

Racism and Health I: Pathways and Scientific Evidence

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Abstract

This article reviews the scientific research that indicates that despite marked declines in public support for negative racial attitudes in the United States, racism, in its multiple forms, remains embedded in American society. The focus of the article is on the review of empirical research that suggests that racism adversely affects the health of nondominant racial populations in multiple ways. First, institutional racism developed policies and procedures that have reduced access to housing, neighborhood and educational quality, employment opportunities, and other desirable resources in society. Second, cultural racism, at the societal and individual level, negatively affects economic status and health by creating a policy environment hostile to egalitarian policies, triggering negative stereotypes and discrimination that are pathogenic and fostering health-damaging psychological responses, such as stereotype threat and internalized racism. Finally, a large and growing body of evidence indicates that experiences of racial discrimination are an important type of psychosocial stressor that can lead to adverse changes in health status and altered behavioral patterns that increase health risks.

Keywords

racism, pathways, health

In the United States, as in other racialized countries in the world, racially stigmatized and disenfranchised populations have worse health than their more advantaged counterparts (D. Williams, 2012). The poorer health of these racial minority populations is

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evident in higher rates of mortality, earlier onset of disease, greater severity and progression of disease, and higher levels of comorbidity and impairment. In addition, disadvantaged racial populations tend to have both lower levels of access to medical care and to receive care that is poorer in quality. In U.S. data, these patterns tend to be evident for African Americans (or Blacks), American Indians (or Native Americans), Native Hawaiians and other Pacific Islanders, and economically disadvantaged Hispanic (or Latino) and Asian immigrants with long-term residence in the United States (D. Williams, 2012). These striking disparities are persistent over time and, although reduced, are evident at every level of income and education (Braveman, Cubbin, Egerter, Williams, & Pamuk, 2010; D. Williams, 2012). In recent years, increased attention has been given to the role of racism as a determinant of these patterns of racial inequality in health.

This article describes the complex nature of contemporary racism in the United States. To identify the leverage points for intervention, it outlines the multiple ways in which racism can affect health. First, it provides a brief overview of the empirical evidence that reveals that institutional racism shapes socioeconomic status (SES) and opportunities in a variety of ways. Next, it shows that research reveals that cultural racism, with its associated, negative images, stereotypes, and prejudice, can be damaging to health. Finally, it highlights the research indicating that interpersonal discrimination is a potent psychosocial stressor that has pervasive negative effects on health.

Overview of the Nature of Racism and Its Persistence

Racism is an organized system premised on the categorization and ranking of social groups into races and devalues, disempowers, and differentially allocates desirable societal opportunities and resources to racial groups regarded as inferior (Bonilla-Silva, 1996; D. Williams, 2004). Racism often leads to the development of negative attitudes (prejudice) and beliefs (stereotypes) toward nondominant, stigmatized racial groups and differential treatment (discrimination) of these groups by both individuals and social institutions. These multiple dimensions of racism do not always co-occur. For example, it is possible for racism to exist in institutional structures and policies without the presence of racial prejudice or negative racial stereotypes at the individual level.

Despite progress in the reduction of explicit public support of racism in the United States, there is also strong evidence of its persistence. National data on the racial attitudes of Whites reveal positive changes over time in support of the principle of racial equality (Schuman, Steeh, Bobo, & Krysan, 1997). For example, the percentage of Whites supporting the view that “White people should have the first chance at any kind of job” fell from 55% in 1944 to 3% in 1972. At the same time, support for laws and policies to achieve equality lags behind the support for the principle of equality (Schuman et al., 1997). For example, in spite of increased support for the principle of equality and the advent of laws that prohibit discrimination, Whites’ support for the federal government’s efforts to ensure that Black people get fair treatment in jobs declined from 38% in 1964 to 28% in 1996.

Several lines of evidence support the notion that racism persists in contemporary society. First, many Americans believe that racism remains a problem in the United States. At the time of President Obama's inauguration in 2009, 85% of Blacks and 71% of Whites saw racism as a somewhat big (41% vs. 49%, respectively) or big problem (44% vs. 22%, respectively) in the United States (Washington Post Company, 2009). A 2012 national survey found that 67% of Whites and 90% of Blacks agreed that Blacks and Hispanics currently experience discrimination in the United States, and 74% of Blacks and 31% of Whites indicated that they had personally experienced racial discrimination (Schoen, 2012). At the same time, other national data reveal that Whites now believe that they are more likely to be victims of racial discrimination than Blacks (Norton & Sommers, 2011).

Documenting the persistence of racism is a challenge because the nature of racism in contemporary society has also changed in ways that make it not readily recognizable to most adults. Scientific evidence indicates that in addition to conscious, deliberate cognitive processes, humans also engage in implicit (unconscious), effortless, automatic, evaluative processes in which they respond to a stimulus based on images stored in their memory (Dovidio & Gaertner, 2004). For example, Americans manifest high levels of negative feelings and beliefs about Blacks, Latinos, obese people, and homosexuals (Nosek et al., 2007). *Aversive racism* is one of the terms used to characterize contemporary racism (Dovidio & Gaertner, 2004). An aversive racist lacks explicit racial prejudice (that is, has sympathy for those who were victimized by injustice in the past and is committed to principles of racial equality) but has implicit biases that favor Whites over Blacks. Research suggests that almost 70% of Americans have implicit biases that favor Whites over Blacks (Nosek et al., 2007). The pattern is most pronounced among Whites but is also evident for Asians, Hispanics, and American Indians. These high levels of implicit bias suggests that discrimination is likely to be commonplace in American society, with much of it occurring through behaviors that the perpetrator does not experience as intentional (Dovidio & Gaertner, 2004).

Discrimination

Second, racial discrimination persists in contemporary society, with Whites continuing to self-report that they discriminate against minorities (Pager & Shepherd, 2008). In addition, there is considerable high-quality scientific evidence documenting the persistence of racial discrimination. A recent review of audit studies—those in which researchers carefully select, match, and train individuals to be equally qualified in every respect but to differ only in race—provide striking examples of contemporary racial discrimination (Pager & Shepherd, 2008). For example, audit studies in employment document that a White job applicant with a criminal record is more likely to be offered a job than a Black applicant with an otherwise identical resume whose record was clean. Similarly, job applicants with distinctively Black names (e.g., Aisha, Darnell) are less likely to get callbacks for job interviews than applicants with identical resumes who have distinctively White names (e.g., Alison, Brad). Other audit studies reveal racial discrimination in renting apartments, purchasing homes and cars, obtaining

mortgages and medical care, applying for insurance, and hailing taxis. Research has also found that even the price of a fast food meal increases with the percentage Black of a zip code (Pager & Shepherd, 2008). Minority homebuyers and residential areas were also explicitly targeted for subprime and predatory loans (Pager & Shepherd, 2008). Between 1993 and 2000, 78% of the new housing loans in minority neighborhoods and 72% of the increase in refinancing to Blacks were from subprime lenders.

Institutional Racism

Third, racial discrimination also persists in institutional mechanisms and processes. Residential segregation by race is a prime example (Massey & Denton, 1993). *Segregation* refers to the physical separation of the races in racially distinctive neighborhoods and communities that was developed to ensure that Whites were safeguarded from residential closeness to Blacks (Cell, 1982). This enforced residence in separate areas developed in both northern and southern urban areas in the late 19th and early 20th centuries and has remained strikingly stable since then but with small declines in recent years (Glaeser & Vigdor, 2001; Lieberson, 1980; Massey & Denton, 1993). Although segregation has been illegal since the Fair Housing Act of 1968, it is perpetuated today through an interlocking set of individual actions, institutional practices, and governmental policies. In the 2010 Census, residential segregation was at its lowest level in 100 years, and declines in segregation were evident in all of the nation's largest metropolitan areas (Glaeser & Vigdor, 2012). However, recent declines in segregation in have been driven by a few Blacks moving to formerly all-White census tracts but have had little impact on the very high percentage of Black census tracts, the residential isolation of most African Americans, and the concentration of urban poverty (Glaeser & Vigdor, 2001). The forced removal and relocation of American Indians to reservations is another example of institutionalized isolation of a marginalized racial population.

