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CONCEPTUAL FOUNDATIONS OF HEALTH DISPARITIES RESEARCH

Disentangling Race and Socioeconomic Status: A Key to Understanding Health Inequalities

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ABSTRACT *This article addresses one of the most vexing problems facing health disparities researchers, the confounding of race and socioeconomic status. This article does the following: (1) it outlines the magnitude of confounding between race and socioeconomic status; (2) it demonstrates problems caused by this confounding; (3) it examines the degree to which race disparities are a function of socioeconomic status; and (4) it discusses considerations for advancing research on health disparities after accounting for the confounding of race and socioeconomic status.*

KEYWORDS *Ethnicity, Health disparities, Race, Socioeconomic status.*

INTRODUCTION

Recent years have witnessed renewed attention to racial and ethnic inequalities in health status and access to quality healthcare. This area of research has begun to evolve beyond studies that merely describe health disparities, with increasing attention being paid to efforts to explain them.[1] However, although the research literature on health disparities has begun to mature, there are four problems that severely complicate research efforts to understand racial disparities in health status. This article elucidates one of these problems, after a brief description of the other three.

The first problem that complicates research on racial disparities in health is racial segregation. America remains highly segregated along racial lines. Racial segregation can lead to starkly different environmental and social risk exposures among racial groups.[1–5] Consequently, it is not known to what extent racial disparities in health status are manifestations of differential social/environmental exposures. Analytic methods to adjust for this problem (such as hierarchical linear models) have been developed; however, there are few data sets that can support such analysis.

A second problem faced by health disparities researchers is that, typically data sources sufficiently large and geographically diverse enough to statistically adjust for most confounders lack the psychosocial variables that are of great interest in understanding race disparities in health. Examples of such data sources are the National Health and Nutritional Survey, the Behavioral Risk Factors Surveillance

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Survey, and the National Medical Expenditure Panel. The third major problem is that most large-scale epidemiologic community studies that include important psychosocial variables lack sufficient numbers of racial minorities to conduct race disparities research (e.g., Framingham, Massachusetts and Washington County, Maryland).

The fourth problem, the confounding of race and socioeconomic status, is the topic of this article. Simply stated, health status varies by race. Health status varies by socioeconomic status. Racial minorities are more likely to have low socioeconomic status compared with Whites. And, the overlap between race and socioeconomic status complicates efforts to determine whether it is, "race *and* social class" or "race *or* social class" that produces disparities in health status. This article outlines the magnitude of confounding of race and socioeconomic status. It demonstrates problems caused by this confounding, examines the degree to which race disparities are a function of socioeconomic status, and discusses considerations for advancing research on health disparities after accounting for the confounding of race and socioeconomic status.

MEASURES OF SOCIOECONOMIC STATUS

The degree to which race and socioeconomic status are confounded depends on the measure of socioeconomic status that is used. The relationship between race and socioeconomic status as measured by income, educational attainment, poverty, wealth (net worth), and occupation is examined below. Figure 1 summarizes the relationship between race/ethnicity and four measures of socioeconomic status: median income, poverty, educational attainment, and net worth. The relationship between socioeconomic status and race/ethnicity is similar across all measures. Panel A of Fig. 1 shows that Asian/Pacific Islanders have the highest median income of any racial/ethnic group, followed by Whites. Both Black and Hispanic Americans have median incomes about $10,000 lower than the median income for Asian/Pacific Islanders.

Panel B shows the inverse of Panel A. The highest poverty rates are found among Blacks and Hispanics, and the lowest rates are among Asian/Pacific Islanders and Whites. Panel C demonstrates that the percent of high school graduates does not differentiate among the race groups as much as income or poverty status. More than 80% of Black, White, and Asian Americans are high-school graduates. However, college graduation displays more variation among the groups.

