins, 1995). African Americans, who are disproportionately represented in racially segregated urban communities, encounter the burden of decreased access to employment, municipal services and other institutional supports for community life (Massey & Denton, 1993; Massey & Fischer, 1998; Sugrue, 1996). Residential segregation primarily occurs on the basis of race and class, and thus its influences on access to employment affect both women and men. However, African American women’s employment experiences and economic status are influenced by employer’s stereotypic perceptions of African American women — that is, by the combined categories of race and gender (Kennely, 1999; Krieger et al., 1993). Furthermore, women who are raising children as single heads of households encounter the dual strain of being the sole economic provider for their families at the same time that they struggle to meet the social and emotional needs of their children (Edin & Lein, 1996). On the east side of Detroit, approximately two-thirds of women who are raising children report that they are doing so as single heads of households, and the incomes of those households are substantially lower than those in which two parents are present (Schulz et al., 1999).

Recent research further underscores the contribution of community or neighborhood effects to health status (Geronimus et al., 1996; Haan, Kaplan & Camacho, 1987; Robert, 1998; Schulz et al., 2000), linking economic disinvestment to neighborhood conditions, which in turn may shape health outcomes (James, Schulz & van Olphen, 1999). The public health impact of these processes is seen in the disproportionate burden of morbidity and mortality borne by residents of high-poverty urban communities, increasingly recognized as a concern by public health practitioners and researchers (Freudenberg, 1998; Fullilove, 1998; Fullilove, Green & Fullilove, 1999).

Cumulative effects

The cumulative effects of exposure to multiple stressors over time has been hypothesized to contribute to more rapid deterioration in the health of African American women when compared to white women, an effect that has been termed the “weathering hypothesis” (Geronimus, 1992). Turner and colleagues (1995) have argued for more comprehensive measures of the variety of ways that these differential life experiences may contribute to differential exposure to stressors and ultimately to differentials in health status. We consider both race and gender to be social constructs that shape, and are shaped by, patterns of social interaction that substantially influence the conditions of peoples’ lives (Auerbach & Figert, 1995; Essed, 1990; Feagin,
1991; James, 1993a; LaVeist, 1996; Massey & Denton, 1993; Polednak, 1996). In this paper, we examine the distribution of a number of stressors that may contribute to racial differences in women’s health status, and the ways that these stressors are distributed by race and by area of residence.

Study setting

As one of the most racially segregated cities in the United States (Massey & Denton, 1993; Sugrue, 1996), Detroit offers an important opportunity to examine the combined effects of race-based residential segregation and subjective experiences of discrimination on women’s health.

Over the past four decades, white residents and employers in the Detroit area have increasingly relocated from aging urban industrial areas to the ever-expanding suburban areas. There is evidence that the proportion of white employees to African American employees increased in corporations that relocated to the suburbs (Zax & Kain, 1996), while employment opportunities declined in increasingly segregated urban communities (Jaynes & Williams, 1989; Massey & Denton, 1993; Sugrue, 1996; Thomas, 1997). Some urban employers responded to this situation by reducing rates of pay, bolstered by the knowledge that the available labor pool far exceeded the number of positions available in the area (Turner, 1997).

The Detroit metropolitan area reflects processes of economic disinvestment and increasing race-based residential segregation over the past several decades that have been experienced by urban industrial areas throughout the northeast and midwest (Schulz et al., 2000; Sugrue, 1996). Little research has specifically examined the implications of these patterns for the lives of women living in urban communities and surrounding areas, nor the relationship of those patterns to racial differences in women’s health status. The Detroit metropolitan area offers an opportunity to examine the relationship of these economic and social patterns to the stressors experienced by women, as these may vary by race and area of residence.

Hypotheses for this study

This study begins with the premise that race is a social category that shapes patterns of social interaction and the distribution of social resources differentially for African American and white women. The stress process framework is used to examine the differential distribution of stressors by area of residence and the cumulative effects of these different life experiences on women’s health status. Specifically, we test the hypotheses listed below.