The high level of incarceration of Blacks and other minorities is another example of institutional racism. The United States imprisons a higher proportion of its population than any other country in the world. Racial disparities in the criminalization and investigation of certain behaviors combined with discrimination in prosecution and sentencing have led to the inordinately high levels of incarceration of minorities in the United States (Alexander, 2010). Immigration policy in the United States, historically and currently, has been another form of institutional racism (Gee & Ford, 2011). These policies have ranked racial groups; excluded, segregated, and incarcerated some racial populations; and limited the rights and privileges of those deemed dangerous or undesirable.

Cultural Racism

The persistence of institutional and interpersonal discrimination is driven by the racism that remains deeply ingrained in American culture. Ideas of Black inferiority and White superiority have historically been embedded in multiple aspects of American culture, and many images and ideas in contemporary popular culture continue to

devalue, marginalize, and subordinate non-White racial populations (Dirks & Mueller, 2007). Moreover, anti-Black ideology and representation is distinctive because it is typically the benchmark to which other groups are compared. Findings from surveys and studies employing experimental or quasi-experimental design have found that greater exposure to TV programs that describe Blacks negatively was associated with higher levels of racial prejudice toward Blacks (Mutz & Goldman, 2010). Although Blacks and other minorities appear more frequently on TV than in the past, a recent study that examined characters in 11 popular TV programs found that more negative nonverbal behavior (facial expressions and body language) is directed toward Black characters than toward status-matched White characters and that exposure to nonverbal bias increased viewers' bias—even though viewers were not consciously aware of patterns of nonverbal behavior (Weisbuch, Pauker, & Ambady, 2009). Another study documented that a dehumanizing bias that associates Blacks with apes persists and that this dehumanization matters (Goff, Eberhardt, Williams, & Jackson, 2008). The study found that newspaper stories of defendants convicted of capital crime over a 20-year period were more likely to describe Black convicts than White ones with *ape*-like words (e.g., *beast*, *brute*, *monster*, *prowl*). Importantly, adjusting for defendant SES, victim SES, crime severity, aggravating circumstances, and mitigating circumstances, researchers found that Blacks implicitly portrayed as more ape-like were more likely to be executed than those whose lives were spared (Goff et al., 2008). A similar trend was evident for Whites.

Blacks and other minorities are also negatively stereotyped in the United States. The 1990 General Social Survey (GSS) found that 29% of Whites viewed Blacks as unintelligent, 45% saw them as lazy, 57% believed that Blacks prefer to live off welfare, and 51% believed that Blacks are prone to violence (Davis & Smith, 1990). Questions were asked on a 7-point scale from a positive to a negative stereotype, with 4 on the scale representing agreeing with neither side. Strikingly, one in five Whites or fewer saw Blacks as intelligent (21%), hardworking (17%), preferring to be self-supporting (13%), and not prone to violence (14%). Across the various stereotypes, Whites viewed Blacks, Hispanics, and Asians more negatively than themselves, with Blacks viewed the most negatively and Hispanics twice as negatively as Asians.

Data available in the GSS for two of the stereotypes since 1990 show very limited change over time (Smith, Marsden, & Hout, 2011). In 2010, 32% of Whites agreed that Blacks were lazy, down from 45% in 1990. However, the percentage of Whites endorsing the view that Blacks were hardworking changed from 17% in 1990 to 16% in 2010, with a higher proportion of Whites endorsing the *neither* category (49% vs. 34%). Some progress was evident on the intelligence stereotype, with the rate of Whites who viewed Blacks as unintelligent declining from 29% in 1990 to 13% in 2010 and that of Whites agreeing that Blacks were intelligent increasing from 21% in 1990 to 27% in 2010. The percentage of Whites endorsing the neutral response increased from 44% to 56%.

A recent study documents that negative stereotypes of Blacks are commonplace in American culture. The BEAGLE (Bound Encoding of the Aggregate Language Environment) Project constructed a database of about 10 million words from a sample

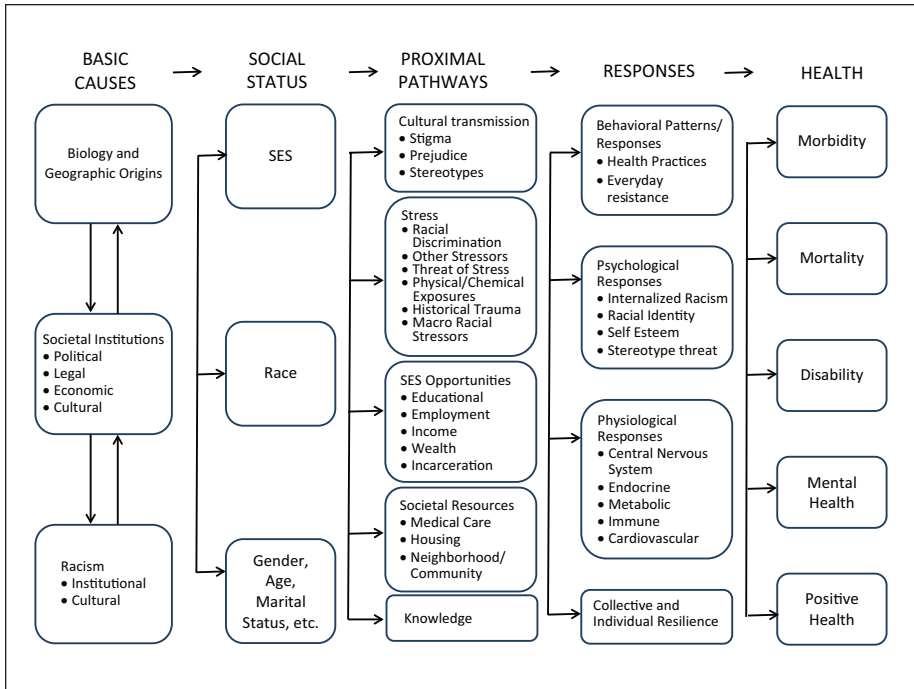


Figure 1. A framework for the study of racism and health.

of books, newspapers, and other materials that is a good representation of American culture and equivalent to what the average college-level student would read in his or her lifetime (Verhaeghen, Aikman, & Van Gulick, 2011). Statistical analysis of the associative strength between pairs of words revealed the following order of the frequency of the pairing of the word *Black* with these 10 words in American culture: *poor*, *violent*, *religious*, *lazy*, *cheerful*, *dangerous*, *charming*, *merry*, *ignorant*, and *musical*. Thus, the negative stereotypes of Blacks in the GSS (*violent*, *lazy*, *dangerous*, and *unintelligent*) probably reflects how often Americans have seen or heard these words paired with *Black* in their lifetime.

