

COMMENTARY

Understanding Associations Among Race, Socioeconomic Status, and Health: Patterns and Prospects

David R. Williams

Harvard T.H. Chan School of Public Health, Harvard University, and University of Cape Town

Naomi Priest

Australian National University

Norman B. Anderson

American Psychological Association, Washington, DC

Race/ethnicity and socioeconomic status (SES) are social categories that capture differential exposure to conditions of life that have health consequences. Race/ethnicity and SES are linked to each other, but race matters for health even after SES is considered. This commentary considers the complex ways in which race combines with SES to affect health. There is a need for greater attention to understanding how risks and resources in the social environment are systematically patterned by race, ethnicity and SES, and how they combine to influence cardiovascular disease and other health outcomes. Future research needs to examine how the levels, timing and accumulation of institutional and interpersonal racism combine with other toxic exposures, over the life-course, to influence the onset and course of illness. There is also an urgent need for research that seeks to build the science base that will identify the multilevel interventions that are likely to enhance the health of all, even while they improve the health of disadvantaged groups more rapidly than the rest of the population so that inequities in health can be reduced and ultimately eliminated. We also need sustained research attention to identifying how to build the political support to reduce the large shortfalls in health.

Keywords: race, socioeconomic status (SES), health disparities, discrimination, population health

Racially and ethnically stigmatized people experience higher than average rates of illness, impairment, and death in their societies in the United States and globally (Williams, 2012). Across multiple health outcomes, these disparities are also seen in the earlier onset of illness, more severe disease, and poorer quality of care for racial/ethnic minorities compared with their majority peers. Socioeconomic status (SES), whether measured by income, education, or occupational status, is among the most robust determinants of variations in health outcomes in virtually every society

throughout the world (WHO Health Commission, 2008). Understanding the complex ways in which race, ethnicity, and SES uniquely and in combination influence health outcomes is thus a critical task in addressing disparities across the socioeconomic spectrum and among racial/ethnic groups (Williams, Mohammed, Leavell, & Collins, 2010). This commentary considers empirical evidence regarding these complexities and argues for greater attention to understanding the risks and resources in the social environment that are linked to race, ethnicity, and SES and how they combine and accumulate together with innate and acquired biological factors across the life course to influence cardiovascular disease and other health outcomes.

Historically, the categorization of social groups into races has reflected oppression, exploitation, and social inequality (American Sociological Association, 2003). The identification of specific racial categories over time has been primarily driven by historical circumstances and social and political factors. For example, since the first federal census in the United States in 1790, racial categories have changed with every national census (Nobles, 2000). For brevity, in this article we use the term *race* to refer to both the racial and ethnic categories that the U.S. Government's Office of Management and Budget requires all Federal agencies to use. In doing so, we consider race as primarily a social category that encompasses what is commonly referred to as *ethnicity*—common geographic origins, ancestry, family patterns, cultural norms and

David R. Williams, Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health; Department of African and African American Studies and of Sociology, Harvard University; Department of Psychiatry and Mental Health, University of Cape Town; Naomi Priest, ANU Centre for Social Research and Methods, Australian National University; Norman B. Anderson, American Psychological Association, Washington, DC.

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Correspondence concerning this article should be addressed to David R. Williams, Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, 677 Huntington Avenue, 6th floor, Boston, MA 02115. E-mail: dwilliam@hsph.harvard.edu

traditions, and the social history of specific groups (Williams et al., 2010).

Biological and genetic explanations of race, and of differences in health among racial groups, dominated in the 19th and early 20th century (American Sociological Association, 2003) and still persist among many today (Williams et al., 2010). However, human genetic variation does not naturally map onto the subgroups that correspond to our racial categories, and most genetic variation is found among individuals and not among population groups. However, although racial categories are not good indicators of biological variation within the human population, considerable research documents the salience of race as a social category and that existing racial categorization has considerable social consequences (American Sociological Association, 2003).

