

Social Inequalities and Health

EMBODYING INEQUALITY: A REVIEW OF CONCEPTS, MEASURES, AND METHODS FOR STUDYING HEALTH CONSEQUENCES OF DISCRIMINATION

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Investigating effects of discrimination upon health requires clear concepts, methods, and measures. At issue are both economic consequences of discrimination and accumulated insults arising from everyday and at times violent experiences of being treated as a second-class citizen, at each and every economic level. Guidelines for epidemiologic investigations and other public health research on ways people embody racism, sexism, and other forms of social inequality, however, are not well defined, as research in this area is in its infancy. Employing an ecosocial framework, this article accordingly reviews definitions and patterns of discrimination within the United States; evaluates analytic strategies and instruments researchers have developed to study health effects of different kinds of discrimination; and delineates diverse pathways by which discrimination can harm health, both outright and by distorting production of epidemiologic knowledge about determinants of population health. Three methods of studying health consequences of discrimination are examined (indirect; direct, at the individual level, in relation to personal experiences of discrimination; at the population level, such as via segregation), and recommendations are provided for developing research instruments to measure acute and cumulative exposure to different aspects of discrimination.

Our future survival is predicated upon our ability to relate within equality.
Audre Lorde, 1980 (1, p. 358)

Inequality hurts. Discrimination harms health. These seem like straightforward, even self-evident, statements. They are propositions that epidemiologists can test, just like any other propositions about health that we investigate.

Yet, epidemiologic research explicitly focused on discrimination as a determinant of population health is in its infancy. At issue are both economic

consequences of discrimination and accumulated insults arising from everyday and at times violent experiences of being treated as a second-class citizen, at each and every economic level. In asking whether discrimination harms health, this new work builds on a century and a half of research demonstrating that racial/ethnic economic disparities often—but not always—“explain” U.S. racial/ethnic inequalities in health (2–8). And it extends this work to address health consequences of other types of discrimination, based on gender, sexuality, disability, and age (Table 1).

Testing the hypothesis that discrimination harms health requires clear concepts, measures, and methods. This article offers a brief review of definitions and patterns of discrimination within the United States, evaluates analytic strategies and instruments researchers have developed to study health effects of different kinds of discrimination, and concludes by delineating diverse pathways by which discrimination can harm health, both outright and by distorting production of epidemiologic knowledge about determinants of population health. Although the examples I employ are primarily U.S.-based and pertain chiefly to racial discrimination and physical health, the broader issues raised should be relevant to other countries, to other types of discrimination, to mental health, and to overall well-being.

Throughout, the framework I use to conceptualize and operationalize relationships between discrimination, inequality, and health is ecosocial theory (9–11). Taking literally the notion of “embodiment,” this theory asks how we literally incorporate biologically—from conception to death—our social experiences and express this embodiment in population patterns of health, disease, and well-being. Bringing the metaphor of the body politic to life—a body “ruled” by a “head” and sustained by laboring “hands,” a body that creates, consumes, excretes, reproduces, and evolves—this theory draws attention to why and how societal conditions daily produce population distributions of health. Critical causal components conjointly include (a) societal arrangements of power and property and contingent patterns of production and consumption, and (b) constraints and possibilities of our biology, as shaped by our species’ evolutionary history, our ecologic context, and individual trajectories of biological and social development. These factors together structure inequalities in exposure and susceptibility to—and also options for resisting—pathogenic insults and processes across the lifecourse (9, 12). Ecosocial theory thus posits that how we develop, grow, age, ail, and die necessarily reflects a constant interplay, within our bodies, of our intertwined and inseparable social and biological history. Three additional assumptions, relevant to this article, are that we, as human beings, desire and are capable of living fully expressed lives replete with dignity and love, that epidemiologists are motivated to reduce human suffering, and that social justice is the foundation of public health.

Before considering how to conceptualize, measure, and quantify health consequences of discrimination, one caveat immediately is in order: the purpose of

studying health effects of discrimination is not to prove that oppression is “bad” because it harms health. Unjustly denying people fair treatment, abrogating human rights, and constraining possibilities for living fully expressed, dignified, and loving lives is, by definition, wrong—*regardless* of effects on health. Rather, the rationale for studying health consequences of discrimination is to enable full accounting of what drives population patterns of health, disease, and well-being, so as to produce knowledge useful for guiding policies and actions to reduce social inequalities in health and promote social well-being.

DISCRIMINATION IN THE UNITED STATES: DEFINITIONS AND PATTERNS

Definitions of Discrimination

According to the Oxford English Dictionary, the word “discriminate” derives from the Latin term *discriminare*, which means “to divide, separate, distinguish” (13, p. 746). From this standpoint, “discrimination” simply means “a distinction (made with the mind, or in action).” Yet, when people are involved, as both agents and objects of discrimination, the meaning and act of discrimination takes on a new meaning: “to discriminate against” is “to make an adverse distinction with regard to; to distinguish unfavorably from others” (13, p. 746). In other words, when people discriminate against each other, more than simple distinctions are at issue. Instead, those who discriminate restrict, by judgment and action, the lives of those whom they discriminate against.

The invidious meanings of adverse discrimination become readily apparent in the legal realm, where people have created and enforce laws both to uphold and to challenge discrimination. Legally, discrimination can be of two forms. One is “*de jure*,” meaning mandated by law; the other is “*de facto*,” without legal basis but sanctioned by custom or practice. Examples of *de jure* discrimination include Jim Crow laws, now overturned, that denied African Americans access to facilities and services used by white Americans (14, pp. 57–111) and current laws prohibiting gay and lesbian marriage (15). By contrast, underrepresentation of people of color and white women in clinical trials constitutes a form of *de facto* discrimination (16–18).

Whether *de jure* or *de facto*, discrimination can be perpetrated by a diverse array of actors. These include: the state and its institutions (ranging from law courts to public schools), non-state institutions (e.g., private sector employers, private schools, religious organizations), and individuals. From a legal or human rights perspective, however, it is the state that possesses critical agency and establishes the context—whether permissive or prohibitive—for discriminatory acts: it can enforce, enable, or condone discrimination, or, alternatively, it can outlaw discrimination and seek to redress its effects (Table 2) (19, 20). A

Table 1

Basic taxonomy of prevalent types of discrimination, United States, 1990s, by type, constituent dominant and subordinate social groups, justifying ideology, material and social basis, and examples of embodiment as inequalities in health

Type of discrimination	Constituent social groups		Justifying ideology	Material and social basis	Examples of embodiment as inequalities in health ^d
	Dominant	Subordinate			
Racial/ethnic	White, Euro-American	People of color: black; Latino/a and Hispanic; American Indian and Alaska Native; Native Hawaiian and Pacific Islander; Asian ^b	Racism	Conquest, slavery, skin color, property	Higher infant mortality rates (per 1,000 births, 1989–1991) Black: 17.1 American Indian: 12.6 Hispanic: 7.6 Asian/Pacific Islander: 6.6 White: 7.4 Age-adjusted mortality rates 1.52 times higher among blacks vs. whites (84, 108)
Gender ^c	Men and boys	Women and girls	Sexism	Property, gender roles, religion	Longer life expectancy of women (6.4 yrs) offset by higher rates of disability and illness, resulting in fewer years of disability-free life (108, 303) Annually, 1 million women (vs. 140,000 men) battered by spouse or partner, and 500,000 women raped or sexually assaulted (usually by a man they know) (332) By age 18, 1 in 3 or 4 girls and 1 in 10 boys sexually abused (333)

Anti-gay/ anti-lesbian	Heterosexual	Lesbian, gay, bisexual, queer, transgender, transsexual	Heterosexism	Gender roles, religion	Elevated rates of smoking, suicide, and substance abuse (61, 163, 300, 308)
Disability	Able-bodied	Disabled	Ableism	Costs of enabling access	Denial of health insurance; inadequate medical care (30, 297)
Age	Non-retired adults	Youth, elderly	Ageism	Family roles, property	Sexual abuse of children (see Gender, above) Among elderly, poorer survival due to less aggressive treatment (31, 64)
Social class	Business owners, executives, professionals	Working class, poor	Class bias	Property, education	Socioeconomic gradient in excess morbidity and mortality, with risk greatest among the poor (7, 84)

^aReferences in parentheses.
^bEach of these groups is extremely heterogeneous; terminology employed is what will be used in the U.S. 2000 census. Examples (far from exhaustive) of subgroups include: Black: African American, Afro-Caribbean, and Black African; Latino/a and Hispanic: Chicano, Mexican American, Cuban, Puerto Rican, Central and South American; American Indian and Alaska Native: nearly 600 federally recognized and unrecognized American Indian tribes, Aleuts, and Eskimos; Native Hawaiian and Pacific Islander: Native Hawaiian, Samoan, Guamanian; Asian: Chinese, Japanese, Filipino, Korean, Laotian, Hmong, Samoan.
^cAlso called "sex discrimination."