Mechanisms by Which Racism Can Affect Health and Evidence of Health Effects

Figure 1 outlines the multiple pathways by which racism can affect health. It indicates that racism is one of several fundamental or basic determinants of health, and it gives emphasis to institutional and cultural racism (D. Williams, 1997). The model emphasizes the importance of distinguishing basic causes from surface or intervening causes (proximal pathways). Whereas changes in fundamental causes lead to changes in outcomes, interventions in the intermediate or proximal pathways, without corresponding

changes in fundamental causes, are unlikely to produce long-term improvements in population health. The model argues that race and other social status categories, such as SES, gender, age, and marital status, are created by the larger macro forces in society and are linked to health through several intervening mechanisms. Racism and other fundamental causes operate through multiple mechanisms to affect health, and the pathways through which distal causes affect health can change over time. Institutional and cultural racism can adversely affect health through stigma, stereotypes, prejudice, and racial discrimination. These aspects of racism can lead to differential access to SES and to a broad range of societal resources and opportunities. Racism is not the only determinant of intervening mechanisms, but its presence as a fundamental cause in a society can alter and transform other social factors and can exacerbate the negative effects of other risk factors for health. For example, stress is posited as one of the intervening pathways. Racism creates some types of stressors, such as discrimination and historical trauma, but it can also affect the levels, clustering, and impact of stressors, such as unemployment, neighborhood violence, or physical and chemical exposures in residential and occupational environments.

The model acknowledges that social inequalities in knowledge and communication play an insufficiently recognized role in contributing to and exacerbating social inequalities in health (Viswanath, 2006). Much of the contemporary disease burden is linked to behaviors that are potentially modifiable with the appropriate opportunities and access to preventive care and health information. Communication factors that shape health knowledge, attitudes, and behavior, such as access to and the use of various media sources, attention to health information, trust in the sources of information, and the processing of information, all vary by race-ethnicity and SES. Moreover, members of stigmatized racial groups are less able to act on and benefit from relevant health knowledge because they often lack the necessary resources to do so.

Much research on the determinants of health focuses on the responses (behavioral, psychological, physiological) to the proximal pathways. Figure 1 reminds us that these responses can be optimally understood and contextualized in the light of the upstream factors that initiate and sustain the conditions that population groups are responsive to. It also indicates that attention should be given to both individual and collective resistance and resilience. For example, some recent research suggests that some unhealthy behaviors of minority populations may reflect everyday resistance—an effort to express opposition to the larger society, assert independence, and reject the dominant society's norms (Factor, Kawachi, & Williams, 2013).

Institutional Racism and Health

Residential segregation is a potent institutional legacy of racism that is a driver of the persistence of racial economic inequality and thus racial inequities in health (D. Williams & Collins, 2001). Segregation was one of the most successful domestic policies of the 20th century in the United States (Cell, 1982), and it can affect health through multiple pathways (D. Williams & Collins, 2001). First, it restricts socioeconomic mobility by limiting access to quality elementary and high school education,

preparation for higher education, and employment opportunities. For example, segregated schools are unequal on multiple dimensions, including teacher quality, educational resources, per-student spending, and neighborhood violence, crime, and poverty (Orfield, Frankenberg, & Garcés, 2008). Segregation also reduces access to employment opportunities. It has facilitated the exodus of low-skill, high-pay jobs from areas of minority concentration, and it has facilitated discrimination based on place of residence (Pager & Shepherd, 2008; Wilson, 1987). One study found that the elimination of segregation would erase Black-White differences in earnings, high school graduation rate, and unemployment and reduce racial differences in single motherhood by two thirds (Cutler & Glaeser, 1997).

Segregation is also associated with residence in poorer-quality housing and in neighborhood environments that are deficient in a broad range of resources that enhance health and well-being, including medical care. The concentration of poverty in segregated environments can lead to exposure to elevated levels of chronic and acute stressors. A recent study documented, for example, that compared to Whites, Blacks and U.S.-born Latinos had higher exposure to a broad range of psychosocial stressors and greater clustering of multiple stressors (Sterthal, Slopen, & Williams, 2011). This stress exposure accounted for some of the residual effect of race on health after income and education were controlled. In addition, segregation leads minorities to have higher risk of exposure to toxic chemicals at the individual, household, and neighborhood level (Morello-Frosch & Jesdale, 2006). Research also reveals that segregation directly and indirectly contributes to lower access and poorer quality of health care across the entire continuum of care from prevention services through end-of-life care (White, Haas, & Williams, 2012). The poor health of minorities is further exacerbated by these racial differences in access and quality of care.

Segregation in the United States is also a fundamental cause of the high rates of violent crime and homicide for African Americans. Differences at the neighborhood level, driven by segregation, in the availability of jobs (especially for males), opportunities for marriage, concentrated poverty, family structure, and the supervision of adolescent males are the key determinants of elevated risk of violent crime and homicide (Sampson, 1987). These factors lead to the concentration of urban violence in a few "hot spots." Research in Boston documented that 3% of street segments and intersections accounted for more than 50% of all gun violence incidents (Braga, Papachristos, & Hureau, 2010). A study in Seattle found that most crime was concentrated in a few street segments, and 84% of these segments had stable concentrations of crime over a 14-year period, with increases in crime in a very few street segments accounting for overall city trends in crime (Weisburd, Bushway, Lum, & Yang, 2004).

Incarceration has a range of adverse impacts on the health of incarcerated people and of the communities to which they return after their release (Dumont, Brockmann, Dickman, Alexander, & Rich, 2012). When incarcerated individuals return to their communities, their access to public and private housing, employment opportunities, voting rights, welfare- and food-assistance programs, health services, and financial aid for higher education is limited (N. Williams, 2006). Most incarcerated adults are parents of children younger than 18 years of age, and these children are at increased

risk for social and emotional difficulties and for engaging in criminal behavior in the future (Travis & Waul, 2003). When a parent is imprisoned, families often suffer from financial instability and social stigma and are deprived of social and caregiving support of the incarcerated parent (Travis & Waul, 2003). High rates of incarceration also adversely affect communities by reducing the availability of male partners for marriage.

Although institutional racism is arguably the most important mechanism by which racism adversely affects health, it is challenging to capture in traditional epidemiological research, and we have not fully quantified the impact of institutional racism on health. Some studies have found a positive association between area-level measures of residential segregation and infant and adult mortality rates, and other health outcomes, after adjusting for demographic and socioeconomic variables (Kramer & Hogue, 2009). A recent analysis estimated that segregation is responsible for 176,000 deaths annually (Galea, Tracy, Hoggatt, DiMaggio, & Karpati, 2011). Efforts have also been made, with limited success, to operationalize other aspects of institutional racism in epidemiological studies (e.g., Gee, 2002; Mendez, Hogan, & Culhane, 2012; Wallace, 2011). Recent reviews have provided a roadmap for the needed research to better conceptualize and measure the complex ways in which segregation can affect health and health care (Kramer, Cooper, Drews-Botsch, Waller, & Hogue, 2010; Osypuk & Acevedo-Garcia, 2010; White et al., 2012; White & Borrell, 2011). Implementing these recommendations is an important priority. Similar research attention needs to be given to other aspects of institutional racism.

Cultural Racism and Health

Research is needed to fully understand the multiple ways in which representations of race in popular culture affect persons who are exposed to them, but there is growing evidence that these effects can be decisive for the thoughts, feelings, and behavior of both dominant and subordinate groups. Cultural racism is likely to be a major contributor to negative racial stereotypes and the absence of positive emotion for stigmatized racial groups that can shape the policy preferences of the larger society and contribute to the lack of political will to address racial inequalities in society, including those in health. The absence of positive emotions has been identified as an important component of subtle prejudice (Pettigrew & Meertens, 1995). Research indicates that emotions have a large impact on decision making in general and on race-related attitudes and policy in particular. A recent meta-analysis found that emotional prejudice was twice as strongly predictive of discriminatory behavior as racial beliefs and stereotypes (Talaska, Fiske, & Chaiken, 2008). A study in Germany, the Netherlands, France, and the United Kingdom found that the absence of positive emotions (measured by two items that captured the absence of feelings of sympathy and admiration toward the out-group) was a strong predictor of opposition to policies regarding immigrant out-groups (Pettigrew & Meertens, 1995). Similarly, a study of Detroit-area Whites found that a two-item measure that assessed the lack of sympathy and admiration for Blacks was the strongest predictor of opposition to affirmative action in

employment and to an active role of government in reducing racial inequalities (D. Williams et al., 1999). Moreover, recent research reveals that racial prejudice is a driver of opposition to President Obama's health care reform legislation, with the racial divide in attitudes toward health care being 20 percentage points larger now than it was for President Clinton's plan back in the early 1990s (Tesler, 2012).