1. African American women will report lower levels of household income at any given level of education than white women living in the same metropolitan area. Furthermore, African American women living in more economically marginalized urban areas will report lower household incomes at each level of education than women who live in less economically marginalized areas.

2. African American women will experience more frequent unfair treatment or discrimination than white women living in the same metropolitan area.

3. African American women who live in economically marginalized urban communities will experience a greater number of acute life events than their counterparts in more economically stable communities.

4. The cumulative effects of differentials in socioeconomic status, experiences with unfair treatment or discrimination and acute life events will be associated with racial differences in women’s health status.

Methods

Sample

Data for this study are drawn from two surveys conducted in the Detroit metropolitan area in 1995 and 1996. In 1996 a survey was conducted with 700 women aged 18 and older living in a geographically defined area on the east side of Detroit who care for children under 18 years of age at least five hours a week. This community survey was conducted by the East Side Village Health Worker Partnership under the auspices of the Detroit Community-Academic Urban Research Center (URC) funded by the Centers for Disease Control and Prevention. The East Side Village Health Worker Partnership is a community-based participa-
tory research partnership that uses a lay health advisor approach to address and understand stressful life conditions and health protective factors for women and children on the east side of Detroit (Parker, Schulz, Israel & Hollis, 1998; Schulz et al., 1999). This survey (hereafter referred to as the VHW survey) was conducted in a geographically defined area on the east side of Detroit which is highly segregated by race (96% African American) and where 37% of all families and 65% of female headed families with children live below the poverty line. The VHW survey used a two-stage random sampling process. Households were randomly selected from a listing of all households in the defined area and, if more than one woman in a selected household met the eligibility criteria, respondents were randomly selected from the eligible members within the household. The response rate for this survey was 80%, with 97% of respondents self-reporting their race/ethnicity as African American. The analyses reported in this paper use only African American respondents from the VHW survey.

Data are also analyzed from the 1995 Detroit Area Study (DAS), an annual survey of the Detroit metropolitan area encompassing Wayne (which includes the city of Detroit), Oakland and Macomb counties, which focused on social inequality and health. The DAS is a multistage area probability sample of 1139 adult respondents 18 years of age and older living in the tri-county area. The response rate for this survey was 70%, and the final sample included 520 respondents who self-identified as white, 586 who identified as African American and 33 respondents who identified as either Asian, Hispanic or American Indian (Williams et al. 1997b). The analyses reported in this paper use only African American and white female respondents from this survey (397 African American and 296 white women; 333 of the African American female respondents lived within the Detroit city limits and 64 lived outside the city; 15 of the white female respondents lived in the city limits and 281 lived in the metropolitan area).

The VHW survey area is highly segregated on the basis of race (96% African American) and 37% of families living in that area of the city have incomes below the poverty line. Within the city of Detroit as a whole, 77% of residents are African American and the poverty rate is somewhat lower, with 31% of families below the poverty line. In the areas surrounding the city of Detroit, just 7% of residents are African American and 6% of households fall below poverty. The use of both the VHW and the DAS survey data allows comparisons of the life experiences of African American and white women living in residential areas that differ in terms of the extent of race-based residential segregation and the concentration of household poverty.

This analysis divides respondents into four subgroups: African American women living on Detroit’s east side (VHW survey area); African American women living within the city of Detroit as a whole; African American women living in the Detroit metropolitan area but outside of the Detroit city limits; and white women living in the Detroit metropolitan area but outside of the Detroit city limits. Ideally, we would have included a fifth group, white women living within the city of Detroit. However, the very low numbers in this category (n = 15), precluded meaningful analysis for this group.

Measures

Both the DAS and the VHW surveys used a single item measure of general health status in which respondents were asked “in general, would you say your health is: excellent, very good, good, fair or poor?”. This item, which has been shown to be a reliable indicator of future population mortality (Idler & Benyamin, 1997), is used as the dependent variable in the analyses reported here.