Table 2
Selected U.S. laws and international human rights instruments prohibiting discrimination^a

U.S. laws	International human rights instruments
U.S. constitution	Universal Declaration of Human Rights (1948)
13th amendment (banned slavery) (1865)	Discrimination (Employment and Occupation Convention) (1958)
14th amendment (guaranteed due process to all citizens, excepting American Indians) (1866)	Convention against Discrimination (in Education) (1960)
15th amendment (banned voting discrimination based on "race, color, or previous condition of servitude") (1870)	International Convention on the Elimination of All Forms of Racial Discrimination (1965)
19th amendment (banned voting discrimination "on account of sex") (1920)	International Covenant on Civil and Political Rights (1966)
Civil Rights Act (1875) (declared unconstitutional by U.S. Supreme Court in 1883)	International Covenant on Economic, Social, and Cultural Rights (1966)
Civil Rights Act (1964)	Declaration on the Elimination of Discrimination Against Women (1967)
Voting Rights Act (1965)	Declaration on Race and Racial Prejudice (1978)
Fair Housing Act (1968)	Convention on the Elimination of All Forms of Discrimination against Women (1979)
Equal Opportunity Act (1975)	Convention on the Rights of the Child (1989)
Americans with Disabilities Act (1990)	

^aSources: references 14, pp. 224-238; 18; 19; 297; 334.

powerful example of the latter is the new post-apartheid South African constitution (21). This document mandates, in the most inclusive language of any national constitution in the world, that “The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language and birth”; discrimination by individuals on these terms is likewise prohibited.

Despite its legal dimensions, however, discrimination is never simply a legal affair. Conceptualized more broadly, it refers to all means of expressing and institutionalizing social relationships of dominance and oppression. At issue are practices of dominant groups to maintain privileges they accrue through subordinating the groups they oppress and ideologies they use to justify these practices, with these ideologies revolving around notions of innate superiority and inferiority, difference, or deviance. Thus, the *Collins Dictionary of Sociology* defines “discrimination” as “the process by which a member, or members, of a socially defined group is, or are, treated differently (especially unfairly) because of his/her/their membership of that group” (22, p. 169). Extending this definition, the *Concise Oxford Dictionary of Sociology* holds that discrimination involves not only “socially derived beliefs each [group] holds about the other” but also “patterns of dominance and oppression, viewed as expressions of a struggle for power and privilege” (23, pp. 125–126). In other words, random acts of unfair treatment do not constitute discrimination. Instead, discrimination is a socially structured and sanctioned phenomenon, justified by ideology and expressed in interactions, among and between individuals and institutions, intended to maintain privileges for members of dominant groups at the cost of deprivation for others.

Although sharing a common thread of systemic unfair treatment, discrimination nevertheless can vary in form and type, depending on how it is expressed, by whom, and against whom. As summarized in Table 3, diverse forms identified by social scientists include: *legal*, *illegal*, *overt* (or *blatant*), and *covert* (or *subtle*) discrimination, and also *institutional* (or *organizational*), *structural* (or *systemic*), and *interpersonal* (or *individual*) discrimination (24–27). Although usage of these terms varies, *institutional discrimination* typically refers to discriminatory policies or practices carried out by state or non-state institutions, *structural discrimination* refers to the totality of ways in which societies foster discrimination, and *interpersonal discrimination* refers to directly perceived discriminatory interactions between individuals—whether in their institutional roles (e.g., employer/employee) or as public or private individuals (e.g., shopkeeper/ shopper). In all cases, perpetrators of discrimination act unfairly toward members of socially defined subordinate groups to reinforce relations of dominance and subordination, thereby bolstering privileges conferred to them as members of a dominant group.

Table 3
 Conceptualizing discrimination as a determinant of population health

Aspects of discrimination
Type: defined in reference to constituent dominant and subordinate groups, and justifying ideology (see Table 1)
Form: legal or illegal; institutional, structural, interpersonal; direct or indirect; overt or covert
Agency: perpetrated by state or by non-state actors (institutional or individual)
Expression: from verbal to violent; mental, physical, or sexual
Domain: e.g., at home; within family; at school; getting a job; at work; getting housing; getting credit or loans; getting medical care, purchasing other goods and services; by the media; from the police or in the courts; by other public agencies or social services; on the street or in a public setting
Level: individual, institutional, residential neighborhood, political jurisdiction, regional economy
Cumulative exposure to discrimination
Timing: conception; infancy; childhood; adolescence; adulthood
Intensity
Frequency (acute; chronic)
Duration

Pathways of embodying discrimination, involving exposure, susceptibility, and responses to:

- Economic and social deprivation: at home, in the neighborhood and other socioeconomic regions
- Toxic substances and hazardous conditions (pertaining to physical, chemical, and biological agents): at home, at work, and in the neighborhood
- Socially inflicted trauma (mental, physical, or sexual, ranging from verbal to violent): at home, at work, in the neighborhood, in society at large
- Targeted marketing of legal and illegal psychoactive and other substances (alcohol, tobacco, other drugs, junk food)
- Inadequate health care, by health care facilities and by specific providers (including access to care, diagnosis, treatment)

Responses to discrimination (protective and harmful)

- Protective
 - Active resistance by individuals and communities (involving organizing, law suits, social networks, social support)
 - Creating safe spaces for self-affirmation (social, cultural, sexual)
- Harmful
 - Internalized oppression and denial
 - Use of psychoactive substances (legal and illegal)

Effects of discrimination on scientific knowledge

- Theoretical frameworks
 - Specific hypotheses
 - Data collection
 - Data interpretation
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Patterns of Discrimination

A full accounting of discrimination in the United States today is beyond the scope of this article. Instead, to provide a reminder of its ubiquity as well as background to considering how it can harm health, I next review, briefly, five notable ways that discrimination can permeate people's lives.

First, as summarized in Table 1, many groups experience discrimination in the United States today. Dominant types of discrimination are based on race/ethnicity, gender, sexuality (including sexual orientation and identity), disability, age, and, although not always recognized as such, social class (15, 25, 28–35). Other types, more pronounced in the past, include discrimination based on religion and nationality (36, 37). These latter types are still highly relevant for American Indians and other indigenous people in the United States, for whom many governmental policies (e.g., restrictions on religious expression, abrogation of treaty rights, removal of children to non-Indian families) have often been genocidal in effect, if not intent (37–40).

Second, as explicitly recognized by the South African constitution, people often can experience multiple forms of discrimination. Whereas white women may be subject, as women, to gender discrimination, women of color—whether black, Latina, Asian or Pacific Islander, or American Indian—may be subject to both gender and racial discrimination. Moreover, this experience of multiple subordination cannot simply be reduced to the “sum” of each type. Recent U.S. scholarship on gendered racism, for example, has begun to examine how, in a context of overall negative stereotypical portrayals of black Americans as lazy and unintelligent (41, 42), black women—as *black women*—are stereotyped, as Patricia Collins has observed, as “mammies, matriarchs, welfare recipients and hot mammas” (43, p. 67), while black men—as *black men*—are stereotyped as criminals and rapists (25, 27, 43, 44). Understanding discrimination experienced by black women and men thus requires considering the salience of both their race/ethnicity and gender.

Third, singly or combined, different types of discrimination can occur in just about every facet of public and private life (Table 3). The full gamut extends from the grinding daily realities of what Philomena Essed has termed “everyday” discrimination (27) to the less common yet terrifying and life-transforming events, such as being victim of a hate crime (45).

In a typical day, experiences with discrimination accordingly can start—depending on type—in the morning, at home, continue with public encounters en route to or while at school or work or even shopping or eating at a restaurant or attending a public event, and extend on through the evening, whether in the news or entertainment or while engaging with family members (1, 14, 15, 25–28, 30, 31, 46–51). Other common but not typically daily scenarios for experiencing discrimination include: applying for a job (24, 51–53), looking for housing (54–56), getting a mortgage or a loan (57–59), buying a car (60), get-

ting health care (61–67), or interacting with the police or public agencies or the legal system (14, 25, 26, 28, 68).

Fourth, while some experiences of discrimination may be interpersonal and obvious, they are also likely to be institutional and invisible. To know, for example, that you have been discriminated against in your salary, or that you have been denied a mortgage, or an apartment, or been steered away from certain neighborhoods when you are looking for a home, requires knowing how the employer, bank, landlord, or real estate agent treats other individuals (29, 46, 69–71). Typically, it is only when people file charges of discrimination in court that evidence of such patterns of inequality can be obtained. Other clues can be obtained by examining social patterning of economic inequality, since acts of discrimination—whether institutional or interpersonal, blatant or covert—usually harm economic as well as social well-being. Table 4 illustrates this point for racial/ethnic discrimination, depicting marked racial/ethnic inequalities in income, wealth, education, and unemployment.

Fifth and finally, attesting to some of the animosity that feeds and justifies discrimination are, to give but one example, numerous surveys of U.S. racial attitudes (14, 41, 42, 72). Despite declines in racial prejudice over time, reported levels remain high, even taking into account that (a) people underreport negative social attitudes (41); (b) dominant groups typically deny discrimination exists, especially, as Essed (29) has noted, if it is no longer legal (e.g., 73, 74); and (c) as Jackman (28) has argued, paternalism combined with friendly feelings toward individual members of subordinate groups coupled with denial of any responsibility for institutional discrimination is as much a hallmark of contemporary discrimination as is outright conflict and negative attitudes. Strikingly, then, data from the 1990 General Social Survey reveal that fully 75 percent of white Americans agree that “black and Hispanic people are more likely than whites to prefer living on welfare” and a majority concur that “black and Hispanic people are more likely than whites to be lazy, violence-prone, less intelligent, and less patriotic” (42, 75). These are ugly social facts, with profound implications for not only our body politic but also the very bodies in which we live, love, rejoice, suffer, and die.