One response of stigmatized racial populations to the pervasive negative racial stereotypes in the culture is to accept as true the dominant society's beliefs about their biological and/or cultural inferiority. This internalized racism or self-stereotyping is one mechanism by which negative stereotypes about race in the larger society can adversely affect health. By fostering the endorsement of beliefs about the innate deficiencies of one's self and one's group, internalized racism can lead to lower self-esteem and psychological well-being, which in turn could adversely affect health and health behavior in multiple ways (Kwate & Meyer, 2011). A recent review of existing research found that internalized racism was positively associated with alcohol consumption, psychological distress, being overweight, abdominal obesity, blood pressure, and fasting glucose (D. Williams & Mohammed, 2009). It has also been suggested that internalized stereotypes could also indirectly affect health by decreasing motivation for socioeconomic attainment (Kwate & Meyer, 2011).

However, the health consequences of internalized racism have received very limited research attention, and there are many unanswered questions. We currently have limited understanding of which groups are most vulnerable, the range of outcomes most affected, and how internalized racism combines with other aspects of racism to affect health. Some limited research has found that internalized racism is adversely related to cardiovascular risk factors for females but not males, and we do not have a clear understanding of the determinants of these gender differences (Chambers et al., 2004; Tull, Cort, Gwebu, & Gwebu, 2007). A recent study found a positive association between internalized racism and violence and delinquent behavior among adolescents (Bryant, 2011), suggesting that it may be a risk factor for a broad range of outcomes. Another recent study found that internalized racism interacted with perceived discrimination to affect cardiovascular disease risk (Chae, Lincoln, Adler, & Syme, 2010).

The term *stereotype threat* refers to the activation of negative stereotypes among stigmatized groups that creates expectations, anxieties, and reactions that can adversely affect social and psychological functioning (Fischer et al., 1996; Steele, 1997). U.S. research indicates that when a stigma of inferiority is activated for African Americans in experimental conditions, performance on an examination is adversely affected (Steele, 1997). Similarly, women who were told that they perform more poorly than men, and White men who were told that they do worse than Asians, had lower scores on an examination than control groups (Fischer et al., 1996; Steele, 1997). Research indicates that stereotype threat occurs only when a group is stereotype vulnerable. The activation of negative stereotypes about Blacks enhances academic performance for Black Caribbean immigrants who were not socialized in America's racism-filled culture, but it reduces it for the children of Caribbean Black immigrants (Deaux et al., 2007). Similarly, for Asian American women, making gender salient reduces academic performance, but making their race salient enhances it (Shih, Pittinsky, & Ambady, 1999).

There has been little systematic attention to the direct effects of stereotype threat on health. However, existing research suggests the plausibility of two pathways. First, the psychological stress created by stereotype threat could lead to physiological arousal. One experimental study found that the activation of the stigma of inferiority led to increases in blood pressure for African American but not White students (Blascovitch, Spencer, Quinn, & Steele, 2001). Other limited evidence indicates that stereotype threat can increase anxiety, reduce self-regulation, and impair decision-making processes in ways that can increase aggressive behavior and overeating (Inzlicht & Kang, 2010). Second, stereotype threat can adversely affect the patient-provider relationship. In clinical encounters, stereotype threat can impair patients' communication abilities, leading to discounting of information from the provider, delays, or failure to obtain needed medical care and lower levels of adherence (Aronson, Burgess, Phelan, & Juarez, 2013; Burgess, Warren, Phelan, Dovidio, & van Ryn, 2010).

Cultural racism can trigger unconscious bias that can lead to unequal access to health-enhancing economic opportunities and resources. Many Whites have automatic, rapid, and unconscious emotional and neural reactions to Blacks, noticing an individual's race and whether he or she is trustworthy in less than 100 ms (Fiske, Bergsieker, Russell, & Williams, 2009). Research indicates that when one holds a negative stereotype about a group and meets someone who fits the stereotype, he or she will discriminate against that individual (van Ryn et al., 2011). This stereotype-linked unconscious or unthinking bias can occur among persons who are not prejudiced and is activated automatically (without intent) with individuals being unaware of its activation and the impact on their behavior (van Ryn et al., 2011). Cultural racism also undergirds the findings from the audit studies reviewed earlier that documented the pervasive societal presence of discrimination that lead to reduced opportunities for socioeconomic advancement, higher costs of goods and services, and poorer quality of life. For example, the discrimination in mortgage lending noted earlier that led to a high level of subprime loans for minorities has contributed to the marked losses in home equity for these populations during the recent housing crisis. Between 2005 and 2009, the median wealth of White households declined by 16% compared to 53% for Black and 66% for Hispanic households (Pew Research Center, 2011). The median wealth of Whites is now 20 times that of Blacks and 18 times that of Hispanics. Wealth is a critical component of SES that has been shown to affect health over and above income and education (Pollack et al., 2007). Thus, the declining wealth of racial minorities is likely to have had adverse health consequences.

Unconscious (as well as conscious) bias can also lead to unequal access to high-quality medical care. A 2003 report from the Institute of Medicine concluded that across virtually every therapeutic intervention, ranging from high-technology procedures to the most basic forms of diagnostic and treatment interventions, Blacks and other minorities receive fewer procedures and poorer-quality medical care than Whites (Smedley, Stith, & Nelson, 2003). Strikingly, these differences persist even after statistical adjustment for variations in health insurance, SES, stage and severity of disease, co-occurring illness, and the type of health care facility are taken into

account. Analyses of data from a large, volunteer, and nonrepresentative sample of persons who took the Implicit Association Test (IAT) reveal that physicians have an implicit preference for Whites over Blacks, similar to the pattern observed for other professionals (lawyers and others with PhDs) and the general population (Sabin, Nosek, Greenwald, & Rivara, 2009). Research reveals that higher implicit bias scores among physicians is associated with biased treatment recommendations in the care of Black patients (van Ryn et al., 2011), although the pattern is not uniform (Haider et al., 2011). This highlights the importance of research to better understand the conditions under which these biases are likely to occur. In addition, provider implicit bias is also associated with poorer quality of patient provider communication and lower patient evaluation of the quality of the medical encounter, including provider nonverbal behavior (Cooper et al., 2012; van Ryn et al., 2011). Research is needed to identify optimal strategies of raising health providers' awareness of subtle, unconscious discrimination and providing them with strategies to minimize its occurrence.

Experiences of Discrimination

Individuals are aware of at least some of the experiences of discrimination created by institutional and cultural racism. Research reveals that these subjective experiences of discrimination are psychosocial stressors that adversely affect a very broad range of health outcomes and health risk behaviors (Pascoe & Richman, 2009; D. Williams & Mohammed, 2009). For example, Tené Lewis and colleagues have shown that chronic everyday discrimination is positively associated with coronary artery calcification (Lewis et al., 2006), C-reactive protein (Lewis, Aiello, Leurgans, Kelly, & Barnes, 2010), blood pressure (Lewis et al., 2009), giving birth to lower-birth-weight infants (Earnshaw et al., 2013), cognitive impairment (Barnes et al., 2012), subjective and objective indicators of poor sleep (Lewis et al., 2012), visceral fat (Lewis, Kravitz, Janssen, & Powell, 2011), and mortality (Barnes et al., 2008).