Panel D shows that net worth displays a great deal of variation among the groups. Net worth measures the accumulated value of all assets minus liabilities. Although median net worth for Whites approaches $80,000, median net worth for Hispanics and African Americans is less than $10,000. Excluding home equity, median net worth for Whites is greater than $22,000, whereas Black and Hispanic median net worth excluding home equity is less than $2,000. As Table 1 summarizes, net worth is related to income. However, net worth measures much more than income. It takes into consideration the intergenerational transfer of wealth. Net worth also measures the quality of one's financial decision-making.

Table 1 summarizes median net worth within income quintiles by race/ethnic groups. The table shows that for all groups, as income increases median net worth increases. However, differences in net worth across the racial/ethnic groups are substantial. In the highest income quintile, median net worth for Whites is more than three times the Black median and nearly three times the Hispanic median (data for Asians were not available). At the middle and lower quintiles the disparities are even greater. For example, among the first quintile, the White median net worth is 240 times greater than Black median net worth and forty-eight times the median net

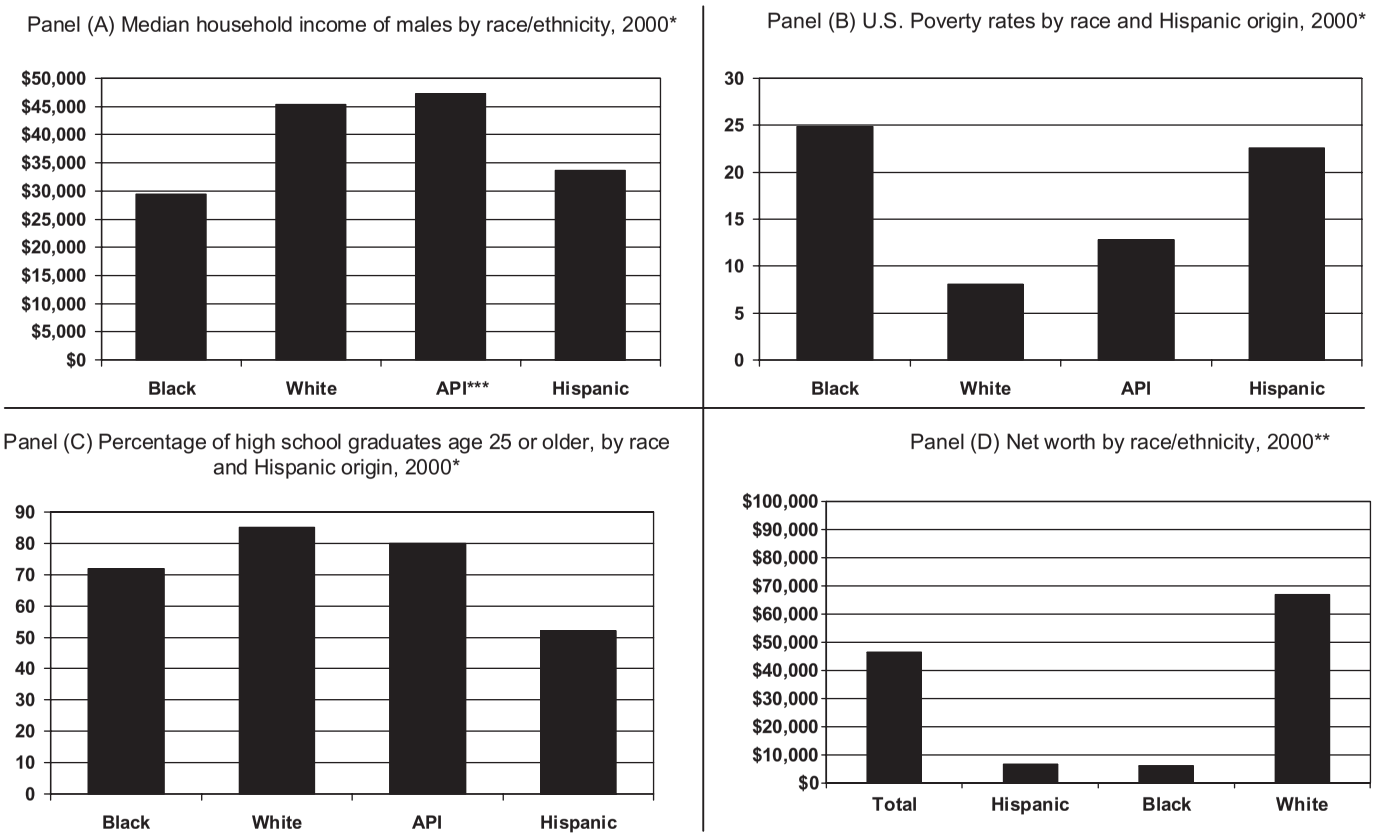

FIGURE 1. Measures of socioeconomic status and race/ethnicity.