MEASURING DISCRIMINATION TO ESTIMATE ITS EFFECTS ON POPULATION HEALTH

How, then, can epidemiologists study discrimination as a determinant of population health? Figure 1 (on p. 308) summarizes three approaches to quantify health effects of discrimination: (a) indirectly, by inference, at the individual level; (b) directly, using measures of self-reported discrimination, at the individual level; and (c) in relation to institutional discrimination, at the population level. All three approaches are informative, complementary, and necessary. I review and provide examples for each method, below.

Table 4
Selected racial/ethnic inequalities in socioeconomic position, United States, mid-1980s to mid-1990s^a

Outcome	Black	American Indian and Alaska Native	Asian and Pacific Islander	Hispanic	White
Percent below poverty (1990)	29.5%	31.6%	14.1%	25.3%	9.8%
Ratio to whites	3.0	3.2	1.4	2.6	[1.0]
Median household income (1989)	\$19,758	\$19,897	\$36,784	\$24,156	\$31,435
Ratio to whites	0.6	0.6	1.2	0.8	[1.0]
Median net worth in lowest income quintile (1991)	\$1	N.A.	N.A.	\$645	\$10,257
Ratio to whites	0.0			0.06	[1.0]
Percent unemployed (adults ≥ 16 yrs old) (1990)					
Men	13.7%	16.2%	5.1%	9.8%	5.4%
Ratio to whites	2.6	3.1	1.0	1.9	[1.0]
Women	12.2%	13.4%	5.5%	11.2%	5.0%
Ratio to whites	2.4	2.7	1.1	2.2	[1.0]
Educational attainment (adults ≥ 25 yrs old) (1990)					
Less than high school	37.0%	34.7%	22.4%	50.2%	22.0%
Ratio to whites	1.7	1.6	1.0	2.3	[1.0]
Bachelor's degree or higher	11.4%	8.9%	36.6%	9.2%	21.5%
Ratio to whites	0.5	0.4	1.7	0.4	[1.0]

^aSource: references 335, p. 34; 336.

Indirectly Measuring Health Effects of Discrimination, Among Individuals

One of the more common approaches to studying health consequences of discrimination is indirect. Recognizing that discrimination may be difficult to measure, investigators instead compare health outcomes of subordinate and dominant groups (Figure 1a). If distributions of these outcomes differ, then researchers determine whether observed disparities can be explained by “known risk factors.” If so, investigators interpret their findings in the light of how discrimination may shape distribution of the relevant “risk factors.” If, however, a residual difference persists, even after controlling for these other risk factors, then additional aspects of discrimination may be inferred as a possible explanation for the remaining disparities (assuming no unmeasured confounders).

Exemplifying this indirect method are U.S. studies examining whether socioeconomic factors “explain” black-white inequalities in health status (6–8, 76–86), exposure to occupational and environmental health hazards (87–91), or receipt of medical services (92–97). In their earliest form, starting in the mid-1800s, these kinds of investigations compared health of enslaved with free blacks and also with poorer and wealthier whites, thereby exposing how slavery and poverty, and not “race” per se, largely explained the poorer health of “the Negro” (5, 98–100). The basic strategy, then and now, is to determine whether “adjusting” for socioeconomic position (along with relevant confounders) eliminates observed racial/ethnic disparities in the specified outcome. If so, economic consequences of racial discrimination are inferred to underlie the observed (unadjusted) disparities; in other words, both racism and class matter (6, 7, 76–81).

If, however, racial/ethnic differences persist, four alternative explanations can be offered. One is that inadequate measurement of socioeconomic position produces residual confounding (6, 101, 102). Consider, for example, a disease whose incidence increases with poverty, with incidence rates identical among African Americans and white Americans at each income level. Under these circumstances, if African Americans below the poverty line were much poorer than white Americans below the poverty line, then analyses adjusting for being “above” versus “below” poverty would fail to explain excess rates of disease among African Americans—even though black-white income disparities in fact fully explained black-white differences in disease incidence. A second hypothesis, discussed in the next section, is that the remaining difference reflects health consequences of unmeasured non-economic aspects of racial discrimination—for example, chronic psychological stress (6, 103). A third explanation, unrelated to discrimination, posits that unexplained differences reflect unmeasured factors that are associated with both race/ethnicity and the specified outcome but are not related to either discrimination or socioeconomic position—for example, culturally shaped patterns of food consumption. Finally, a

- a. *Indirect, at individual level:* Examine whether “known risk factors” explain differences in health outcomes between members of dominant and subordinate groups; if not, infer discrimination may contribute to residual difference
- Discrimination by physician (unobserved) → Differences in treatment (observed), → Differences in outcome (observed)
 possibly affected by: severity in illness, comorbidity, age, insurance status, economic resources, family support, patient “preference” (usually unobserved), etc.
- b. *Direct, at individual level:* Among subordinate group, examine whether self-reported experiences of discrimination are associated with specified health outcome
- Discrimination (self-reported) → Threat → Fear, anger, denial, etc. → Physiological responses: cardiovascular, endocrine, neurologic, immune, etc. → Health outcome (observed)
- c. *Institutional, at population level:* Among subordinate group, examine whether group-level measures of discrimination are associated with population rates of health outcome
- Discrimination (unobserved) → Residential segregation (observed) → Concentration of poverty, poor housing quality, increased population density, toxic exposures, lack of access to services and goods, political disempowerment, etc. → Elevated morbidity and mortality rates (observed)

fourth explanation—often invoked but rarely tested (104, 105)—speculates that innate genetic differences are responsible. Whether and how investigators address these alternative explanations, when interpreting unexplained differences in health status between subordinate and dominant groups, varies considerably across studies.

Illustrating both the importance and the ambiguity of research using indirect methodologies to study health effects of discrimination is research on a well-known public health problem: black-white disparities in risk of low birth weight (106, 107). Numerous investigations have demonstrated that poverty is associated with elevated risk of low birth weight among both African Americans and white Americans and also that “adjusting” for poverty substantially reduces—but does not eliminate—excess risk among African Americans (106, 107). Even so, not only is risk of low birth weight 1.5 to 2 times higher among African American than among white and Hispanic infants born to poor or less educated parents (107; 108, p. 90), but it is also 2 times higher comparing black with white infants born of college-educated parents (109, 110), even after controlling for numerous covariates. Although additional non-economic and economic dimensions of racial discrimination could account for these findings, so too could other unmeasured determinants or confounders. Absent data on these unmeasured factors, discrimination can be at best inferred, not demonstrated, as a determinant of health outcomes. These same caveats apply to the other major strand of research indirectly assessing effects of discrimination and health, which focuses on differentials in diagnosis and treatment of women and men with the same symptoms or diseases (62, 66, 111, 112).

The importance of discrimination in restricting economic resources, coupled with evidence of the profound impact of economic well-being on health (6, 7, 113–116), accordingly suggests that one strategy for reducing ambiguity and improving epidemiologic research is employing appropriate measures of socioeconomic position (101, 117–119). Failing to take into account such issues as level of measurement (e.g., individual, household, neighborhood, or region) and time period (e.g., childhood, adult) can introduce bias and produce considerable residual confounding. Using individual-level—instead of household-level—measures of socioeconomic position for women, for example, will rarely be adequate for properly detecting socioeconomic gradients in women’s health (116, 120–122). Moreover, as illustrated by a study which found that childhood but not adult measures of socioeconomic position account for adult racial/ethnic disparities in infection by *Helicobacter pylori* (123)—presumably because most infection occurs in childhood—socioeconomic position should be measured at relevant points across the lifespan, in relation to both acute exposures and cumulative disadvantage (12, 117). For guidance on measuring socioeconomic position in epidemiologic studies, overall and with respect to time period and level of management, as well race/ethnicity, gender, and sexual orientation, readers are encouraged to consult the cited references, above.

Lastly, one further indirect approach to measuring health effects of discrimination on individuals—albeit relevant only to racial discrimination—addresses associations between skin color and health status. This approach has been employed in 17 U.S. epidemiologic studies focusing on health of African Americans (124–140). Although most of these studies actually were attempting to use skin color as a biological marker for genetic admixture, several also conceptualized skin color as a marker for discrimination. The underlying presumption is that darker skin color increases risk of discrimination above and beyond a powerful “color line” markedly distinguishing people of color from white Americans.

Notably, among these 17 epidemiologic studies, 12 reported associations (all modest) between skin color and the specified outcomes (ranging from blood pressure to all-cause and cause-specific mortality) (124–130, 133, 134, 137, 138, 140). Of these 12, the ten collecting socioeconomic data *all* found that socioeconomic position either typically explained or else substantially modified the observed association (124, 126–129, 133, 134, 137, 138, 140). Additionally, the single published U.S. study examining associations between skin color, socioeconomic position, and self-reported experiences of racial discrimination among African Americans documented that while darker skin color was moderately associated with socioeconomic deprivation (among men only), skin color and self-reported experiences of racial discrimination were largely unrelated (141). Other sociologic research similarly has shown that while moderate associations exist between skin color and income among both African Americans and Mexican Americans (chiefly among men), income disparities are far greater comparing African Americans or Mexican Americans with light skin to white Euro-Americans than when comparing African Americans or Mexican Americans with dark versus light skin (142–146). The net implication is that while skin color may serve as a modest indirect marker for aspects of racial discrimination, it is not a direct marker for self-reported experiences of racial discrimination.