Research on discrimination has also shed light on some puzzles in the literature. For example, prior research reveals that African Americans are more likely than Whites to manifest no blood pressure decline or a blunted blood pressure decline during sleep, a pattern that has been associated with increased risk for mortality and cardiovascular outcomes (Profant & Dimsdale, 1999). Recent studies reveal that exposure to discrimination contributes to the elevated levels of nocturnal blood pressure among Blacks (Brondolo et al., 2008; Tomfohr, Cooper, Mills, Nelesen, & Dimsdale, 2010). Decreases in blood pressure dipping during sleep have also been associated with low SES and other psychosocial stressors (Tomfohr et al., 2010). Prior research has also found lower levels of health care seeking and adherence behaviors among racial minorities, and research on discrimination now documents that racial bias is a contributor to these patterns. Moreover, research in the United States, South Africa, Australia, and New Zealand reveals that discrimination makes an incremental contribution over SES in accounting for racial disparities in health (D. Williams et al., 2008; D. Williams & Mohammed, 2009).

Many questions remain unanswered. Research suggests that across multiple societal contexts, perceptions of unfair treatment, regardless of whether they are attributed to race or other social reasons, are adversely related to health for both racial minorities and Whites (D. Williams & Mohammed, 2009). However, it is unclear whether the occasional experiences of discrimination by Whites are truly equivalent with the insidious and systematic experiences reported by stigmatized minority populations. Moreover, some studies find a more adverse impact of discrimination on mental health for Whites compared to Blacks (Kessler, Mickelson, & Williams, 1999; D. Williams, Yu, Jackson, & Anderson, 1997). One recent study found that discrimination was associated with a flatter (less healthy) diurnal slope of cortisol for Whites than for Blacks, with the healthier cortisol profile being more evident for low-SES Blacks than for their higher-SES counterparts (Fuller-Rowell, Doan, & Eccles, 2012). This highlights the importance of understanding the conditions under which specific aspects of discrimination are pathogenic for particular social groups as well as the extent to which socialization experiences, resilience resources, coping strategies, and co-occurring exposures may modify the relationship between exposure to discrimination and health.

There are several critical measurement issues with regard to discrimination that need to be addressed in future research. First, fully capturing the impact of discrimination will require greater attention to developing measures that capture not only actual exposure but the threat of exposure (D. Williams & Mohammed, 2009). The threat of discrimination is an understudied aspect of discriminatory stress. Recent research reveals that anticipating being a target of discrimination can produce heightened vigilance that can lead to the activation of negative emotional states, increases in blood pressure, and sympathetic nervous system activation (Sawyer, Major, Casad, Townsend, & Mendes, 2012). Second, exposure to race-related stressors should be captured comprehensively. The stress literature has identified macro stressors—large-scale societal events, such as natural disasters, that can be stressful for individuals. Major negative race-related events can also be macro stressors that lead to adverse changes in health status. For example, in 2006, a Black woman accused White male members of the Duke University lacrosse team of racial derogation, rape, and violence. There was considerable racially divisive media coverage and rhetoric about the incident. Duke's Black students were stressed and had concerns about their safety. An experimental study at Duke found that after the media attention to the incident, Black students, especially females, had higher levels of cortisol and were unresponsive to an experimental task compared to students who participated in the experiment before the lacrosse team incident (Richman & Jonassaint, 2008). Research has also found that historical trauma experienced by Native American communities in the past can reach across generations and adversely affect the physical and mental health of contemporary Native Americans (Walters et al., 2011).

The backdrop of cultural racism can also racialize presumably nonracial societal events so that they have negative health consequences. A study of birth outcomes in California found that infants born to Arab American women 6 months after September 11, 2001 (a period of increased discrimination of Arab Americans), had an increased risk of low birth weight and preterm birth compared to those born in the 6 months

before (Lauderdale, 2006). Women of other racial and ethnic groups in California had no change in birth outcome risk, pre- and post-September 11. Personal experiences of abuse and discrimination linked to September 11 were also positively associated with psychological distress and poor health status and inversely associated with happiness among Arab Americans (Padela & Heisler, 2010). Some evidence also suggests that immigration policies hostile to immigrant groups can adversely affect their quality of life (Garcia & Keyes, 2012). Analyses of data collected in California in 2001 (a time of multiple anti-immigrant legislative proposals) found that inconsistent with prior research, Latino and some other immigrant groups reported higher psychological distress than native-born respondents (D. Williams & Mohammed, 2008). Research is needed to systematically assess the health consequences, if any, of the negative climate and hostile policies toward immigrants.

Third, efforts to comprehensively measure discrimination should also seek to assess exposure to racial bias over the life course. A large study of fifth graders found that 7% of Whites, 15% of Hispanics, and 20% of Blacks reported experiences of racial discrimination and that racial bias was associated with increased risk of mental disorder (Coker et al., 2009). Similarly, research on adolescents find high exposure to racial discrimination in online contents and that these experiences were positively associated with symptoms of depression and anxiety (Tynes, Giang, Williams, & Thompson, 2008). At the present time, we do not clearly understand how the age of onset of experiences of discrimination and the accumulation of such experiences over the life course affect the onset and course of illness. Gee, Walsemann, and Brondolo (2012) have recently outlined a comprehensive agenda for empirically assessing how racism can affect health using a life course lens. They highlight the importance of attending to sensitive periods, the interdependence in exposures among persons, latency periods, stress proliferation processes, and historical period and birth cohort.

Fourth, to the extent feasible, we need to develop measures to assess exposure to discrimination independent of self-report. A significant new development in the assessment of discrimination is the attempt to capture implicit measures of discrimination. A novel application of the IAT is its use to capture the extent to which individuals see themselves and their racial-ethnic group as a perpetrator versus a target of discrimination (Krieger et al., 2011). This measure seeks to minimize the limitations of self-reported data by capturing experiences of racial bias that respondents are unwilling or unable to report. So far, implicit measures of discrimination show weak or modest associations with health outcomes (Krieger et al., 2010, 2011). Nevertheless, the IAT promises a glimpse of the health effects of racial bias that might otherwise be hidden. However, important issues need to be resolved. In contrast to correlations of about .25 between implicit and explicit measures of racial prejudice (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Nosek et al., 2007), most of the correlations between the implicit measures attempting to capture racial discrimination and validated explicit measures of discrimination are .10 or less (Krieger et al., 2011). While we know that the IAT measures unconscious processes related to race, these very low correlations raise the question of whether these implicit measures are capturing actual past exposure to racial discrimination, the perceived threat of

discrimination, vigilance regarding discrimination, the burden of prior experiences of discrimination, the severity of prior exposure, or some other processes related to race. In addition, much of the literature on discrimination assumes that it operates through processes triggered by the psychological appraisal of an environmental stressor, but we do not know if unconscious processes linked to race generate similar stress responses. More research is needed to provide a deeper understanding of exactly what the IAT is capturing and how we should optimally combine it with explicit measures of discrimination.

Conclusion

A major research challenge is the need for the conceptual and analytic models used to study racism and other determinants of disparities in health to reflect the actual clustering of diseases and their determinants. The co-occurrence of multiple diseases is commonplace, increase with age, and is evident at younger ages among low-SES and minority populations (Barnett et al., 2012). Moreover, advantage and disadvantage, resources and risks, tend to co-occur with each other and to cumulate within the same individuals and social spaces over time. Failure to model this accumulation of adversity may fail to capture, and effectively address, the full burden of social exposure. Unhealthy behaviors, such as poor nutrition, physical inactivity, cigarette smoking, and excessive alcohol intake, are clustered in individuals with and without chronic diseases (Héroux et al., 2012). Similarly, discrimination and other psychosocial stressors are clustered with each other and co-occur more frequently in disadvantaged racial populations (Sternthal et al., 2011). Inadequate research attention has been given to the ways in which multiple aspects of racism relate to each other and combine, additively and interactively, with other psychosocial risks and resources to affect health. New analytic models that reflect the complexity of the determinants of health and the clustering and accumulation of risk factors and health outcomes are urgently needed (Adler, Bush, & Pantell, 2012). The model in Figure 1 suggests that there are likely to be multiple causal pathways by which a given distal upstream factor, such as racism, can affect health status. Thus, the configuration of intervening mechanisms may vary over time, in different contexts, and for different outcomes.