The independent variables included age in years as a sociodemographic control variable. Education was measured using an ordinal scale, (1 = less than high school graduation; 2 = high school graduation; 3 = some college; 4 = college graduate), and income (measured as total family income in the past year, with ten response categories, ranging from less than $5000 to more than $50,000). To translate these ordinal categories into more meaningful income figures in the descriptive data reported in this paper, we used the midpoint income figure for each category (e.g. for category 1 = < $5000, we used the midpoint of $2500) when calculating mean incomes. For the uppermost category (> $50,000) we used $50,000 in our calculations. This flattens the range of income distributions somewhat, so that the results in Table 2 represent a conservative estimate of group differences in income. Race was measured by respondent self-identification (0 = white, 1 = African American).

Two measures of exposure to stressors were used as independent variables. The first was a measure of daily encounters with discrimination. This scale was the mean of five items that assessed the frequency of experiences of unfair treatment in the 12 months prior to the interview. Two representative scale items are: how often have you been treated with less courtesy than others, and how often have other people acted as if they were better than you? Response categories ranged from 1 = never to 5 = very often. Cronbach’s alpha for

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2 See Williams et al. (1997a) for a discussion of the development of this scale.
the five item scale was 0.82 and 0.81 for the VHW and DAS samples respectively. The second measure of stressors was an index representing the sum of five acute life events reported by respondents in the 12 months preceding the administration of the survey. Representative items included: whether the respondents had retired when they didn’t want to, had someone close to them die, or had been the victim of a serious physical attack or assault.

Data analysis

Diagnostic tests for heteroskedasticity and multicollinearity of the independent and dependent variables were conducted. Plots of the dependent variables were examined against the independent variables to assess whether assumptions for homoskedasticity were upheld. The variance inflation factors (VIF) and tolerances for the predictor variables were also examined. The assumption of homoskedasticity was met, and the scales used in the analyses were within prescribed tolerances (Neter, Wasserman & Kutner, 1985).

Simple descriptive statistics using the data from the DAS and the VHW Survey compared the responses of African American women living within the VHW study area, African American women in the city of Detroit, and African American and white women in the surrounding metropolitan area by self-reported health status, income, education, frequency of experiences with everyday discrimination or unfair treatment and acute life events.

A series of regression analyses were conducted to examine the independent and cumulative effects of socioeconomic status, daily discrimination and acute stressors on general health status within each of the four subgroups. Finally, the samples were combined and a series of regression analyses was conducted to examine relationships among age, race, income, everyday discrimination or unfair treatment, acute life events and residence, with self-reported health as the dependent variable.

Results

Health status

Overall, white women in the sample reported more favorable general health status than did African American women (Table 1). When examined by race and area of residence, the results indicate that African American women, regardless of where they lived, reported significantly poorer health status than white women living outside the city limits (p < 0.01). There were not significant differences in self-reported health status between African American women living on the east side, in the city as a whole, or outside the city. Thus the differences in self-reported health status that appear between Detroit city and the surrounding metropolitan area appear to be primarily a function of poorer health status among African American women, who are disproportionately represented within the city limits.

Education and household income

Table 1 also shows mean education and income for women within each of the four subsamples. No significant differences were found in mean level of education between the four groups, i.e. African American women in the east side of Detroit or Detroit as a whole or between African American or white women living outside the city but in the metropolitan area. However, as shown in Table 2, there were differences in mean household income by both race and area of residence at each level of education. White women living outside the city reported higher incomes than African American women living in the same metropolitan area at each educational level (p < 0.05). Furthermore, mean income at each educational level was higher for African American women city-wide than for African American women living on Detroit’s east side. African American women living on the east side with some college education reported household incomes roughly similar to those for African American women living elsewhere in the city and outside the city who were high school graduates, and comparable to household incomes for white women living outside the city who had not completed high school.

Daily discrimination

Table 1 also compares reported experiences of unfair treatment or discrimination for each of the four groups. Regardless of where they lived, African American women reported significantly more frequent experiences with everyday unfair treatment than white women living outside the city (p < 0.001).
Acute life events

Table 1 shows mean number of acute life events experienced in the preceding 12 months for women in each of the four subgroups. White women living outside Detroit reported the fewest acute life events, followed by African American women living outside the city. African American women living in the city reported the greatest number of life events. Differences in the number of acute life events experienced by African American and white women who lived outside the city were not statistically significant. However, African American women who lived in the city experienced significantly more acute life events than white women who lived outside the city ($p < 0.01$).