Taken together, then, existing research relying upon indirect strategies to measure health effects of discrimination provides precisely this: indirect evidence. These studies do not and cannot explicitly measure direct experiences of discrimination. Nor can they investigate effects related to intensity, duration, or time period of exposure to discrimination. What such studies *can* address, however, are (a) health effects of types of discrimination *not readily perceived by individuals* (e.g., treatment decisions of individuals’ physicians), and (b) whether economic disparities or other factors presumed to be related to discrimination account for observed differences in health between dominant and subordinate groups. For these reasons, studies using indirect approaches to measuring health effects of discrimination can and do provide essential, powerful, and important evidence that discrimination shapes societal distributions of health and disease. To ask and answer the question of how directly perceived discrimination affects health accordingly requires a different set of questions and a different research strategy.

Measuring Self-Reported Experiences of Direct Discrimination and Its Health Effects, Among Individuals

To meet the challenge of explicitly measuring people's direct experiences of discrimination and relating this to their health status, a new generation of public health researchers is devising new methods and approaches. Indicating the novelty of this work, at the time of preparing this article I could identify only 20 studies in the public health literature employing instruments to measure self-reported experiences of discrimination (Table 5) (47, 67, 147–164). Of these, 15 focused on racial discrimination (13 on African Americans, two on Hispanics and Mexican Americans), two of which additionally addressed gender discrimination; another solely examined gender discrimination; three investigated discrimination based on sexual orientation; and one concerned discrimination based on disability. I could find no published empirical studies on health effects of self-reported experiences of discrimination based on age.

In Table 5, I summarize measures of discrimination employed in, along with the findings of, these 20 investigations. The most common outcome (ten studies) was mental ill-health, such as depression, psychological distress; the second most common (five studies) was hypertension or blood pressure. Overall, studies consistently reported that higher levels of self-reported experience of discrimination were associated with poorer mental health; associations with somatic health, as discussed below, were more complex.

As indicated by the diversity of questions listed in Table 5, public health research presently lacks a standardized methodology to measure self-reported experiences of direct discrimination. Of particular note is variability in assessing (*a*) the time period of exposure (ever versus recently), (*b*) the domain of such exposures (globally or in specific situations), (*c*) intensity and frequency of exposure (major events or everyday types of discrimination), and (*d*) the targets of discrimination (respondents only or also members of their family or their group overall). Only eight studies included additional questions asking respondents how much they were upset by and how they responded to experiences of discrimination. Less than half the studies reported psychometric measures regarding validity or reliability of their instruments.

At least two factors underlie proliferation of different measures of self-reported experiences of and responses to discrimination in epidemiologic research. One is the recent emergence of public health research on this topic. Thus, investigators are only now starting to develop, employ, and validate instruments appropriate for large-scale epidemiologic investigations. Methodologic research comparing associations of diverse measures of self-reported discrimination with selected health outcomes, within the same study population, has yet to be conducted. Without such validation research, choice of appropriate measures is likely to remain problematic.

Table 5
Measures of direct discrimination used in or designed for studies with health outcomes^a

Type of discrimination; study	Study population ^b	Questions asked	Health outcome and association with self-reported experiences of discrimination ^c
Racial/ethnic James et al., 1984 (147)	112 African American men in North Carolina	Occupational stressors: race as a hindrance to job success; unfair wages (not paid their worth) <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none	Blood pressure ≈↑
Amaro et al., 1987 (148)	303 Hispanic women professionals (national sample)	Ever experienced discrimination at work <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none	Psychological distress ↑
Salgado de Snyder, 1987 (149)	140 Mexican immigrant women in Los Angeles	Ever been discriminated against as a Mexican, in the past 3 months (Note: question was one item in an acculturation scale) <i>Response format:</i> yes/no; if yes: 4-point Likert scale on extent of related stress, ranging from "not very much" to "very stressful" <i>Psychometric evaluation:</i> Cronbach's $\alpha = 0.65$	Depression ≈↑

Krieger, 1990 (150)	51 black and 50 white women in Oakland, California	Ever discriminated against: at school; getting a job; at work; getting housing; getting medical care; from police or in the courts <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none	Hypertension (self-reported) $\approx \uparrow$
Dressler, 1990 (151)	86 black women and 100 black men in Alabama	Response to unfair treatment: accept as fact of life or take action; talk to others or keep to self <i>Response format:</i> select one of the two specified options <i>Psychometric evaluation:</i> none	Blood pressure \emptyset
Murrell, 1996 (152)	165 African American women in northern California	Chronic social role stressors: four questions on discrimination at work, regarding pay raises, promotion, job responsibilities, overall pay (Note: questions were items in a scale on chronic stressors) <i>Response format:</i> 4-point Likert scale on how often, ranging from "never" to "frequently" <i>Psychometric evaluation:</i> none Perceptions of Racism Scale (337): 20-item self-report inventory, of which 10 questions concern medical, two about lifetime experiences of discrimination <i>Response format:</i> 4-point Likert scale ranging from "strongly agree" to "strongly disagree" <i>Psychometric evaluation:</i> Cronbach's $\alpha = 0.91$	Stress \uparrow Low birth weight \emptyset

Table 5
(Cont'd.)

Type of discrimination; study	Study population ^b	Questions asked	Health outcome and association with self-reported experiences of discrimination ^c
Krieger and Sidney, 1996 (153)	4,086 black and white women and men in a multicenter study (1,143 black women, 831 black men, 1,106 white women, 1,006 white men)	Discrimination questions: same as in Krieger, 1990, plus one additional situation: ever discriminated against on the street or in a public setting <i>Response format: yes/no</i> <i>Psychometric evaluation: none</i>	Blood pressure $\approx \uparrow$
Jackson et al., 1996 (154)	623 African Americans (national probability sample)	Response to unfair treatment: see Krieger, 1990 Respondent or family member treated badly because of race (in last 30 days) <i>Response format: yes/no</i> <i>Psychometric evaluation: none</i>	Psychological distress \emptyset Number of chronic conditions \emptyset Disability \emptyset
		Perception of whites' intentions: keep blacks down, better break, don't care <i>Response format: select one of the three specified options</i> <i>Psychometric evaluation: none</i>	Psychological distress \uparrow Number of chronic conditions $\approx \downarrow$ Disability \emptyset

McNeilly et al., 1996 (47)	165 African American college students and 25 community members in North Carolina (123 women, 67 men)	Perceived Racism Scale (51 items): Frequency domain (items 1–43); frequency of exposure to racist incidents (past year; lifetime) on the job, in academic settings, in public settings (overt and subtle), racist statements <i>Response format:</i> for each item, 6-point Likert-like scale, ranging from “almost never” to “several times a day” <i>Psychometric evaluation:</i> Cronbach’s $\alpha = 0.96$; test-retest reliability: range = 0.71–0.81	None; designed for use in future public health studies
Broman, 1996 (155)	312 African American adults in Detroit (209 women, 103 men)	Response domain (items 44–51): emotional responses and behavioral coping responses to perceived racism <i>Response format:</i> Emotional responses: 5-point Likert scale for each type of feeling (e.g., angry, sad), ranging from “not at all” to “extremely”; rank importance (from most to least) of four responses to experiencing racism (“think whites have a problem,” “think that person being racist has a problem,” “feel bad about being black,” “feel bad about myself”) Behavioral responses: select one or more of 10 options (e.g., “speaking up,” “forgetting it,” “getting violent,” “praying”) <i>Psychometric evaluation:</i> Cronbach’s $\alpha = 0.92$; test-retest reliability: range = 0.50–0.78	Hypertension (self-reported) Heart disease (self-reported) \emptyset \emptyset

Table 5
(Cont'd.)