Historically, racial variations in health were often viewed as genetic or biological, and some current observers view them as intractable and deeply embedded in cultural values and behaviors. The research reviewed here indicates that racism in its institutional and cultural forms have been and continue to be major contributors to initiating and sustaining racial inequalities in a broad range of societal outcomes that combine to create inequalities in health. We need a deeper understanding of how cultural norms and institutional policies and procedures with regard to race shape interpersonal relations and the quality of living conditions in ways that affect health. It follows that we are unlikely to make significant progress in reducing the well-documented large racial disparities in health without intensive, comprehensive, and sustained initiatives to eliminate racial inequalities in a broad range of social, political, and economic indicators. We therefore need more concerted efforts to develop the science base that would

enable us to effectively intervene to reduce and ultimately eliminate the pathogenic effects of racism and health. We consider the evidence and research opportunities for effective intervention in a companion article (D. Williams & Mohammed, in press).

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References

- Adler, N., Bush, N. R., & Pantell, M. S. (2012). Rigor, vigor, and the study of health disparities. *Proceedings of the National Academy of Sciences*, *109*(Suppl. 2), 17154-17159.
- Alexander, M. (2010). *The new Jim Crow: Mass incarceration in the age of colorblindness*. New York, NY: New Press.
- Aronson, J., Burgess, D., Phelan, S. M., & Juarez, L. (2013). Unhealthy interactions: The role of stereotype threat in health disparities. *American Journal of Public Health*, *103*(1), 50-56.
- Barnes, L. L., de Leon, C. F. M., Lewis, T. T., Bienias, J. L., Wilson, R. S., & Evans, D. A. (2008). Perceived discrimination and mortality in a population-based study of older adults. *American Journal of Public Health*, *98*(7), 1241-1247.
- Barnes, L. L., Lewis, T. T., Begeny, C. T., Yu, L., Bennett, D. A., & Wilson, R. S. (2012). Perceived discrimination and cognition in older African Americans. *Journal of the International Neuropsychological Society*, *18*(5), 856-865.
- Barnett, K., Mercer, S. W., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research, and medical education: A cross-sectional study. *The Lancet*, *380*(9836), 37-43.
- Blascovitch, J., Spencer, S. J., Quinn, D., & Steele, C. (2001). African Americans and high blood pressure: The role of stereotype threat. *Psychological Science*, *12*(3), 225-229.
- Bonilla-Silva, E. (1996). Rethinking racism: Toward a structural interpretation. *American Sociological Review*, *62*(3), 465-480.
- Braga, A. A., Papachristos, A., & Hureau, D. (2010). The concentration and stability of gun violence at micro places in Boston, 1980-2008. *Journal of Quantitative Criminology*, *26*(1), 33-53.
- 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*, S186-196.
- Brondolo, E., Libby, D. J., Denton, E.-G., Thompson, S., Beatty, D. L., Schwartz, J., & Gerin, W. (2008). Racism and ambulatory blood pressure in a community sample. *Psychosomatic Medicine*, *70*(1), 49-56.

- Bryant, W. W. (2011). Internalized racism's association with African American male youth's propensity for violence. *Journal of Black Studies, 42*(4), 690-707.
- Burgess, D., Warren, J., Phelan, S., Dovidio, J., & van Ryn, M. (2010). Stereotype threat and health disparities: What medical educators and future physicians need to know. *Journal of General Internal Medicine, 25*(Suppl. 2), S169-177.
- Cell, J. W. (1982). *The highest stage of White supremacy: The origin of segregation in South Africa and the American South*. New York, NY: Cambridge University Press.
- Chae, D. H., Lincoln, K. D., Adler, N. E., & Syme, S. L. (2010). Do experiences of racial discrimination predict cardiovascular disease among African American men? The moderating role of internalized negative racial group attitudes. *Social Science and Medicine, 71*(6), 1182-1188.
- Chambers, E. C., Tull, E. S., Fraser, H. S., Mutunhu, N. R., Sobers, N., & Niles, E. (2004). The relationship of internalized racism to body fat distribution and insulin resistance among African adolescent youth. *Journal of the National Medical Association, 96*(12), 1594-1598.
- Coker, T. R., Elliott, M. N., Kanouse, D. E., Grunbaum, J. A., Schwebel, D. C., Gilliland, M. J., & Schuster, M. A. (2009). Perceived racial/ethnic discrimination among fifth-grade students and its association with mental health. *American Journal of Public Health, 99*(5), 878-884.
- Cooper, L. A., Roter, D. L., Carson, K. A., Beach, M. C., Sabin, J. A., Greenwald, A. G., & Inui, T. S. (2012). The associations of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care. *American Journal of Public Health, 102*(5), 979-987.
- Cutler, D. M., & Glaeser, E. L. (1997). Are ghettos good or bad? *Quarterly Journal of Economics, 112*, 827-872.
- Davis, J. A., & Smith, T. W. (1990). *General social surveys, 1972-1990 NORC ed.* Chicago, IL: National Opinion Research Center.
- Deaux, K., Bikmen, N., Gilkes, A., Ventuneac, A., Joseph, Y., Payne, Y. A., & Steele, C. M. (2007). Becoming American: Stereotype threat effects in Afro-Caribbean immigrant groups. *Social Psychology Quarterly, 70*(4), 384-404.
- Dirks, D., & Mueller, J. C. (2007). Racism and popular culture. In J. Feagin & H. Vera (Eds.), *Handbook of racial and ethnic relations* (pp. 115-129). New York, NY: Springer.
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive racism. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 1-51). San Diego, CA: Academic Press.
- Dumont, D. M., Brockmann, B., Dickman, S., Alexander, N., & Rich, J. D. (2012). Public health and the epidemic of incarceration. *Annual Review of Public Health, 33*(1), 325-339.
- Earnshaw, V., Rosenthal, L., Lewis, J., Stasko, E., Tobin, J., Lewis, T., & Ickovics, J. (2013). Maternal experiences with everyday discrimination and infant birth weight: A test of mediators and moderators among young, urban women of color. *Annals of Behavioral Medicine, 45*(1), 13-23.
- Factor, R., Kawachi, I., & Williams, D. R. (2013). The social resistance framework for understanding high-risk behavior among non-dominant minorities: Preliminary evidence. *American Journal of Public Health, e1-e7*.
- Fischer, C. S., Hout, M., Jankowski, M. S., Lucas, S. R., Swidler, A., & Voss, K. (1996). *Inequality by design: Cracking the bell curve myth* Princeton, NJ: Princeton University Press.
- Fiske, S. T., Bergsieker, H. B., Russell, A. M., & Williams, L. (2009). Images of Black Americans. *Du Bois Review: Social Science Research on Race, 6*(1), 83-101.