Making sense of racial health disparities requires careful consideration of multiple issues captured by racial categories. Race reflects simultaneously unmeasured confounding of biological factors linked to ancestral history, geographic origins, and environmental exposures (Williams et al., 2010). These environmental factors include the current psychological, social, physical, and chemical environment; the exposures over the life course and across generations; and the biological adaptation to these environmental exposures, including gene expression (Williams et al., 2010). For example, some researchers have historically sought to explain the large Black–White differences in hypertension in the United States in terms of genetics. In contrast, an international comparative study of hypertension among West Africans in Africa and persons of West African descent in other contexts found a stepwise increase in hypertension as a person moved from rural to urban Africa, to the Caribbean, and then to the United States, with persons of African descent in the United States having hypertension levels that were twice as high as that of Blacks in Africa (Cooper et al., 1997). It is instructive to note that Whites in the United States have higher rates of hypertension than do Blacks in Africa, and other comparative data reveal that the prevalence of hypertension among African Americans in the United States is higher than those in some predominantly White populations in Europe, such as Sweden and Italy, but is lower than those in other European countries, such as Germany and Finland (Cooper et al., 2005). These data highlight the potential of social, cultural, and environmental factors to predict variation in hypertension risk.

SES is a complex and multidimensional concept comprising a range of factors encompassing economic resources, power,

and prestige that can influence health at different times in the life course, at different levels (e.g., individual, household, neighborhood), and via different pathways (Braveman, Cubbin, Egerter, Williams, & Pamuk, 2005). Table 1 shows that all indicators of SES are strongly patterned by race. Asians, a group heavily made up of immigrants, have a high SES profile. Levels of college graduation are almost twice as high for Whites compared with those of Blacks and Hispanics. Other data reveal that Pacific Islanders (15%) and American Indian/Alaskan Natives (13%) also have lower levels of college graduation than do Whites (Ogunwole, Drewery, & Rios-Vargas, 2012). Data on median household income tell a similar story. Asians have the highest median household income in the United States, but Hispanics earn 70 cents and Blacks earn 59 cents for every dollar of income that Whites earn. However, income differences markedly understate racial differences in economic status. *Net worth*, a measure of wealth, captures the economic assets and reserves of a household. Wealth facilitates the ability of a household to both plan for the future and cushion shortfalls in income. Racial differences in wealth are striking. For every dollar of wealth that Whites have, Asian households have 83 cents but Blacks have 6 cents and Hispanics have 7 cents (U.S. Census Bureau, 2014).

These racial differences in SES are an important contributor to racial disparities in health. However, racial disparities in health typically persist, although reduced, across all levels of SES (Braveman et al., 2010; Williams et al., 2010). Table 2 illustrates this complexity by presenting racial and educational variations in heart disease mortality for men and women (Jemal, Ward, Anderson, Murray, & Thun, 2008). Among men, death rates from heart disease are almost twice as high for Blacks compared with Whites. These racial disparities are smaller, absolutely and relatively, than are the education gaps in heart disease mortality within each race. At the same time, at every level of education a racial gap persists, with the absolute gap similar at the lowest and highest education level, and the relative gap is wider for college graduates than for those who did not complete high school. Death rates from heart disease are lower for both Black and White women than for their male peers, but the patterns of disparities by race and education among women are generally similar to those found for men. Heart disease mortality is almost three times higher for Black women than for White women, with the death rates for the lowest education category compared with college graduates being twice as high among Black women but almost six times

Table 1
Socioeconomic Status by Race and Ethnicity

Indicator	Whites	Blacks	Hispanics	Asian	Ratios		
					B/W	H/W	A/W
Education (% college grad+), 2006–2010 ^a	31	17.8	13	50.2	.57	.42	1.62
Median household income, 2013 ^b	58,270	34,598	40,963	67,065	.59	.70	1.15
Median wealth, 2011 ^c	110,500	6,314	7,683	89,339	.06	.07	.81
Non-home wealth, 2011 ^c	33,408	2,124	4,010	29,339	.06	.12	.88
Home ownership, 2014 (%) ^d	72.3	42.1	44.5		.58	.62	

Note. B/W = Black–White; H/W = Hispanic–White; A/W = Asian–White.