*US Census Bureau. Census 2000, Summary File; Tables P148B, P148D, P148E, P148H, P148I, P152B, P152D, P152E, P152H, P152I, P159B, P159D, P159E, P159H, P159I. Generated by John Jackson; using American FactFinder. Available at: http://factfinder.census.gov/home/saff/main.html?_lang=en. Accessed 23 March, 2005.

**US Census Bureau. *Wealth and Asset Ownership, (Table 1). Median Value of Assets for households, by Type of Asset owned and selected Characteristics: 2000.* Available at: http://www. census.gov/hhes/www/wealth/19982000/wlth98-4.html. Accessed March 23, 2005.

***API, Asian Pacific Islander.

TABLE 1. Median net worth and income quintile by race/ethnicity, 2000

	Black	White	Hispanic
Lowest 20%	<$100	$24,000	$500
Second 20%	$5,275	$48,500	$5,670
Middle 20%	$11,500	$59,500	$11,200
Fourth 20%	$32,600	$92,842	$36,225
Highest 20%	$65,141	$208,023	$73,032

Source: US Census Bureau. *Net Worth and Asset Ownership of Households: 1998 and 2000*. 2003:70–88.

worth for Hispanics. And, in the third quintile, White median net worth is more than forty-two times the Black median and more than five times the Hispanic median.

Job status is another way in which to measure socioeconomic status. Some occupations are held in higher regard than others. Along with this higher regard and prestige, these occupations generally command higher incomes. In 1996, 48% of men and 73% of women civilians 25–64 years held white-collar positions. Thirty-nine percent of civilian men in this age range held blue-collar jobs, compared with only 10% of women. By contrast, women were nearly twice as likely as men to be employed in service occupations (16% compared with 9%). Only 4% of men and just 1% of women reported their major occupation as farm-related (Table 2).

Asian or Pacific Islander men and non-Hispanic White men were much more likely to hold white-collar positions than Black or Hispanic men; three out of every five Asian or Pacific Islander men and over one half of White men were employed in white-collar occupations, compared with one out of every three Black men and about one quarter of Hispanic men. For each race and ethnic group examined, most of the employed civilian women between 25 and 64 years held white-collar positions from 52% of Hispanic women to over three quarters of White women.

Occupational prestige approaches the issue of measuring socioeconomic status by ranking the relative prestige of the individual's occupation. Although this approach has been used in sociological and economics research, it has not been widely used in health research. Occupational prestige scaling is a process whereby occupations are ranked on a scale from 1 to 100 for its perceived prestige. The rankings are derived from surveys that ask respondents to attach a ranking to the occupation. Thousands of occupations are classified and the rankings are updated periodically.[6] Table 3 illustrates a sample of occupations from the Nakao and Treas occupational prestige rankings.[6]

Typically, occupational prestige scales are used in conjunction with income and education to form a composite score. There are several well-recognized socioeconomic status scales that use this approach. Although there are some differences in the specific calculations for these indexes, they are all generally related. Examples of these scales are the Duncan socioeconomic index (SEI),[7] the Featherman and Hauser scale,[8] Nam and Powers,[9] and Nakao and Treas.[6]

ARE RACE DISPARITIES IN HEALTH STATUS CAUSED BY SOCIOECONOMIC STATUS?