- Fuller-Rowell, T. E., Doan, S. N., & Eccles, J. S. (2012). Differential effects of perceived discrimination on the diurnal cortisol rhythm of African Americans and Whites. *Psychoneuroendocrinology*, *37*(1), 107-118.
- Galea, S., Tracy, M., Hoggatt, K. J., DiMaggio, C., & Karpati, A. (2011). Estimated deaths attributable to social factors in the United States. *American Journal of Public Health*, *101*(8), 1456-1465.
- Garcia, A. S., & Keyes, D. G. (2012). *Life as an undocumented immigrant: How restrictive local immigration policies affect daily life*. Washington, DC: Center for American Progress. Retrieved from http://www.americanprogress.org/issues/2012/03/pdf/life_as_undocumented.pdf
- Gee, G. C. (2002). A multilevel analysis of the relationship between institutional and individual racial discrimination and health status. *American Journal of Public Health*, *92*(4), 615-623.
- Gee, G. C., & Ford, C. L. (2011). Structural racism and health inequities. *Du Bois Review: Social Science Research on Race*, *8*(1), 115-132.
- Gee, G. C., Walsemann, K. M., & Brondolo, E. (2012). A life course perspective on how racism may be related to health inequities. *American Journal of Public Health*, *102*(5), 967-974.
- Glaeser, E. L., & Vigdor, J. L. (2001). *Racial segregation in the 2000 Census: Promising news*. Washington, DC: Brookings Institution.
- Glaeser, E. L., & Vigdor, J. (2012). The end of the segregated century: Racial separation in America's neighborhoods, 1890-2010. *Civic Report*, *66*. Retrieved from http://www.manhattan-institute.org/html/cr_66.htm
- Goff, P. A., Eberhardt, J. L., Williams, M. J., & Jackson, M. C. (2008). Not yet human: Implicit knowledge, historical dehumanization, and contemporary consequences. *Journal of Personality and Social Psychology*, *94*(2), 292-306.
- Haider, A. H., Janel, S. N. S., Cooper, L. A., Efron, D. T., Swoboda, S., & Cornwell, E. E., III. (2011). Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *JAMA: The Journal of the American Medical Association*, *306*(9), 942-951.
- Héroux, M., Janssen, I., Lee, D.-C., Sui, X., Hebert, J. R., & Blair, S. N. (2012). Clustering of unhealthy behaviors in the Aerobics Center Longitudinal Study. *Prevention Science*, *13*(2), 183-195.
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin*, *31*(10), 1369-1385.
- Inzlicht, M., & Kang, S. K. (2010). Stereotype threat spillover: How coping with threats to social identity affects aggression, eating, decision making, and attention. *Journal of Personality and Social Psychology*, *99*(3), 467-481.
- Kessler, R. C., Mickelson, K. D., & Williams, D. R. (1999). The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior*, *40*(3), 208-230.
- Kramer, M. R., Cooper, H. L., Drews-Botsch, C. D., Waller, L. A., & Hogue, C. R. (2010). Do measures matter? Comparing surface-density-derived and census-tract-derived measures of racial residential segregation. *International Journal of Health Geographics*, *9*(29), 1-15.
- Kramer, M. R., & Hogue, C. R. (2009). Is segregation bad for your health? *Epidemiologic Reviews*, *31*(1), 178-194.
- Krieger, N., Carney, D., Lancaster, K., Waterman, P. D., Kosheleva, A., & Banaji, M. (2010). Combining explicit and implicit measures of racial discrimination in health research. *American Journal of Public Health*, *100*(8), 1485-1492.

- Krieger, N., Waterman, P. D., Kosheleva, A., Chen, J. T., Carney, D. R., Smith, K. W., & Samuel, L. (2011). Exposing racial discrimination: Implicit and explicit measures. The My Body, My Story Study of 1005 US-born Black and White community health center members. *PLoS ONE*, 6(11), e27636.
- Kwate, N. O. A., & Meyer, I. H. (2011). On sticks and stones and broken bones: Stereotypes and African American health. *Du Bois Review: Social Science Research on Race*, 8(1), 191-198.
- Lauderdale, D. S. (2006). Birth outcomes for Arabic-named women in California before and after September 11. *Demography*, 43(1), 185-201.
- Lewis, T. T., Aiello, A. E., Leurgans, S., Kelly, J., & Barnes, L. L. (2010). Self-reported experiences of everyday discrimination are associated with elevated C-reactive protein levels in older African-American adults. *Brain, Behavior, and Immunity*, 24(3), 438-443.
- Lewis, T. T., Barnes, L. L., Bienias, J. L., Lackland, D. T., Evans, D. A., & Mendes de Leon, C. F. (2009). Perceived discrimination and blood pressure in older African American and White adults. *Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 64A(9), 1002-1008.
- Lewis, T. T., Everson-Rose, S., Powell, L. H., Matthews, K. A., Brown, C., Karavolos, K., & Wesley, D. (2006). Chronic exposure to everyday discrimination and coronary artery calcification in African-American women: The SWAN Heart Study. *Psychosomatic Medicine*, 68, 362-368.
- Lewis, T. T., Kravitz, H. M., Janssen, I., & Powell, L. H. (2011). Self-reported experiences of discrimination and visceral fat in middle-aged African-American and Caucasian women. *American Journal of Epidemiology*, 173(11), 1223-1231.
- Lewis, T. T., Troxel, W. M., Kravitz, H. M., Bromberger, J. T., Matthews, K. A., & Hall, M. H. (2012). Chronic exposure to everyday discrimination and sleep in a multiethnic sample of middle-aged women. *Health Psychology*. Advance online publication.
- Lieberson, S. (1980). *A piece of the pie: Black and White immigrants since 1880*. Berkeley: University of California Press.
- Massey, D. S., & Denton, N. A. (1993). *American apartheid: Segregation and the making of the underclass*. Cambridge, MA: Harvard University Press.
- Mendez, D. D., Hogan, V. K., & Culhane, J. F. (2012). Stress during pregnancy: The role of institutional racism. *Stress and Health*. Advance online publication.
- Morello-Frosch, R., & Jesdale, B. M. (2006). Separate and unequal: Residential segregation and estimated cancer risks associated with ambient air toxics in US metropolitan areas. *Environmental Health Perspectives*, 114(3), 386-393.
- Mutz, D. C., & Goldman, S. K. (2010). Mass media. In J. F. Dovidio, M. Hewstone, P. Glick, & V. M. Esses (Eds.), *The Sage handbook of prejudice, stereotyping and discrimination* (pp. 241-257). Thousand Oaks, CA: Sage.
- Norton, M. I., & Sommers, S. R. (2011). Whites see racism as a zero-sum game that they are now losing. *Perspectives on Psychological Science*, 6(3), 215-218.
- Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ranganath, K. A., & Banaji, M. R. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology*, 18, 36-88.
- Orfield, G., Frankenberg, E., & Garces, L. M. (2008). Statement of American social scientists of research on school desegregation to the U.S. Supreme Court in *Parents v. Seattle School District and Meredith v. Jefferson County*. *Urban Review*, 40(1), 96-136.
- Osypuk, T. L., & Acevedo-Garcia, D. (2010). Beyond individual neighborhoods: A geography of opportunity perspective for understanding racial/ethnic health disparities. *Health Place*, 16(6), 1113-1123.