Table 3 shows that there were differences by race and by area of residence in the type of acute life events experienced. While women in each of the four groups were equally likely to report that they had retired when they did not want to in the past year, African American women, regardless of area of residence, were more likely to report that they had been the victim of a physical attack than were white women who lived outside the city ($p < 0.05$). African American women who lived in the city were more likely to report that someone close to them had died in the past 12 months than were women of either race who lived outside the city ($p < 0.05$). These patterns suggest that risk of experiencing different acute life events differs by both race and by area of residence.

Stressors and health status

Regression analyses were carried out to examine the relationships between socioeconomic status, experiences with everyday unfair treatment and acute life events, by race and area of residence, to indicators of general health. Table 4 shows results of regression analyses for each of the four subgroups. Self-reported general health status is the dependent variable, regressed on age, education, income, everyday experiences of unfair treatment and acute life events. Everyday experiences with unfair treatment nor acute life events were significant correlates of general health status for women who lived outside the city of Detroit, above and beyond the effects of the sociodemographic variables. Neither everyday experiences with unfair treatment nor acute life events were significant correlates of general health status for women who lived outside the city of Detroit, above and beyond the effects of the sociodemographic variables.

Finally, we examined the extent to which race and area of residence contributed to racial differentials in health status, above and beyond the contributions made by experiences of unfair treatment and acute life events. Table 5 shows results from a series of re-

<table>
<thead>
<tr>
<th>African American women, east side Detroit ($n = 679$)</th>
<th>African American women, Detroit city ($n = 333$)</th>
<th>African American women in Detroit metropolitan area ($n = 64$)</th>
<th>White women in Detroit metropolitan area ($n = 276$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self reported general health status (1=poor, 5=excellent)</td>
<td>3.3 (1.0)</td>
<td>3.2 (1.1)</td>
<td>3.2 (1.2)</td>
</tr>
<tr>
<td>Age</td>
<td>38.9 (16.1)</td>
<td>45.2 (16.1)</td>
<td>44.8 (20.8)</td>
</tr>
<tr>
<td>Education (1=less than high school, 4=college graduate)</td>
<td>2.1 (0.9)</td>
<td>2.5 (0.9)</td>
<td>2.6 (1.0)</td>
</tr>
<tr>
<td>Income ($b$)</td>
<td>14,183 (2.3)</td>
<td>23,116 (2.8)</td>
<td>27,227 (2.7)</td>
</tr>
<tr>
<td>Everyday unfair treatment (1=never, 5=very often)</td>
<td>2.3 (0.8)</td>
<td>2.2 (0.8)</td>
<td>2.3 (0.9)</td>
</tr>
<tr>
<td>Acute life events ($e$)</td>
<td>0.79 (0.9)</td>
<td>0.73 (0.8)</td>
<td>0.55 (0.8)</td>
</tr>
</tbody>
</table>