As shown above, there is substantial correlation between race and socioeconomic status. This well-known fact may lead some to conclude that race differences in

TABLE 2. Current occupation for people 25–64 years

Race and Hispanic origin	Men				Women			
	White-collar	Blue-collar	Service	Farm	White-collar	Blue-collar	Service	Farm
All races	48.4	39.2	8.7	3.8	72.9	10.2	15.8	1.1
White, non-Hispanic	52.6	37.4	6.7	3.4	77.6	8.3	13.0	1.1
Asian or Pacific Islander	60.9	27.7	8.9	2.5	68.5	15.7	15.4	0.4
Black, non-Hispanic	33.5	46.9	17.6	2.0	59.3	14.8	25.7	0.1
Hispanic	26.1	49.4	15.4	9.0	52.3	18.4	26.7	2.7

Source: US Bureau of the Census. *Current Population Survey: March 1996*.

TABLE 3. Sample of occupational prestige scores

Occupation	Score
Physician	97
Dentist	96
School principal	85
Architect	84
Accountant	76
Real estate agent	64
Dancer	44
Receptionist	37
Toll collector	26

Source: Nakao K, Treas J. Updating occupational prestige and socioeconomic sources: how the new measures measure up. In: Marsden P, ed. *Sociological Methodology, 1994*. Washington, DC: American Sociological Association; 1994:1–72.

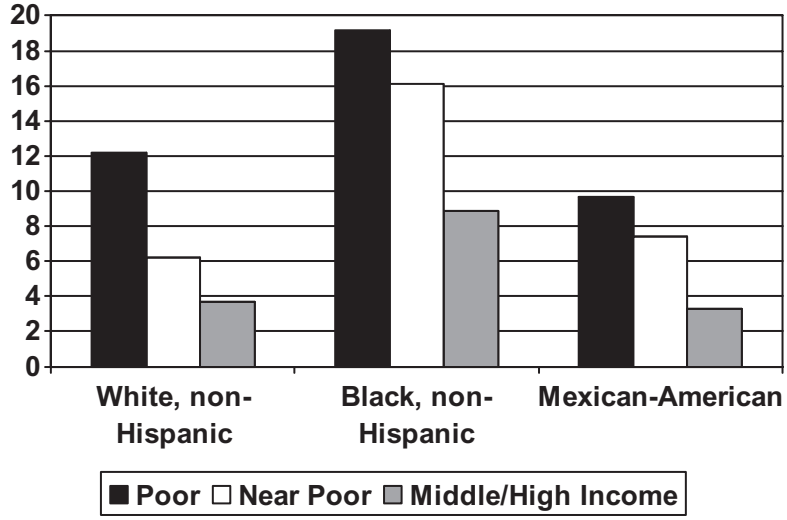

FIGURE 2. Elevated blood level among men 18 years or over.

health status are spurious. That is, race disparities result from underlying socioeconomic status. However, for most health outcomes this is simply not true. Although race and socioeconomic status are correlated, it is clear that both variables are independent predictors of health status. For example, Fig. 2 summarizes the percentage of males age 18 and older who were found to have elevated blood lead levels in a national study.

As can be seen from Fig. 2, within each race group there is a linear relationship between income status and elevated blood level. That is, as income increases the proportion of men with elevated blood levels decreases. Also, within each income group there is a race disparity in elevated blood lead level. Moreover, within

each income group, African Americans have the highest percentage of men with elevated blood lead levels.

Table 4 extrapolates data from Fig. 2 to examine the independent impact of race and income. The table displays the percentages of men with elevated blood levels along with the ratio of rates. Among men in the "poor" category, the rate of elevated blood lead for Black men was 57% greater than the rate for White men. The rate ratio increases to 2.60 (160% greater) and 2.41 (141% greater) for the "near poor" and "middle/high" income groups, respectively. The ratio of rates for income groups within race groups (comparing the "poor" group with the "middle/high" income groups) is computed in the bottom row of the table. For White men, the difference in the rate of elevated blood lead between socioeconomic status groups is greater than the disparity between race groups. Among White males, the "poor" were 3.3 (230%) times more likely to have elevated blood lead compared with men in the "middle/high" income group. For Black men the rate ratio was 2.2 (120%).