- Padela, A. I., & Heisler, M. (2010). The association of perceived abuse and discrimination after September 11, 2001, with psychological distress, level of happiness, and health status among Arab Americans. *American Journal of Public Health, 100*(2), 284-291.
- 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.
- Pascoe, E. A., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531-554.
- Pettigrew, T. F., & Meertens, R. W. (1995). Subtle and blatant prejudice in western Europe. *European Journal of Social Psychology, 25*, 57-75.
- Pew Research Center. (2011). *Wealth gaps rise to record highs between Whites, Blacks and Hispanics*. Washington, DC: Author.
- Pollack, C. E., Chideya, S., Cubbin, C., Williams, B., Dekker, M., & Braveman, P. (2007). Should health studies measure wealth? A systematic review. *American Journal of Preventive Medicine, 33*(3), 250-264.
- Profant, J., & Dimsdale, J. E. (1999). Race and diurnal blood pressure patterns: A review and meta-analysis. *Hypertension, 33*(5), 1099-1104.
- Richman, L. S., & Jonassaint, C. (2008). The effects of race-related stress on cortisol reactivity in the laboratory: Implications of the Duke lacrosse scandal. *Annals of Behavioral Medicine, 35*(1), 105-110.
- Sabin, J. A., Nosek, B. A., Greenwald, A. G., & Rivara, F. P. (2009). Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender. *Journal of Health Care for the Poor and Underserved, 20*(3), 896-913.
- Sampson, R. J. (1987). Urban Black violence: The effect of male joblessness and family disruption. *American Journal of Sociology, 93*(2), 348-382.
- Sawyer, P. J., Major, B., Casad, B. J., Townsend, S. S. M., & Mendes, W. B. (2012). Discrimination and the stress response: Psychological and physiological consequences of anticipating prejudice in interethnic interactions. *American Journal of Public Health, 102*(5), 1020-1026.
- Schoen, D. E. (2012). *Race in America*. Retrieved from http://www.thedailybeast.com/content/dam/dailybeast/2012/04/06/Newsweek_DailyBeast_Race_In_America_Survey.pdf
- Schuman, H., Steeh, C., Bobo, L., & Krysan, M. (1997). *Racial attitudes in America: Trends and interpretations* (Rev. ed.). Cambridge, MA: Harvard University Press.
- Shih, M., Pittinsky, T. L., & Ambady, N. (1999). Stereotype susceptibility: Identity salience and shifts in quantitative performance. *Psychological Science, 10*(1), 80-83.
- Smedley, B. D., Stith, A. Y., & Nelson, A. R. (2003). *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, DC: National Academy Press.
- Smith, T. W., Marsden, P. V., & Hout, M. (2011). *General Social Survey, 1972-2010*. Retrieved from Inter-university Consortium for Political and Social Research <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/31521>
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist, 52*(6), 613-629.
- Sternthal, M. J., Slopen, N., & Williams, D. R. (2011). Racial disparities in health: How much does stress really matter? *Du Bois Review, 8*(1), 95-113.
- Talaska, C., Fiske, S., & Chaiken, S. (2008). Legitimizing racial discrimination: Emotions, not beliefs, best predict discrimination in a meta-analysis. *Social Justice Research, 21*(3), 263-296.
- Tesler, M. (2012). The spillover of racialization into health care: How President Obama polarized public opinion by racial attitudes and race. *American Journal of Political Science, 56*(3), 690-704.

- Tomfohr, L., Cooper, D. C., Mills, P. J., Nelesen, R. A., & Dimsdale, J. E. (2010). Everyday discrimination and nocturnal blood pressure dipping in Black and White Americans. *Psychosomatic Medicine*, 72(3), 266-272.
- Travis, J., & Waul, M. (2003). Prisoners once removed: The children and families of prisoners. In J. Travis & M. Waul (Eds.), *Prisoners once removed: The impact of incarceration and reentry on children, families and communities* (pp. 1-32). Washington, DC: Urban Institute Press.
- Tull, E. S., Cort, M. A., Gwebu, E. T., & Gwebu, K. (2007). Internalized racism is associated with elevated fasting glucose in a sample of adult women but not men in Zimbabwe. *Ethnicity and Disease*, 17(4), 731-735.
- Tynes, B. M., Giang, M. T., Williams, D. R., & Thompson, G. N. (2008). Online racial discrimination and psychological adjustment among adolescents. *Journal of Adolescent Health*, 43(6), 565-569.
- van Ryn, M., Burgess, D. J., Dovidio, J. F., Phelan, S. M., Saha, S., Malat, J., & Perry, S. (2011). The impact of racism on clinician cognition, behavior, and clinical decision making. *Du Bois Review*, 8(1), 199-218.
- Verhaeghen, P., Aikman, S. N., & Van Gulick, A. E. (2011). Prime and prejudice: Co-occurrence in the culture as a source of automatic stereotype priming. *British Journal of Social Psychology*, 50(3), 501-518.
- Viswanath, K. (2006). Public communications and its role in reducing and eliminating health disparities. In G. E. Thomson, F. Mitchell, & M. B. Williams (Eds.), *Examining the health disparities research plan of the National Institutes of Health: Unfinished business* (pp. 215-253). Washington, DC: Institute of Medicine.
- Wallace, D. (2011). Discriminatory mass de-housing and low-weight births: Scales of geography, time, and level. *Journal of Urban Health*, 88(3), 454-468.
- Walters, K. L., Mohammed, S. A., Evans-Campbell, T., Beltrán, R. E., Chae, D. H., & Duran, B. (2011). Bodies don't just tell stories, they tell histories: Embodiment of historical trauma among American Indians and Alaska Natives. *Du Bois Review: Social Science Research on Race*, 8(1), 179-189.
- Washington Post Company. (2009). Washington Post-ABC News poll: Race relations. Retrieved from http://www.washingtonpost.com/wp-srv/politics/polls/postpoll_042609.html
- Weisbuch, M., Pauker, K., & Ambady, N. (2009). The subtle transmission of race bias via televised nonverbal behavior. *Science*, 326(5960), 1711-1714.
- Weisburd, D., Bushway, S., Lum, C., & Yang, S.-M. (2004). Trajectories of crime at places: A longitudinal study of street segments in the City of Seattle. *Criminology*, 42(2), 283-321.
- White, K., & Borrell, L. N. (2011). Racial/ethnic residential segregation: Framing the context of health risk and health disparities. *Health and Place*, 17(2), 438-448.
- White, K., Haas, J. S., & Williams, D. R. (2012). Elucidating the role of place in health care disparities: The example of racial/ethnic residential segregation. *Health Services Research*, 47(3, Part 2), 1278-1299.
- Williams, D. R. (1997). Race and health: Basic questions, emerging directions. *Annals of Epidemiology*, 7(5), 322-333.
- Williams, D. R. (2004). Racism and health. In K. E. Whitfield (Ed.), *Closing the gap: Improving the health of minority elders in the new millennium* (pp. 69-80). Washington, DC: Gerontological Society of America.
- Williams, D. R. (2012). Miles to go before we sleep: Racial inequities in health. *Journal of Health and Social Behavior*, 53(3), 279-295.
- Williams, D. R., & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public Health Reports*, 116(5), 404-416.

- Williams, D. R., Gonzalez, H. M., Williams, S., Mohammed, S. A., Moomal, H., & Stein, D. J. (2008). Perceived discrimination, race and health in South Africa: Findings from the South Africa Stress and Health Study. *Social Science and Medicine*, 67(3), 441-452.
- Williams, D. R., Jackson, J. S., Brown, T. N., Torres, M., Forman, T. A., & Brown, K. (1999). Traditional and contemporary prejudice and urban Whites' support for affirmative action and government help. *Social Problems*, 46(4), 503-527.
- Williams, D. R., & Mohammed, S. A. (2008). Poverty, migration, and health. In A. C. Lin & D. R. Harris (Eds.), *The colors of poverty* (pp. 135-169). New York, NY: Russell Sage Foundation.
- Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine*, 32(1), 20-47.
- Williams, D. R., & Mohammed, S. A. (in press). Racism and health II: A needed research agenda for effective interventions. *American Behavioral Scientist*.
- Williams, D. R., Yu, Y., Jackson, J., & Anderson, N. (1997). Racial differences in physical and mental health: socioeconomic status, stress, and discrimination. *Journal of Health Psychology*, 2(3), 335-351.
- Williams, N. (2006). Where are the men? The impact of incarceration and reentry of African-American men and their children and families. *Community Voices: Healthcare for the Underserved*. Retrieved from http://www.communityvoices.org/uploads/wherearethemen2_00108_00144.pdf
- Wilson, W. J. (1987). *The truly disadvantaged*. Chicago, IL: University of Chicago Press.

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