$^a$ Excluding women living in the city of Detroit.
$^b$ One SD = $5,000$.
$^c$ White women reported significantly better health than African American women, regardless of area of residence ($p < 0.01$).
$^d$ White women reported significantly fewer experiences with unfair treatment than African American women ($p < 0.001$).
$^e$ White women reported significantly fewer acute life events than African American women living in Detroit ($p < 0.01$). Differences between African American and white women living outside the city were not statistically significant.
<table>
<thead>
<tr>
<th>Educational level</th>
<th>African American women on Detroit's east side (n = 679)</th>
<th>African American women in Detroit city (n = 333)</th>
<th>African American women in the metropolitan area outside the city (n = 64)</th>
<th>White women in the metropolitan area (n = 276)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school graduation (1)</td>
<td>$8,493 (1.6)$</td>
<td>$14,917 (2.0)$</td>
<td>$30,610 (1.0)$</td>
<td>$20,690 (2.0)$</td>
</tr>
<tr>
<td>High school graduate or GED (2)</td>
<td>$12,771 (2.1)$</td>
<td>$21,980 (2.5)$</td>
<td>$36,134 (2.4)$</td>
<td>$33,315 (2.0)$</td>
</tr>
<tr>
<td>Some college (3)</td>
<td>$19,118 (2.4)$</td>
<td>$25,420 (2.6)$</td>
<td>$41,923 (1.5)$</td>
<td>$36,134 (2.4)$</td>
</tr>
<tr>
<td>College graduate (4)</td>
<td>$27,394 (3.0)$</td>
<td>$37,188 (2.3)$</td>
<td>$42,029 (1.9)$</td>
<td>$42,029 (1.9)$</td>
</tr>
<tr>
<td>Mean</td>
<td>$14,183 (2.3)$</td>
<td>$23,116 (2.8)$</td>
<td>$27,227 (2.7)$</td>
<td>$30,045 (2.4)$</td>
</tr>
</tbody>
</table>

a Results shown are not age-adjusted. While age was significantly associated with education, the differences reported here remain significant after controlling for age.

b One SD = $5000.

c The mean income for African American women on Detroit’s east side was significantly lower than the mean income for African American women city wide, and for African American and white women in the metropolitan area outside the city (p < 0.001).

d White women in the metropolitan area reported household incomes significantly higher than African American women living in the metropolitan area (p ≤ 0.05).
Table 3
Percent of respondents who report each of five acute life events, and mean number of acute life events among African American women on Detroit’s east side, African American women in Detroit, and African American and white women living outside the city of Detroit in the Detroit metropolitan area

<table>
<thead>
<tr>
<th>Event</th>
<th>African American women on Detroit’s east side (n = 664)</th>
<th>African American women, Detroit city (n = 331)</th>
<th>African American women Detroit metropolitan area (excluding Detroit city) (n = 63)</th>
<th>White women Detroit metropolitan area (excluding Detroit city) (n = 271)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent reporting they were victim of physical attack or assault</td>
<td>5.0 (33)</td>
<td>6.6 (22)</td>
<td>4.8 (3)</td>
<td>0.7 (2)</td>
</tr>
<tr>
<td>Percent reporting they retired when they didn’t want to</td>
<td>5.0 (33)</td>
<td>3.3 (11)</td>
<td>4.8 (3)</td>
<td>3.7 (10)</td>
</tr>
<tr>
<td>Percent reporting anyone close to them died</td>
<td>43.6 (290)</td>
<td>44.4 (147)</td>
<td>29.0 (18)</td>
<td>27.9 (76)</td>
</tr>
<tr>
<td>Percent reporting they moved to a worse residence</td>
<td>14.3 (95)</td>
<td>5.1 (17)</td>
<td>7.9 (5)</td>
<td>2.6 (7)</td>
</tr>
<tr>
<td>Percent reporting their home had been robbed or burglarized</td>
<td>11.4 (77)</td>
<td>14.0 (47)</td>
<td>7.8 (5)</td>
<td>4.0 (11)</td>
</tr>
<tr>
<td>Mean number of acute life events reported</td>
<td>0.79 (662)</td>
<td>0.73 (331)</td>
<td>0.55 (62)</td>
<td>0.39 (271)</td>
</tr>
</tbody>
</table>

* Results shown are not age-adjusted.

Differences in mean number of acute life events reported by African American women on the east side and city wide, and between African American women city wide and those living outside the city were not statistically significant. White women living outside of the city reported significantly fewer acute life events (p ≤ 0.01) than African American women living outside of the city.
gression analyses conducted with African American and white respondents living in Detroit and the surrounding metropolitan area, using the DAS dataset. General self-reported health status is regressed, in the first model, on age, education, income and race (African American = 1, white = 0), and in the second model, on age, education, income and Detroit city residence. Models 3 and 4 examine the contributions of race and Detroit city residence, respectively, above and beyond the contributions of the sociodemographic control variables, everyday unfair treatment and acute life events.