Type of discrimination; study	Study population ^b	Questions asked	Health outcome and association with self-reported experiences of discrimination ^c
Ladrine and Klonoff, 1996 (156)	149 black students, staff and faculty at a university (location not specified) (83 women, 66 men)	The Schedule of Racist Events: 18-item self-report inventory; frequency of racist events in past year and entire life and appraisal of related stress <i>Response format:</i> 6-point Likert scale—frequency: “never” to “almost all the time”; stress: “not at all” to “extremely” <i>Psychometric evaluation:</i> Recent discrimination (past year): Cronbach’s $\alpha = 0.95$; split-half reliability: 0.93 Lifetime discrimination: Cronbach’s $\alpha = 0.95$; split-half reliability: 0.91 Appraisal of stress: Cronbach’s $\alpha = 0.92$; split-half reliability: 0.92	Psychiatric distress ↑ Cigarette smoking ↑
Mays and Cochran, 1997 (157)	232 black women and 73 black men (heterosexual) in college, university, and junior college in Los Angeles	Frequency of discrimination: Based on race/ethnicity, gender, or both: in general; personally experienced As perpetrated by three sources (black men, black women, white men): against black person of same gender as respondent; personally experienced As perpetrated by other African Americans against blacks lacking economic resources: in general; personally experienced	Psychological distress ↑

<p><i>Response format:</i> for each item, 7-point Likert-like scale, ranging from “never” to “fairly often” <i>Psychometric evaluation:</i> not stated</p>	<p>Degree of upset and relation to perpetrator, for each type of personally experienced discrimination <i>Response format:</i> 7-point Likert-like scale—upset: ranging from “not at all” to “upset a great deal”; relationship to perpetrator: “mostly by those I know well” to “mostly by complete strangers” <i>Psychometric evaluation:</i> not stated</p>	<p>Satisfaction with medical care ↓</p>
<p>Auslander et al., 1997 (158)</p>	<p>55 African American and 103 white children and their mothers or female guardians</p>	<p>Modified Perceptions of Racism Scale (134): reduced to six questions about perception of unfair treatment on basis of race by city officials, restaurant workers, health care providers, school teachers <i>Response format:</i> 4-point Likert scale, ranging from “strongly disagree” to “strongly agree” <i>Psychometric evaluation:</i> Cronbach’s $\alpha = 0.78$</p>
<p>Williams and Chung, 1999 (in press) (159)</p>	<p>2,107 African Americans (national probability sample)</p>	<p>Respondent or family member treated badly because of race (in last 30 days); for ever-employed persons: own and awareness of others’ experiences of racial discrimination at work <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none</p> <p>Psychological distress ↑</p>

Table 5
(Cont'd.)

Type of discrimination; study	Study population ^b	Questions asked	Health outcome and association with self-reported experiences of discrimination ^c
Williams et al., 1997 (160)	586 black and 520 white adults in Detroit	Discrimination—major events: ever unfairly fired or denied promotion, ever unfairly not hired, ever unfairly treated by police; everyday discrimination: sum of ever experiencing nine kinds <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> Everyday discrimination: Cronbach's $\alpha = 0.88$	Self-rated ill-health $\approx \uparrow$ Psychological distress \uparrow Psychological well-being \downarrow Bed-days \uparrow
Gender Krieger, 1990 (150)	51 black and 50 white women in Oakland, California	Ever discriminated against at school; getting a job; at work; at home; getting medical care <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none	Hypertension $\approx \uparrow$
Ladrine et al., 1995 (161)	294 women students and staff at university; 337 women at an airport (403 white women, 117 Latinas,	Response to unfair treatment: same as Krieger, 1990, for racial discrimination study Schedule of Sexist Events (338): 20-item self-report inventory: frequency of sexist events in past year and entire life <i>Response format:</i> 6-point Likert scale, ranging from "never" to "almost all the time"	Psychiatric distress \uparrow Premenstrual symptoms \uparrow

	<p>38 black women, 25 Asian American women, 46 women in other ethnic groups; location of study site not stated)</p>	<p><i>Psychometric evaluation:</i> Recent discrimination (past year): Cronbach's $\alpha = 0.90$; split-half reliability: 0.83 Lifetime discrimination: Cronbach's $\alpha = 0.92$; split-half reliability: 0.87</p>	
Mays and Cochran, 1997 (157)	<p>232 black women and 73 black men (heterosexual) in college, university, and junior college, in Los Angeles</p>	<p>Frequency of discrimination, perpetrator, degree of upset (see entry under "Racial/ethnic" for types of questions, format, psychometric evaluation)</p>	<p>Psychological distress ↑</p>
Sexual orientation			
Bradford et al., 1994 (162)	<p>1,925 lesbians (national survey; 88% white)</p>	<p>Experiences of discrimination: verbal attack, job loss, physical attack <i>Response format:</i> not stated <i>Psychometric evaluation:</i> none</p>	<p>Mental distress: high prevalence (compared with U.S. women overall; not analyzed in relation to reported discrimination)</p>
Meyer, 1995 (163)	<p>741 gay men in New York City not diagnosed with AIDS (89% white)</p>	<p>Prejudice: experienced anti-gay violence, anti-gay discrimination, in past year <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> none</p>	<p>Psychological distress ↑</p>
		<p>Perceived stigma of being gay: 11-item scale about expectations of rejection and discrimination regarding homosexuality</p>	<p>Psychological distress ↑</p>

Table 5
(Cont'd.)

Type of discrimination: study	Study population ^b	Questions asked	Health outcome and association with self-reported experiences of discrimination ^c
Meyer, 1995 (163) (cont'd.)		<p>Questions asked</p> <p><i>Response format:</i> 6-point Likert scale, ranging from "strongly agree" to "strongly disagree"</p> <p><i>Psychometric evaluation:</i> Cronbach's $\alpha = 0.86$</p> <p>Internalized homophobia: 9-item scale about extent to which gay men are uneasy about their homosexuality and seek to avoid homosexual feelings</p> <p><i>Response format:</i> 4-point Likert scale, ranging from "often" to "never"</p> <p><i>Psychometric evaluation:</i> Cronbach's $\alpha = 0.79$</p>	Psychological distress \uparrow
Krieger and Sidney, 1997 (164)	204 black and white women and men with at least one same-sex sexual partner in a multicenter study (27 black women, 13 black men, 87 white women, 77 white men)	<p>Ever discriminated against: in family; at home; at school; getting a job; at work; getting medical care; on the street or in a public setting</p> <p><i>Response format:</i> yes/no</p> <p><i>Psychometric evaluation:</i> none</p> <p>Response to unfair treatment: see Krieger, 1990, for racial discrimination study</p>	Blood pressure $\approx \uparrow$

Disability Li and Moore, 1998 (67)	1,266 U.S. adults with disabilities (Ohio, Michigan, Illinois; 53% women; 78% white, 17% African American; 47% total annual family income < \$10,000; 43% multiple disabilities; 23% congenital disabilities)	Perception of discrimination: 4-item scale on beliefs about treatment of disabled regarding friendship, intelligence, treatment in community, being hired for a job <i>Response format:</i> yes/no <i>Psychometric evaluation:</i> Cronbach's $\alpha = 0.72$	Acceptance of disability Chronic pain
			↓ ↑

^aT could find no empirical public health studies on health effects of self-reported age discrimination.
^bRacial/ethnic categories as designated in each study.
^c↑ = positive association (more discrimination associated with higher levels of outcome)
↓ = negative association (more discrimination associated with lower levels of outcome)
≈↑ = partial positive association (discrimination positively associated with outcome, but not in dose-response relationship)
≈↓ = partial negative association (discrimination negatively associated with outcome, but not in dose-response relationship)
∅ = no association (between discrimination and outcome)

Also contributing to eclectic use of questions about self-reported experiences of discrimination is an overall dearth of empirical studies on this topic, not just in public health but in research more broadly. Often, when epidemiologists decide to measure social phenomena to assess their impact on health, we look to social sciences for guidance. Yet, neither the sociologic nor psychological literature currently offers well-characterized, “ready-to-use,” validated instruments appropriate for large-scale empirical studies. Instead, most empirical sociologic studies on discrimination either have focused chiefly on racial attitudes of people who discriminate, rather than experiences of those who have endured discrimination (28, 41), or else, as is also the case in psychological research, they have employed in-depth interviews and qualitative approaches not readily transferable to epidemiologic research (27, 46, 165–170). The net effect is an uncanny silence on empirical estimates of the prevalence (let alone effects) of self-reported experiences of discrimination, even as this experience is widely recognized in many other avenues of discourse—law, political science, history, literature, film, other art forms, and the media, to name a few.

Fortunately, epidemiologic principles about considering interplay of exposure and susceptibility in the social context across the lifecourse (9, 12, 171) can nevertheless provide useful guidance for measuring and analyzing self-reported experiences of discrimination and its effects on health. At issue, as in any epidemiologic study, are (a) measurement of exposure, in relation to intensity, frequency, duration, and relevant etiologic period—that is, time between exposure, onset of pathogenic processes, and occurrence of disease; (b) measurement of susceptibility; and (c) effect modification of associations between exposures and outcomes by relevant covariates. In the case of studies of discrimination and health, issues of susceptibility notably include responses to and ways of resisting discrimination, while those involving effect modification require considering how self-reported experiences of discrimination and ways of responding to such experiences may have different meaning or impact depending on a respondent’s social position, as related to multiple subordination, degree of social and material deprivation, and historical cohort.

First, regarding measurement of exposure, extant research suggests questions should be direct and address multiple facets of discrimination for *each* type of discrimination being studied. Conversely, studies should avoid global questions about experiences or awareness of discrimination—whether for all types combined or even just for one type of discrimination—since global questions are likely to underestimate exposure and are of little use for guiding interventions and policies to reduce exposure. Recognizing the importance of assessing multiple domains of discrimination, the few large-scale social science surveys investigating self-reported experiences of discrimination—whether racial (28, 172–176), gender (28, 177), or anti-gay discrimination (178–180)—accordingly have asked respondents questions about experiencing distinct types of discrimination or unfair treatment in a variety of policy-relevant situations. Multiple

options for questions about responses to discrimination and unfair treatment are likewise advisable, since studies show reactions can span from “careful assessment to withdrawal, resigned acceptance, verbal confrontation, physical confrontation, or legal action” (46, p. 274; see also 181–184).