^aOgunwole et al., 2012. ^bDeNavas-Walt and Proctor, 2014. ^cU.S. Census Bureau, 2014. ^dCallis and Kresin, 2015.

Table 2
Heart Disease Death Rates, Age-Standardized, for Blacks and Whites Aged 25–64, 2001

Education	Blacks	Whites	B/W ratio	B/W difference
Men				
All	194.9	100.7	1.94	94.2
<12 years	262.9	214.9	1.22	48
12 years	258.2	145.2	1.78	113
13–15 years	120	73.1	1.64	46.9
16+ years	99.2	51.1	1.94	48.1
Low–high difference	164	164		
Low–high ratio	2.65	4.21		
Women				
All	106.1	37.9	2.8	68.2
<12 years	132.9	97.8	1.36	35.1
12 years	142.1	50.1	2.84	92
13–15 years	73	25.1	2.91	47.9
16+ years	62.8	16.9	3.72	45.9
Low–high difference	70	81		
Low–high ratio	2.12	5.79		

Note. Rates per 100,000 (see Jemal et al., 2008).

as high among their White counterparts. The persistence of a racial difference in heart disease mortality at every level of education is also evident among women, with the racial gap, absolutely and relatively, being larger at the higher levels of education than at the lowest level. It is interesting to note that for both men and women, the largest absolute gap in mortality is evident among high school graduates. Further evidence of the added effect of race after SES is accounted for was documented by a 23- to 25-year follow-up study of medical graduates that found Black physicians, compared with their White peers, had a higher risk of cardiovascular disease (relative risk = 1.65), earlier onset of disease, higher incidence rates of diabetes and hypertension (twice as high), higher incidence of coronary artery disease (1.4 times as high), and higher case fatality (52% v 9%; Thomas, Thomas, Pearson, Klag, & Mead, 1997).

Clearly, race and SES, although related, reflect distinct processes of stratification with each likely to be a proxy for specific exposures that can affect health outcomes (Williams et al., 2010). Research indicates that there are at least four reasons why race still matters for health after SES is considered. First, in addition to being influenced by current SES, health is also affected by exposure to adversity throughout the life course. Early life adversity, such as poverty, abuse, and traumatic stress, vary by race and SES and has been shown to influence multiple indicators of physical and mental health later in life, including cardiovascular, metabolic, and immune function (Shonkoff, Boyce, & McEwen, 2009). An enhanced understanding of the ways in which early life SES and other forms of adversity contribute to adult health disparities, including the psychosocial and physiological pathways and contextual-level influences such as neighborhood factors, is needed. In particular, we need to identify the extent to which childhood poverty among racial minorities is concurrent with a greater concentration of other negative risk factors than it is among Whites and how multiple types of stressors combine at various points across the life course and accumulate to influence later health disparities (Williams et al., 2010).

Second, race matters in health disparities because of the nonequivalence of SES indicators across racial groups. Compared with Whites, Blacks and Hispanics receive less income at the same education levels, have markedly less wealth at equivalent income levels, and have less purchasing power because of higher costs of goods and services in the residential environments where they are disproportionately located (Williams et al., 2010). One national study illustrated how the minority poor are poorer than the White poor. It found that African Americans were more likely than were Whites to report six economic hardships, such as being unable to pay full rent and having one's utilities shut off, even after adjustment for multiple demographic, SES, and health status factors that presumably should have accounted for them (Bauman, 1998).