Results shown in Model 1 of Table 5 indicate that race is significantly associated with health outcomes, controlling for age, education and income ($p < 0.001$). Once the effects of subjective experiences with unfair treatment and acute life events are included in Model 3, residence within or outside of the Detroit city limits is no longer significantly associated with general health status. These results suggest that the relationship of race to general health status is associated with, but not entirely accounted for by, differentials in unfair treatment and acute life events. While residence inside or outside the city limits is significantly associated with health status above and beyond the effects of age, education and income, this relationship is no longer significant when the effects of everyday unfair treatment and acute life events are included in the model.

**Discussion and limitations**

The results reported in this paper generally support the hypothesis that women’s subjective experiences of unfair treatment are associated with racial categories, and that their exposure to the acute life events assessed in this study are associated with both race and with area of residence. African American women report lower mean household incomes at any given level of education than white women, and this effect is exacerbated for African American women who live on the

### Table 4

Self-reported general health status regressed on age, household income, education, daily discrimination and acute life events by race and area of residence

<table>
<thead>
<tr>
<th></th>
<th>African American women Detroit</th>
<th>African American women, Detroit city (n = 331)</th>
<th>African American women, Detroit metropolitan area (excluding Detroit city) (n = 63)</th>
<th>White women Detroit metropolitan area (excluding Detroit city) (n = 271)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td><strong>b (SE)</strong></td>
<td><strong>B</strong></td>
<td><strong>b (SE)</strong></td>
<td><strong>B</strong></td>
</tr>
<tr>
<td>Age</td>
<td>-0.24 (0.03)</td>
<td>-0.35***</td>
<td>-0.23 (0.04)</td>
<td>-0.33***</td>
</tr>
<tr>
<td>Education</td>
<td>0.06 (0.05)</td>
<td>0.06</td>
<td>0.14 (0.07)</td>
<td>0.12*</td>
</tr>
<tr>
<td>Income</td>
<td>0.09 (0.02)</td>
<td>0.20***</td>
<td>0.04 (0.02)</td>
<td>0.11</td>
</tr>
<tr>
<td>Everyday unfair treatment</td>
<td>-0.13 (0.05)</td>
<td>-0.10**</td>
<td>-0.20 (0.07)</td>
<td>-0.15**</td>
</tr>
<tr>
<td>Acute life events</td>
<td>-0.10 (0.04)</td>
<td>-0.09*</td>
<td>-0.19 (0.07)</td>
<td>-0.15**</td>
</tr>
<tr>
<td>Constant</td>
<td>3.85** (0.17)</td>
<td>4.00** (0.31)</td>
<td>3.02**</td>
<td>3.40*** (0.34)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.17</td>
<td>0.17</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>$F$</td>
<td>26.87</td>
<td>13.36</td>
<td>2.17</td>
<td>10.34</td>
</tr>
<tr>
<td>Significant</td>
<td>0.000</td>
<td>0.000</td>
<td>0.071</td>
<td>0.000</td>
</tr>
</tbody>
</table>

$^a p \leq 0.05$, $^* p \leq 0.01$, $^{***} p \leq 0.001$. 

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6 The VHW sample was not included in this analysis because of the similarity in the size and significance of the predictor variables between the VHW and the DAS sample of African American women in Detroit found in the preceding analyses.

7 Race and area of residence were not included in the same model in these analyses due to the high correlations between the two variables (0.830), and resultant high standard errors and unacceptably low tolerances.
east side of Detroit. These findings are consistent with theoretical and empirical work that suggests that racially-based residential segregation combined with economic disinvestment in affected areas contributes to decreased access to economic resources among residents of those areas (Massey & Denton, 1993; Sugrue, 1996; Wilson, 1987).

African American women in the Detroit metropolitan area, whether inside or outside the city limits, reported significantly more frequent experiences with unfair treatment than white women. African American women reported similar frequencies of experiences with unfair treatment regardless of whether they lived on the east side, city-wide or outside the city limits; that is, unfair treatment was associated with race regardless of area of residence.