Studies listed in Table 5 support the recommendation to use specific, rather than global, questions about experiences of discrimination. Thus, rather than ask about experiencing, say, racial discrimination overall, it is likely to be more informative to inquire about experiencing a specific type of discrimination in several different situations, such as at school, at work, on the street. Even better would be asking separately about having experienced racial discrimination in work assignments, promotions, pay, lay-offs, interactions with coworkers, and interactions with supervisors (46, 168). The importance of considering multiple types of discrimination, moreover, is illustrated by one study of anti-gay discrimination which found that while white gay men reported chiefly anti-gay discrimination, white lesbians reported both anti-gay and gender discrimination, and black gay men and lesbians additionally reported racial discrimination (164); another study notably found that lesbian and gay African Americans reported higher rates of depressive distress than would be predicted based on summing risk for their race/ethnicity, gender, and sexual orientation (185).

In addition to specifying domains in which different types of discrimination occur, questions should also address extent of exposure in relation to the presumed etiologic period. Depending on the health outcome(s) under study, both chronic and acute exposures may matter, as will intensity, duration, and frequency of exposure. Thus, in the case of asthma attacks or other outcomes with sudden onsets that can be triggered by adverse events, acute as well as cumulative exposure to discrimination may be relevant. By contrast, in the case of hypertension or other conditions with gradual onset, cumulative exposure, rather than recent or acute exposure, most likely will have greatest etiologic relevance (153). Furthermore, just as “daily hassles” and “major life episodes” often differentially affect health (186), the daily wear-and-tear of everyday discrimination may pose health hazards distinct from those resulting from major episodes of discrimination (such as losing a job) (160). Designing questions about exposure to discrimination accordingly requires careful development of a priori hypotheses about timing and intensity of exposure in relation to the outcome(s) under study.

Additionally, adequate measurement of exposure requires considering whether it is sufficient to ask individuals about only their own experiences of discrimination. Also of concern may be people’s fears of experiencing discrimination and their awareness of or fears about discrimination directed against other members of their family or their social group. Notably, recent research on what has been termed “personal/group discrimination discrepancy” documents that people typically report perceiving greater discrimination directed toward their group than toward themselves personally (157, 175, 184, 187, 188). Possible explanations of this phenomenon range from overestimation of group experiences of dis-

crimination to recognition of patterns of discrimination not readily discerned by personal experience (e.g., discriminatory hiring practices, as discussed earlier) to denial of personal experiences of discrimination, positive coping, optimism, and even illusions of invulnerability (46, 174, 175, 187, 189). Fully measuring exposure to discrimination accordingly may entail asking individuals about their lifetime experiences and fears not only for themselves but for their family members and their appraisal of risk for their social group more generally. These estimates of individual and group exposure, moreover, may be influenced by period and cohort effects due to historical changes in legal status, intensity, and domains of discrimination, for example, coming of age before, during, or after the heyday of the U.S. Civil Rights Movement in the 1960s.

Even assuming questions adequately address the breadth of individuals' experiences, awareness, and fears of discrimination, however, data on self-reported experiences of discrimination necessarily—and importantly—are inherently subjective. Issues of validity are thus the same as those with any epidemiologic data on self-reported exposures, particularly those about personal social experiences (186, 190).

In the case of discrimination, at least four factors may contribute to individuals reporting different experiences of discrimination even when subjected to the same "exposure" (e.g., a specific act). The first involves what has been termed "internalized oppression," whereby members of subordinated groups—especially those experiencing greater social and material deprivation—internalize negative views of the dominant culture and accept their subordinate status and related unfair treatment as "deserved" and hence nondiscriminatory (27, 44, 46, 150, 153, 163, 174, 175, 191). The second concerns ways in which members of subordinate groups relate to "positive" traits—if any—attributed to them by dominant groups; for example, some women may interpret men looking them over sexually in public as evidence of their own sexual attractiveness and hence self-worth, whereas other women may perceive such staring as public harassment (28, 50, 192). Third, people consciously or unconsciously may shape answers to be "socially acceptable" (41, 86), and may also vary in whether they find it helpful or distressing to speak about their problems (193). And fourth, individuals may exaggerate experiences of discrimination (system-blame) to avoid blaming themselves for failure (194).

If operative, any of these biases could potentially affect not only estimates of directly perceived discrimination but also its impact on health. It is important to emphasize, however, that existence of these potential biases does not render epidemiologic research on discrimination and health impossible or unfalsifiable. The logical inference, for example, of a study reporting comparable health status (controlling for relevant confounders) among, say, women reporting no, moderate, and high levels of discrimination within each and every specified sociodemographic stratum (e.g., class, race/ethnicity, age, sexual orientation) would be that discrimination is not causally related to the health outcome(s)

under study. By contrast, if associations were, in some instances, a dose-response relationship (more discrimination associated with greater risk of poor health) or, in others, a J-shaped curve (since internalized oppression may affect meaning of a “no” reply), the data would offer suggestive evidence of links between self-reported experiences of discrimination and health.

The salience of these kinds of conceptual and methodological issues for studying self-reported experiences of discrimination in relation to health is illustrated by a recent investigation I conducted on racial discrimination and blood pressure (153). Participants were members of the Coronary Artery Risk Development in Young Adults (CARDIA) study, a prospective multi-site community-based investigation established in 1985–1986 that enrolled slightly over 5,000 young black and white women and men, in fairly equal proportions, who were 18 to 27 years old at baseline (195). Questions on racial discrimination included in the Year 7 CARDIA examination are described in Table 5. To analyze data on exposure to discrimination, I set as referent group African Americans reporting moderate racial discrimination, defined as reporting racial discrimination in one or two of seven specified situations. I based this choice on the a priori logic that moderate exposure constitutes a normal experience for people subject to racial discrimination, and I further hypothesized—based on prior research—that this referent group would be at lower risk of elevated blood pressure than African Americans reporting no or extensive discrimination (150).

Key findings for the African American participants were that, first, 80 percent reported having ever experienced racial discrimination (28 percent in one or two, and 52 percent in three or more of seven specified situations); 20 percent, however, reported having never experienced racial discrimination. Second, systolic blood pressure (SBP) was independently associated with both self-reported experiences of racial discrimination and response to unfair treatment. Third, adjusting for relevant confounders, SBP was significantly elevated by 2 to 4 mm Hg among (a) working-class men and women and professional women reporting substantial versus moderate discrimination, and (b) working-class men and women reporting no versus moderate discrimination; conversely, (c) among professional men, blood pressure was over 4 mm Hg lower among those reporting no versus moderate discrimination. Fourth, within economic strata, a net difference of 7 to 10 mm Hg in average SBP existed when comparing extremes of experience involving racial discrimination and responses to unfair treatment. Additional novel analyses, also adjusted for relevant confounders, showed that (a) black-white differences in SBP would be reduced by 33 percent among working-class women and by 56 percent among working-class men if SBP of all black working-class women and men were equal to that of those reporting only moderate discrimination (whose SBP was the same as that of their white working-class counterparts), and (b) no black-white differences in SBP occurred among professional black women and men reporting, respectively, moderate and no discrimination, as compared with their white professional counterparts.

One plausible interpretation of why a response of no versus moderate racial discrimination was associated with *elevated* SBP among working-class African American women and men but *lower* SBP among professional black men is that, as discussed above, the meaning of “no” may be related to social position, in this case, gender and class (153). Thus, for people with relatively more power and resources, a “no” may truly mean “no.” By contrast, among more disenfranchised persons, especially those subject to multiple forms of subordination or deprivation, a “no” may reflect internalized oppression. In such cases, a disjuncture between words and somatic evidence may be an instance of the body revealing experiences—translated into pathogenic processes—that people cannot readily articulate with words. In my view, this is the interpretation that makes the most sense, which takes as real the patterns evinced by blood pressure levels in relation to self-reported experiences of racial discrimination. The body can teach us something here, together with our words. Adding plausibility to this interpretation are results of two additional smaller studies, both of which found higher blood pressure among members of groups subjected to discrimination (black women, in one; white gay men, in the other) who said that they had experienced no versus moderate discrimination (150, 164).

Resolving conceptual and methodological questions raised by emerging research on self-reported discrimination and health will require conducting appropriate validation studies. I accordingly describe three complementary research strategies that could potentially be useful, involving smaller, in-depth studies as well as larger surveys.

One approach would be to employ qualitative interviews to assess respondents’ perceptions of discrimination and to probe meanings of their answers to survey questions about experiences of discrimination. Along these lines, one small British study found that people who initially stated on the questionnaire that they had not experienced racial discrimination later said, in subsequent in-depth interviews, that they had experienced such discrimination but found it too hard—or too frightening or too pointless—to discuss (169). Were this finding to be replicated, and were discrepancies between survey responses and in-depth answers about experiencing discrimination found to be greatest among those most subject to subordination or deprivation, it would underscore the need for (a) developing more sensitive approaches to eliciting information on people’s self-reported experiences of discrimination, and (b) taking into account effect modification, by social position, of observed associations between self-reported experiences of discrimination and health status.