Third, arguably the most critical distinctive social exposure experienced by racial minorities is the added burden of racism. Discrimination across both institutional and interpersonal levels remains pervasive in contemporary societies (Pager & Shepherd, 2008). Residential segregation by race, an example of an institutional racism, has created racial differences in education and employment opportunities that produces racial differences in SES. In addition, segregation is a major determinant of racial differences in neighborhood quality and living conditions, including access to medical care (Williams & Collins, 2001). A study of the 171 largest U.S. cities concluded that there is not even one city where Whites live under equivalent conditions to Blacks and that the worst urban context for Whites is better than the average context for Blacks (Sampson & Wilson, 1995). Although segregation is increasing for Hispanics, the segregation of African Americans remains distinctive. For example, an analysis of national data revealed that middle-class Blacks are more segregated than are poor Hispanics and Asians (Massey, 2004). Self-reported experiences of discrimination have been associated with a broad range of disease outcomes, preclinical indicators of disease (e.g., inflammation, visceral fat) and health-risk behaviors (Lewis, Cogburn, & Williams, 2015). As with other forms of early life adversity, discrimination is particularly detrimental to children, with associated poor health outcomes reported in childhood and adolescence, which has been increasingly documented internationally (Priest, Paradies, et al., 2013). Institutional and cultural racism can also harm health through stigma, stereotypes, and prejudice—all of which can contribute to stunted socioeconomic mobility and reduced access to a broad range of societal resources and opportunities required for health (Williams & Mohammed, 2013a).

A fourth reason why there are racial differences in health after SES is controlled is that racial minorities have elevated risk of exposure to a broad range of psychosocial stressors. Institutional discrimination and socioeconomic disadvantages lead to the overrepresentation of minorities in toxic residential and occupational environments that lead to elevated risk of exposure to major hardships, conflicts, and disruptions such as crime, violence, material deprivation, loss of loved ones, recurrent financial strain, relationship conflicts, unemployment, and underemployment. One recent study documented that African Americans and U.S.-born Latinos experience not only higher levels of multiple psychosocial stressors but also greater clustering of stressors than do Whites (Sternthal, Slopen, & Williams, 2011). It is important to note that in this study, psycho-

social stressors, including discrimination, helped to account for the residual association between race and health after controls for education and income.

Implications for Research and Policy

Future research needs to examine how the levels, timing, and accumulation of experiences of racial bias over the life course—particularly before conception, in pregnancy, in early childhood, and in preadolescence—combine with a broad range of other toxic stressors to influence the onset and course of illness. Extant research has failed to comprehensively examine how the distinctive residential environments of Blacks affect normal physiological processes, including adaptive and regulatory systems, and how racial minorities' biological adaptation to their residential environments produces distinct biological profiles and patterns of interactions between biological and psychosocial factors (Williams et al., 2010). There is an urgent need to develop a more integrated science that will assess how multiple dimensions of the social and physical environment combine additively or interactively with innate and acquired biological factors (including epigenetic effects) and accumulate over the life course to influence disease risk.

The patterns described in this article also have implications for how race data are collected and reported. Whenever racial data is collected or reported, greater attention should be given to why race is being used, the limitations of race data, and the interpretation of findings. Data on racial differences in health should routinely be stratified by SES within racial groups to reduce the misspecification of complex health risks and the perpetuation of harmful social stereotypes (Williams, 1999). Renewed research attention needs to be given to identify markers that are better than race to identify potential contribution of genetic factors. It is also important to remember that there are diverse experiences and exposures among and between each of the major racial groups in the United States. Although there are processes of stigmatization and exclusion that affect multiple minority groups, the SES and health of each group is shaped by its own distinctive history and social, political, and cultural context. Accordingly, as we look across various racial and ethnic populations, we should expect to find both similarities and differences with the patterns observed for African Americans.

The persistence of striking inequalities in health by race and SES also highlight the urgent need for a renewed research focus on identifying the interventions at multiple societal levels that will be effective in reducing and ultimately eliminating racial inequities in health. It is important to note that although there is much that we need to learn about maximizing the impact of interventions to reduce the observed gaps, there is substantial evidence now that provides clear direction and promising strategies to tackle health inequalities (Cohen & Sherman, 2014; Osypuk, Joshi, Geronimo, & Acevedo-Garcia, 2014; Williams & Mohammed, 2013b). Thus, our greatest need is to build the political support to use the best available science to reduce the massive loss of lives that social inequalities in health reflect. The available evidence also suggests the need for generic interventions targeted at reducing SES inequalities and that address the added effects of race. Both of these classes of interventions should focus on improving the health of

disadvantaged groups more rapidly than those of the rest of the population so that progress can be made in eliminating inequalities. Many interventions that promise the greatest benefit in improving population health are likely to widen disparities because of the greater health benefits received by the most advantaged (Mechanic, 2002).