The third hypothesis, that acute life events are structured by both race and residence, received qualified support on the basis of the results reported here. African American women who live outside the city reported more frequent acute life events than white women who live outside the city, and fewer acute life events than African American women living in the city, although neither of these differences were statistically significant. However, African American women living in the city of Detroit reported significantly more acute life events than white women who lived outside the city. This result may have been influenced by the specific acute life events measured for this study, some of which were related to race regardless of area of residence (e.g., likelihood of being a victim of a physical attack), while others were associated with both race and area of residence (e.g., whether someone close had died in the past year). Further research would help to disentangle those acute stressors that are most closely associated with neighborhood environment versus those that are organized around the social constructs of race or gender, regardless of neighborhood context.

There are several limitations to this study. One clear limitation is that the data are cross-sectional. The results cannot confirm, for example, that discrimination or acute life events lead to poorer health outcomes. However, these results lead to poorer health outcomes for women who live outside the city, although neither of these differences were statistically significant. African American and white women living in the city of Detroit and outside the city in the metropolitan area were included in this table. VWH survey respondents who lived outside the city were not included in this analysis due to their similarity to women in the city of Detroit as a whole.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$ (SE)</td>
<td>$B$</td>
<td>$b$ (SE)</td>
<td>$B$</td>
</tr>
<tr>
<td>Age</td>
<td>-0.015 (0.002)</td>
<td>-0.247***</td>
<td>-0.015 (0.002)</td>
<td>-0.239***</td>
</tr>
<tr>
<td>Education</td>
<td>0.158 (0.45)</td>
<td>0.139***</td>
<td>0.157 (0.45)</td>
<td>0.138***</td>
</tr>
<tr>
<td>Income</td>
<td>0.073 (0.25)</td>
<td>0.123***</td>
<td>0.088 (0.25)</td>
<td>0.144***</td>
</tr>
<tr>
<td>Race (0=white, 1=African American)</td>
<td>-0.345 (0.83)</td>
<td>-0.156***</td>
<td>-0.251 (0.82)</td>
<td>-0.113***</td>
</tr>
<tr>
<td>Everyday unfair treatment</td>
<td>-0.147 (0.52)</td>
<td>-0.107***</td>
<td>-0.266 (0.043)</td>
<td>-0.221***</td>
</tr>
<tr>
<td>Acute life events</td>
<td>-0.266 (0.043)</td>
<td>-0.221***</td>
<td>-0.270 (0.044)</td>
<td>-0.225***</td>
</tr>
<tr>
<td>Detroit city residence (1=Detroit, 0=non-Detroit)</td>
<td>-0.194 (0.082)</td>
<td>-0.089*</td>
<td>-0.110 (0.081)</td>
<td>-0.050</td>
</tr>
<tr>
<td>Constant</td>
<td>3.529</td>
<td>3.347</td>
<td>4.250</td>
<td>4.160</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.155</td>
<td>0.140</td>
<td>0.213</td>
<td>0.204</td>
</tr>
<tr>
<td>$F$ significant</td>
<td>20.851***</td>
<td>27.450***</td>
<td>30.042***</td>
<td>28.489***</td>
</tr>
</tbody>
</table>

*a* African American and white women living in the city of Detroit and outside the city in the metropolitan area were included in this table. VWH survey respondents who lived outside the city were not included in this analysis due to their similarity to women in the city of Detroit as a whole.

*b* $p < 0.05$. **$p < 0.01$. ***$p < 0.001$. 

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of Detroit \( n = 64 \), may have contributed to a lack of statistical significance for indicators within this group. Even more problematic was the very small number of white women sampled within the Detroit city limits \( n = 15 \), which we have already noted precluded comparisons of this group which would have further explained the influence of residential and racial differences as they contribute to differentials in health status.

Furthermore, the study used two data sets with slightly different sampling strategies and eligibility criteria. Most importantly, the focus in the East Side Village Health Worker survey on women with responsibility for the care of children resulted in a relatively younger study sample (mean age = 38.9) than that of the Detroit Area Study (mean age = 46.2). Age was controlled in all of the regression analyses included in the paper, and the final series of regression analyses included only respondents from the DAS sample. These strategies should minimize potential bias introduced by these differences in the age of the study samples.