A second strategy could build on new research about people’s physiological responses to adverse stimuli pertaining to the type(s) of discrimination being studied. Several recent experimental studies, for example, have shown that blood pressure and heart rate among African Americans increase more quickly upon viewing movie scenes or imagining scenarios involving racist incidents than when viewing non-racist but angry, or neutral, encounters (196–198). These

kinds of studies could be extended by also querying study participants about their self-reported experiences of discrimination, and then analyzing associations between their responses to these questions and their experimentally induced physiological responses to witnessing or imagining discrimination.

A third approach, feasible for large-scale surveys, would be to include questions assessing identity formation, political consciousness, stigma, and internalized oppression (163, 199–201). The purpose would be to examine whether these expressions of self- and social-awareness modify associations between health status and self-reported experiences of discrimination. Notably, each of these constructs is distinct from—and cannot be reduced to—“self-esteem” and “self-efficacy.” At least among African Americans, research indicates that awareness that discrimination hinders black people from getting a good education or good jobs is *not* associated with self-esteem, and is only modestly associated with self-efficacy—presumably because people derive their self-esteem chiefly from relations with family and peers, and their sense of self-efficacy from how much they are able to influence their immediate conditions, even while understanding that societal discrimination exists (194, 202).

Measuring Population-Level Experiences of Discrimination and Health Effects

Individual-level measures of exposures and responses to direct interpersonal discrimination, however, no matter how refined, can, by their very nature, describe only one of several levels of discrimination that affect people’s lives. Also potentially relevant are population-level experiences of discrimination, such as residential segregation, and population-level expressions of empowerment, such as representation in government. A small but growing body of research accordingly has begun to examine whether aspects of discrimination that can be measured only at the population level themselves determine population health. Thus far primarily focused on racial discrimination, studies employing this third strategy have examined associations of African American morbidity and mortality rates with residential segregation, racial/ethnic political clout, and racial attitudes (203–209).

A study on relationships of black residential segregation and political empowerment with infant postneonatal mortality (the death rate of infants 2 to 12 months old) exemplifies this third approach to quantifying health consequences of discrimination (204). Following prior sociological research on residential segregation (58, 210–212), this investigation used an index of dissimilarity to measure degree of residential segregation. This index ranges from 0 to 100 and essentially measures the percentage of African Americans who would have to relocate so that the ratio of blacks to white in every neighborhood would be the same as that for the city as a whole. Black political empowerment (199) in turn was assessed with two measures: (a) relative black political power, defined as the

ratio of the proportion of black representatives on the city council divided by the proportion of the voting-age population that was black, and (b) absolute black political power, defined as the percentage of city council members who were black. This latter measure was conceptualized as reflecting “the level at which African-Americans are empowered to control the political and policy-making apparatus of the city” (204, p. 1084). Analyses showed an increased risk of black neonatal mortality was independently associated with higher levels of segregation and poverty and lower levels of relative (but not absolute) black political power, even when controlling for intra-city allocation of municipal resources (e.g., per capita spending, by neighborhood, on health, police, fires, streets, and sewers). One implication is that community organization, in addition to other community conditions, may affect population health, a finding likewise suggested by recent research on income inequality, community marginalization, and mortality (213–217).

As in the case of studies of self-reported discrimination, however, research on population health in relation to population-level measures of discrimination or empowerment is in its infancy. Potentially promising measures include population-level indicators of social inequality and discrimination created by the United Nations Development Programme (UNDP) (218), none of which have been employed in epidemiologic studies. The UNDP’s gender empowerment measure, for example, includes data pertaining to (a) “economic participation,” operationalized as the percentage of women and of men in administrative and managerial positions and in professional and technical jobs; (b) “political participation and decision-making power,” measured as the percentage of women and of men in parliamentary seats; and (c) “power over economic resources,” operationalized as women’s and men’s proportional share of earned income (based on the proportion of women and men in the economically active workforce and their average wage) (218, p. 108). Similar measures of economic participation and political empowerment could be developed for other subordinate groups, such as the lesbian and gay or disabled populations. Also likely to be informative, though not yet incorporated in epidemiologic studies, are measures of (a) economic segregation of neighborhoods (219, 220), (b) occupational segregation of jobs by gender and race/ethnicity (14, 25, 87, 221), (c) voter registration and voting rates of subordinate and dominant groups, and (d) sociodemographic composition of additional branches of government, such as the judiciary.

A related strategy—also not yet employed in epidemiologic research—would be to examine population health in relation to government ratification and enforcement of diverse human rights instruments, including the existence and enforcement of national laws prohibiting discrimination (e.g., in the United States, the Civil Rights Act and the Americans with Disability Act) (Table 2). For example, the United States has ratified the International Covenant on Civil and Political Rights (1966) and the International Convention on the Elimination of

All Forms of Racial Discrimination (1965), but not the Universal Declaration of Human Rights (1948), the International Covenant on Economic, Social and Cultural Rights (1966), the Convention on the Rights of the Child (1989), or the Convention on the Elimination of All Forms of Discrimination against Women (1979) (218, p. 216). Any or all of these human rights instruments could provide important benchmarks for assessing how discrimination related to violation of these internationally stipulated rights affects population health. From a policy perspective, this could be particularly useful, since popular movements and professional organizations can hold governments, and sometimes even non-state actors, accountable for stipulations in these human rights instruments (19, 20, 222). Epidemiologic research, for example, could analyze rates of domestic violence against women in relation to state funding for police training about domestic violence (a type of spending called for by the Convention on the Elimination of All Forms of Discrimination against Women), or racial/ethnic disparities in infant mortality in relation to public expenditures to improve race relations (a type of spending called for by the International Convention on the Elimination of All Forms of Racial Discrimination).

Any studies investigating associations between population-level measures of determinants and outcomes, however, must address two concerns, regarding (a) etiologic period and (b) ecologic fallacy. In the case of etiologic period, at issue—as in the case of studies using individual-level measures of discrimination—are distinctions between acute and cumulative exposures and between outcomes with short and longer latency periods. Thus, from a temporal standpoint, an association of higher levels of residential segregation or negative racial attitudes with, say, concurrent infant mortality rates or childhood morbidity rates or homicide rates would provide more compelling evidence of health effects of segregation or racial attitudes than would its association with all-cause mortality among adults, given the much longer latency period for most causes of death (e.g., cardiovascular disease, cancer). If, however, current levels of segregation reflected past levels and little bias were introduced by residential mobility, then inferences about links between segregation and adult mortality rates could be warranted. Comparable caveats about temporal plausibility have been raised for studies examining current levels of income inequality in relation to adult mortality rates: these associations make sense only if current income inequality is a marker for systematic underinvestment in human resources over time (223).

Second, regarding ecologic fallacy, concern centers on whether causal inferences at the population level are valid at the individual level. As well described in both social science and public health literature, ecologic fallacy chiefly results from confounding introduced through the grouping variable (e.g., census tract, city, state, nation) used to define the group-level dependent and independent variables (224–228). The classic case, reported by W. S. Robinson in 1950 (224), was that although state-level data showed strong associations between high illiteracy rates and the proportion of states' population that was black (Pearson correlation coeffi-

cient = 0.946), within these states the relationship between illiteracy and race/ethnicity was much weaker (Pearson correlation coefficient = 0.203).

A subsequent critique of Robinson's analyses demonstrated that grouping by state added an important confounding variable: state level of spending on public education (229). Because southern states—the ones with relatively high proportions of black residents—had a low tax base and spent relatively less on public education, illiteracy in these states was also high among their white residents. Had Robinson taken into account state per capita spending on education, a phenomenon that can only be measured at the group level, not only would the computed ecologic correlations have been less affected by aggregation bias but the study also would have identified how state funding for education determines literacy rates. In other words, had Robinson used relevant population-level data, his study would have avoided what has been termed “individualistic fallacy”: erroneous inferences about explanations of patterns observed at the individual level because they rely only upon individual-level data (6, 225, 228).

In addition to highlighting the importance of population-level determinants of outcomes measured among individuals, the critique of Robinson's study implies that population-level measures of discrimination could perhaps be meaningfully combined with individual-level measures to yield even more informative analyses of health consequences of discrimination (6, 103, 230). Methodologically, this approach entails use of contextual or multilevel analyses, a technique first developed in the social sciences (228, 231–234). Using such methods, U.S. epidemiologic studies have begun to show that health profiles of, say, poor people who live in poor neighborhoods generally are worse than those of equally poor people who live in more affluent neighborhoods (235–239). Residential segregation or community political empowerment could likewise conceivably modify experiences, perceptions, and effects of—as well as responses to—individually reported experiences of discrimination. The study design of contextual analysis, however, has yet to be used in epidemiologic research on health effects of discrimination.

HOW COULD DISCRIMINATION HARM HEALTH?

Prompting development of the kinds of research strategies I have been describing is the persistent question: why does health status differ among subordinate and dominant groups? More than methodology, however, is required to conduct valid and informative analysis of health consequences of discrimination. Equally vital is systematic and explicit consideration of ways that discrimination can harm health. Theory matters. At issue is comprehending not only direct health consequences of discrimination that we embody but also how discrimination can harm our very ability to understand—and provide knowledge useful for effectively intervening upon—the public's health.