In conclusion, there are large and pervasive racial disparities in health that reflect larger social inequalities within societies, of which SES is only one. Race still matters for health when SES is considered, as does gender. In particular, racism is an organized system of social stratification that combines with and even transforms SES to influence health. Action is thus critically required to illuminate and address how the health of socially disadvantaged groups is determined by exposures to risks and resources linked to living and working conditions and how intervening in these contexts can lead to improvements in health.

References

- American Sociological Association. (2003). *The importance of collecting data and doing social scientific research on race*. Washington, DC: Author.
- Bauman, K. (1998). Direct measures of poverty as indicators of economic need: Evidence from the survey of income and program participation. *U.S. Census Bureau Population Division Technical Working Paper No. 30*. Washington DC: U.S. Census Bureau.
- Braveman, P. A., Cubbin, C., Egerter, S., Chideya, S., Marchi, K. S., Metzler, M., & Posner, S. (2005). Socioeconomic status in health research: One size does not fit all. *Journal of the American Medical Association, 294*, 2879–2888. <http://dx.doi.org/10.1001/jama.294.22.2879>
- Braveman, P. A., Cubbin, C., Egerter, S., Williams, D. R., & Pamuk, E. (2010). Socioeconomic disparities in health in the United States: What the patterns tell us. *American Journal of Public Health, 100*(Suppl 1), S186–S196. <http://dx.doi.org/10.2105/AJPH.2009.166082>
- Callis, R. R., & Kresin, M. (2015). *Residential vacancies and homeownership in the fourth quarter 2014*. Washington, DC: U.S. Census Bureau.
- Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology, 65*, 333–371. <http://dx.doi.org/10.1146/annurev-psych-010213-115137>
- Cooper, R., Rotimi, C., Ataman, S., McGee, D., Osotimehin, B., Kadir, S., . . . Wilks, R. (1997). The prevalence of hypertension in seven populations of West African origin. *American Journal of Public Health, 87*, 160–168. <http://dx.doi.org/10.2105/AJPH.87.2.160>
- Cooper, R. S., Wolf-Maier, K., Luke, A., Adeyemo, A., Banegas, J. R., Forrester, T., . . . Thamm, M. (2005). An international comparative study of blood pressure in populations of European vs. African descent. *BMC Medicine, 3*, 2. <http://dx.doi.org/10.1186/1741-7015-3-2>
- DeNavas-Walt, C., & Proctor, B. D. (2014). *Income and Poverty in the United States: 2013*. U. S. Census Bureau Current Populations Reports, P60-249. Washington D.C.: U. S. Government Printing Office.
- Jemal, A., Ward, E., Anderson, R. N., Murray, T., & Thun, M. J. (2008). Widening of socioeconomic inequalities in U.S. death rates, 1993–2001. *PLoS ONE, 3*(5), e2181. <http://dx.doi.org/10.1371/journal.pone.0002181>
- Lewis, T. T., Cogburn, C. D., & Williams, D. R. (2015). Self-reported experiences of discrimination and health: Scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology, 11*, 407–440. <http://dx.doi.org/10.1146/annurev-clinpsy-032814-112728>
- Massey, D. S. (2004). Segregation and stratification: A biosocial perspective. *Du Bois Review, 1*, 7–25. <http://dx.doi.org/10.1017/S1742058X04040032>