Our measure of acute life events was limited to five items that appeared in both data sets. As already noted, differences in the distribution of these acute life events suggest that racial differentials in women’s health status may occur through multiple pathways. Some of these disproportionately affect African American women regardless of where they live, and some are more likely to affect African American women because of their disproportionate representation in urban communities characterized by economic marginalization. Measures of acute life events that contained additional items could extend our understanding of the variety of ways that stressors are patterned by race and area of residence, and the relative contributions of these differential distributions to racial differences in women’s health status.

It is difficult to disentangle the effects of place of residence on the individuals who reside there from individual or household factors that may contribute to residence in different areas. The categories of residence used in these analyses were relatively broad, given differences in residential segregation and socioeconomic status that exist within both the city of Detroit and in the outlying metropolitan area. Further analyses using data with large enough samples to disentangle the effects of race and residence within smaller geographic areas (e.g. between African American and white respondents living in the same neighborhoods) could help to assess the effects of race and place more thoroughly. In addition, the data used here were gathered in the Detroit metropolitan area and care should be taken in generalizing to other metropolitan areas where economic patterns as well as patterns of residential segregation may differ.

Finally, these results, which focus on stressors and their relationship to general health status, present only a part of a larger picture. Not all communities with high concentrations of poverty, and not all individuals within such communities, experience negative health effects to the same extent (Geronimus et al., 1996; Israel, James, Schulz, Parker & Farquhar, 2000; Parker et al., 2000). The stress process model suggests that protective factors not included in these analyses, such as social support and social integration, may play a key role in modifying the negative relationships shown here between exposure to chronic and acute stressors and health outcomes (Israel & Schurman, 1990; Israel et al., 2000; Williams, Spencer & Jackson, 1998). Examining factors such as household composition, the availability of social support, and community level factors, would contribute to an understanding of the ways that these indicators may influence the health of women within various contexts, above and beyond the effects of life stressors.

**Concluding comments**

Despite these limitations, these results contribute to a growing body of evidence that there are multiple pathways through which discrimination influences health. African American women in this study had fewer economic resources at their disposal (both overall, and at any given educational level), reported more frequent experiences with unfair treatment and experienced a greater number of acute life events in the past year than white women. Experiences of unfair treatment and acute life events both made independent and significant contributions to, although they did not completely account for, racial differences in health status. Household income at a given level of education, and the likelihood of experiencing some acute life events were associated with residence in the city, and had a greater impact on African American women because they were more likely to live in the city. In contrast, experiences of unfair treatment did not vary significantly for African American women by area of residence: that is, regardless of where they lived, African American women were more likely than white women living outside the city to experience unfair treatment. Whether through subjectively experienced discrimination or through structural conditions that contribute to increased risks of certain acute life events, the cumulative effects of these differential exposures to stressors contributes to longstanding racial differences in women’s health status.

Detailing the specific stressors experienced by African American and white women, and their relationship to race and to aspects of the environment or context, helps to enhance our understanding of the social determinants of longstanding racial disparities in health.
These results suggest that efforts to address underlying social determinants of health are an important aspect of addressing persistent racial disparities in health. Approaches that address these underlying stressors imply attention to the health-related implications of social policies that are rarely discussed in these terms. Examples of such policies include minimum wage, child care for working parents, equal education and equal wages for comparable work programs (Marmor, Morris & Evans, 1994;Thoits, 1995). Policies and practices that actively work to counter both institutional and interpersonal forms of discrimination, whether that discrimination is enacted on the basis of racial or gender categories, are linked to health through these pathways. In addition, policies that address the concentration of stressors in localized areas, for example, economic and social stressors, combined with physical environmental hazards found in some urban communities, are important health-related policies when considered within the framework of the stress process model (Corin, 1994; Evans, Barer & Marmor, 1994). Although this article has focused on relationships between stressors linked to the social categories of race, and has focused on their implications for racial disparities in women’s health, many such policies are likely to influence community health more broadly.

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