DISCUSSION

To some extent the problem of disentangling race and socioeconomic status is as much conceptual as it is methodological. For many years, this writer taught an undergraduate course on health disparities and minority health. On the first day of class, he gives the students a "test" to assess their perceptions about race, ethnicity, and social class in America. The "test" consists of multiple-choice questions such as, "According to the most recent census, how many African Americans, Hispanics, and Asians live in the United States?" and "According to the most recent census, what percentage of African Americans, Hispanics, and Asians live below the official poverty line?"

Each year the results are similar. These students—bright and generally well-informed—grossly overestimate the number of racial minorities, and they overestimate the proportions living in poverty. Predictably, they estimate the number of both African Americans and Hispanics to be more than 80 million (there are about 35 million African Americans and Hispanics), and they typically estimate poverty rates to be greater than 60% (the rate is about 22% for both groups). At least, among these students (admittedly not a representative group) the perception differs greatly from reality. Often perceptions drive the research questions and the way in which results are interpreted. Ask yourself, how you would have done on this "test"?

The most common approach to dealing with the confounding of race and socioeconomic status is to use multivariate methods, such as multiple regression analysis.

TABLE 4. Percent of males 18 years of age and older with elevated blood lead levels

	White	Black	Ratio of Rates for Race
Poor	12.2	19.2	1.57
Near poor	6.2	16.1	2.60
Middle/high income	3.7	8.9	2.41
Ratio of rates for SES groups (top/bottom)	3.3	2.2	

SES, socioeconomic status.

Source: US Department of Health and Human Services. *Health, United States, 1998*.

However, this approach can successfully address race/socioeconomic status confounding only if there is a sufficient sample of respondents in all comparative racial/socioeconomic status groups. For example, in a comparative analysis of smoking among Asian and Hispanic Americans, there would need to be sufficient numbers of low socioeconomic status Asians and Hispanic smokers and nonsmokers, and sufficient numbers of Asian and Hispanic smokers and nonsmokers who are of high socioeconomic status. So, each cell of the $2\times2\times2$ table would have to be sufficiently populated to make valid comparisons. However, it is probably the case that most researchers do not power their studies in this way.

When it comes to studies of race, socioeconomic status, and health, it may not matter much which measure of socioeconomic status one uses in most cases. The relative position of each race/ethnic group is about the same for each measure. However, although each measure has some benefits, each has limitations as well. And, although it is clear that race/ethnicity is associated with each measure of socioeconomic status, the degree of confounding varies. For example, racial differences in educational attainment has been narrowing (although educational attainment gaps persist), yet racial disparities in wealth continue to widen.[10] Net worth may be the most comprehensive measure of socioeconomic status because it accounts for all assets, not just income, and it adjusts for liabilities. Net worth accounts for intergenerational wealth transfers and thus, captures the accumulated socioeconomic advantage that whites enjoy compared with racial minorities.

Net worth is frequently collected in social science studies, but few health-related studies have used this measure. This measure should be used more frequently in studies of health disparities. The collection of net worth data requires the addition of many questions to the questionnaire, which may not always be possible. One alternative is to collect only assets (not including liabilities). In a recent study conducted at the Morgan-Hopkins Center for Health Disparities Solutions, data were collected on assets by adding the following questions to standard questions on income and education:

- Do you have a savings account?
- Do you have a checking account?
- Do you own your own business?
- Do you own any real estate besides where you live?
- Do you own any stocks, mutual funds, or bonds?
- Do you own any certificates of deposit?

Income, poverty, and net worth often have substantial missing data, sometimes as great as 15–20%. Also these measures (as is the case with occupation) are dynamic. They vary over the life span. For example, income, poverty, or net worth measured among the elderly can be vastly different from what it was during most of their lives. By contrast educational attainment is generally stable by age 25. Educational attainment cannot decrease over time, although it can increase. However, as we have seen in Fig. 1, educational attainment displays the least differentiation among the racial/ethnic groups. As such wherever possible it is best to use multiple measures of socioeconomic status.

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