- Mechanic, D. (2002). Disadvantage, inequality, and social policy. *Health Affairs*, 21, 48–59. <http://dx.doi.org/10.1377/hlthaff.21.2.48>
- Nobles, M. (2000). History counts: A comparative analysis of racial/color categorization in U.S. and Brazilian censuses. *American Journal of Public Health*, 90, 1738–1745. <http://dx.doi.org/10.2105/AJPH.90.11.1738>
- Ogunwole, S. U., Drewery, M. P., Jr., & Rios-Vargas, M. (2012). *The population with a bachelor's degree or higher by race and hispanic origin: 2006–2010*. Washington DC: U. S. Census Bureau. Retrieved from <http://www.census.gov/prod/2012pubs/acsbr10-19.pdf>
- Osypuk, T. L., Joshi, P., Geronimo, K., & Acevedo-Garcia, D. (2014). Do social and economic policies influence health? A review. *Current Epidemiology Reports*, 1, 149–164. <http://dx.doi.org/10.1007/s40471-014-0013-5>
- Pager, D., & Shepherd, H. (2008). The sociology of discrimination: Racial discrimination in employment, housing, credit, and consumer markets. *Annual Review of Sociology*, 34, 181–209. <http://dx.doi.org/10.1146/annurev.soc.33.040406.131740>
- Priest, N., Paradies, Y., Trener, B., Truong, M., Karlsen, S., & Kelly, Y. (2013). A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people. *Social Science & Medicine*, 95, 115–127. <http://dx.doi.org/10.1016/j.socscimed.2012.11.031>
- Sampson, R. J., & Wilson, W. J. (1995). Toward a theory of race, crime, and urban inequality. In J. Hagan & R. D. Peterson (Eds.), *Crime and inequality* (pp. 37–56). Stanford, CA: Stanford University Press.
- Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *Journal of the American Medical Association*, 301, 2252–2259. <http://dx.doi.org/10.1001/jama.2009.754>
- Sternthal, M. J., Slopen, N., & Williams, D. R. (2011). Racial disparities in health: How much does stress really matter? *Du Bois Review*, 8, 95–113. <http://dx.doi.org/10.1017/S1742058X11000087>
- Thomas, J., Thomas, D. J., Pearson, T., Klag, M., & Mead, L. (1997). Cardiovascular disease in African American and White physicians: The Meharry Cohort and Meharry–Hopkins Cohort studies. *Journal of Health Care for the Poor and Underserved*, 8, 270–283. <http://dx.doi.org/10.1353/hpu.2010.0526>
- U.S. Census Bureau. (2014). *Net worth and asset ownership of households: 2011*. Retrieved from <http://www.census.gov/people/wealth/>
- WHO Health Commission. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health. Final Report of the CSDH*. Geneva, Switzerland: World Health Organization.
- Williams, D. R. (1999). The monitoring of racial/ethnic status in the U.S.A: Data quality issues. *Ethnicity & Health*, 4, 121–137. <http://dx.doi.org/10.1080/13557859998092>
- Williams, D. R. (2012). Miles to go before we sleep: Racial inequities in health. *Journal of Health and Social Behavior*, 53, 279–295. <http://dx.doi.org/10.1177/0022146512455804>
- Williams, D. R., & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public Health Reports*, 116, 404–416. [http://dx.doi.org/10.1016/S0033-3549\(04\)50068-7](http://dx.doi.org/10.1016/S0033-3549(04)50068-7)
- Williams, D. R., & Mohammed, S. A. (2013a). Racism and health I: Pathways and scientific evidence. *American Behavioral Scientist*, 57, 1152–1173. <http://dx.doi.org/10.1177/0002764213487340>
- Williams, D. R., & Mohammed, S. A. (2013b). Racism and health II: A needed research agenda for effective interventions. *American Behavioral Scientist*, 57, 1200–1226. <http://dx.doi.org/10.1177/0002764213487341>
- Williams, D. R., Mohammed, S. A., Leavell, J., & Collins, C. (2010). Race, socioeconomic status, and health: Complexities, ongoing challenges, and research opportunities. *Annals of the New York Academy of Sciences*, 1186, 69–101. <http://dx.doi.org/10.1111/j.1749-6632.2009.05339.x>

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