Pathways to Embodying Discrimination

From an ecosocial standpoint, one useful concept for understanding links between discrimination and health is “biological expressions of discrimination,” to extend a terminology I developed with Sally Zierler to discuss connections between gender and health. We defined biological expressions of gender (including gender discrimination) to mean “incorporation of social experiences of gender into the body and expressed biologically, in ways that may or may not be associated with biological sex” (10). One example would be how girls’ and women’s bodybuild and exercise patterns are affected by underfunding of girls’ athletic programs (240). By the same logic, biological expressions of racial discrimination (or race relations, more broadly) refer to how people literally embody and biologically express experiences of racial oppression and resistance, from conception to death, thereby producing racial/ethnic disparities in morbidity and mortality across a wide spectrum of outcomes (241). Similar terminology could be used to discuss biological expressions of other types of discrimination, whether based on sexual identity or orientation, age, disability, social class, or other characteristics. For each type of discrimination, a key a priori assumption is that disparate social and economic conditions of subordinate and dominant groups will produce differences in their physiological profiles and health status.

Conversely, constructs such as “gendered expressions of biology” (10) or “racialized expressions of biology” (241) are useful for denoting how social relations of dominance and subordination affect expression of health outcomes linked to biological processes and traits invoked to define membership in subordinate and dominant groups. In the case of biological sex and gender, for example, women’s ability to become pregnant has been used to define women’s roles and to restrict women’s employment in certain male and relatively well-paid occupations, even though other less well-paid and typically female occupations may be equally hazardous—with these gendered roles in turn shaping distributions of pregnancy outcomes (10, 242). Or, in the case of race/ethnicity, examples of racialized components of our biology include skin color, hair type, and facial features, and also such genetic disorders as sickle cell anemia, cystic fibrosis, and Tay-Sachs disease. Rather than being conceptualized as particular aspects of human diversity, with varying distributions among populations—distributions notably shaped by geography, conquest, and laws about who can have children with whom—these traits instead typically are construed, tautologically, as evidence of “racial types” (241). Particular biological characteristics accordingly become imbued with meanings of “race,” conjuring up notions of fundamental difference on a whole host of other characteristics, even though within-group differences far exceed those between groups (6, 104, 105, 243–247).

From an ecosocial vantage, specific pathways potentially leading to embodiment of experiences of discrimination—whether perpetrated by institutions or individuals, in public or private domains—are legion, as are plausible health out-

comes. This is because discrimination creates and structures exposures to noxious physical, chemical, biological, and psychosocial insults, all of which can affect biological integrity at numerous integrated and interacting levels, simultaneously comprised of genes, cells, tissues, organs, and organ systems. The net effect, as discussed in a growing literature on causal pathways leading to inequalities in health across the lifecourse, is to create, using Eric Brunner's (248) term, a "biology of inequality" (6, 7, 12, 113–116, 213, 248–253).

Conceptually, however, the myriad socially structured trajectories—operative throughout the lifecourse—by which discrimination can affect health can be coalesced into five clusters. As delineated in Table 3, these pathways involve exposure, susceptibility, and responses (both social and biological) to:

1. Economic and social deprivation: at work, at home, in the neighborhood, and other relevant socioeconomic regions.
2. Toxic substances and hazardous conditions (pertaining to physical, chemical, and biological agents): at work, at home, and in the neighborhood.
3. Socially inflicted trauma (mental, physical, or sexual, ranging from verbal to violent): at work, at home, in the neighborhood, and in society at large.
4. Targeted marketing of legal and illegal psychoactive substances (alcohol, tobacco, other drugs) and other commodities (e.g., junk food).
5. Inadequate health care, by health care facilities and by specific providers (including access to care, diagnosis, and treatment).

Also relevant are health consequences of people's varied responses to discrimination. These can range from internalized oppression and use of psychoactive substances to reflective coping, active resistance, and community organizing to end discrimination and promote social justice (6, 11, 27, 46, 159, 181, 254–256).

From a theoretical standpoint, the utility of an ecosocial framework is that it encourages development of specific testable hypotheses by systematically tracing pathways between social experiences and their biological expression. Applying these five pathways to the case of racial discrimination and population distributions of blood pressure among black and white Americans, an ecosocial framework thus guides researchers to explore the following kinds of hypotheses:

Pathway 1: Residential and occupational segregation lead to greater economic deprivation among African Americans and increased likelihood of living in neighborhoods without good supermarkets, thereby reducing access to affordable nutritious diets; risk of hypertension is elevated by nutritional pathways involving high fat, high salt, and low vegetable diets (256–260).

Pathway 2: Residential segregation increases risk of exposure to lead among African Americans via contaminated soil (related to proximity of neighborhoods to freeways) and lead paint (related to decreased resources for removing and replacing lead paint); lead elevates risk of hypertension by damaging renal physiology (91, 261–264).

Pathway 3: Perceiving or anticipating racial discrimination provokes fear and anger; the physiology of fear (“flight-or-fight” response) mobilizes lipids and glucose to increase energy supplies and sensory vigilance and also produces transient elevations in blood pressure; chronic triggering of these physiological pathways leads to sustained hypertension (103, 126, 134, 147, 150, 153, 160, 196, 197, 256, 265–267).

Pathway 4: Targeted marketing of high-alcohol beverages to African American communities increases likelihood of harmful use of alcohol to reduce feelings of distress; excess alcohol consumption elevates risk of high blood pressure (256, 258, 268–270).

Pathway 5: Poorer detection and clinical management of hypertension among African Americans increases risk of uncontrolled hypertension, due to insufficient or inappropriate medical care (256, 258, 271–273).

By specifying these discrete pathways—however entangled in people’s real lives—ecosocial theory thus provides a coherent way for integrating social and biological reasoning about discrimination as a determinant of population health. Instead of cataloguing an eclectic list of risk factors or presuming genetic explanations as sufficient or fundamental, ecosocial theory proposes that explanations of population health are incomplete—and their ability to guide healthy public policy crimped—unless they take into account interweaving of social and biological determinants of well-being.

Effects of Discrimination upon Epidemiologic Knowledge

Discussion of how theory directs the generation of hypotheses in turn points to one important additional way discrimination can affect population health: its impact on epidemiologic knowledge and public health practice. At issue are the kinds of questions epidemiologists do and do not ask, the studies we conduct, and ways we analyze and interpret our data and consider their likely flaws.

That scientists’ ideas are shaped, in part, by dominant social beliefs of their times is well documented by historians of public health, medicine, and science (274–285). Relevant to epidemiology, during the last 20 years a substantial body of literature has begun to document how scientific knowledge and, more importantly, real people, have been harmed by scientific racism, sexism, and other related ideologies, including eugenics, that justify discrimination in relation to class, age, sexual orientation, and disability (5, 6, 31, 61, 65, 66, 105, 276, 286–299).

At issue are both acts of omission and acts of commission. These range from the virtual invisibility of lesbians and gay men in major public health databases (61, 300) to distortions of etiologic and therapeutic knowledge due to underrepresentation of people of color and women in epidemiologic studies, clinical trials, and even medical textbooks (16–18, 301–303), to the conduct of research premised on the view that innate differences underlie poorer health of

subordinate groups, absent consideration of how subordination might affect health. Vividly illustrating detrimental effects of discrimination upon the generation and application of scientific knowledge, to choose but one example, is the pernicious and longstanding legacy of “race” epidemiology; comparable accounts exist for eugenic constructions of class-based differences in health (304, 305), for sexist analyses of women’s health (66, 253, 290, 295, 306), and to a lesser extent, for heterosexist research on lesbian and gay health (61, 300, 307–309).

Historically, “race” first attained prominence in U.S. medical research in the early 1700s (5, 289, 310). Appearance of “race” as a category relevant to health followed institutionalization of the “one drop rule” in various slave codes established in the mid-to-late 1600s (37, 310–312). This rule specified that if someone had only “one drop” of African “blood,” she or he was deemed “black.” Embedded in this allegedly biological and innate definition of “race” was the notion of intrinsic “racial” superiority and inferiority. Based on this belief, leading scientists and physicians conducted studies to document (and occasionally fabricate (313–315)) racial/ethnic differences in every physical feature imaginable, and then used these data both to explain observed racial/ethnic disparities in health and to prove the “black race” was innately inferior to the “white race” and “fit” only for slavery (5, 276, 289, 316–318).

During the mid-1800s, however, the first generation of credentialed U.S. black physicians—along with abolitionists—challenged the very category of “race.” Arguing that people had more similarities than differences, they instead conducted studies showing diversity of health outcomes among free and enslaved blacks and similarity of health outcomes among blacks and poor whites (5, 98–100). Based on these studies, they accordingly argued that slavery and economic duress—not innate constitution—were the principal reasons black Americans had worse or different health than white Americans. This alternative viewpoint flourished briefly during and after the Civil War. After the destruction of Reconstruction, however, leading medical and scientific researchers again conducted studies and proffered explanations based on the premise that “race”—not racial subordination—was the root cause of racial inequalities in health (5, 276, 289).

The next serious challenge to biological definitions of “race” emerged in the aftermath of World War II, in part in reaction to Nazi racial science, especially its fusion of eugenics and anti-Semitism to justify both “Aryan” supremacy and the Holocaust (305, 319). In 1951, UNESCO released its first statement on race, rebutting its validity as a biological category; subsequent revisions, amplifying this point, were issued in 1964, 1969, and, most recently, 1997 (320–322). All editions emphasize that although distributions of specific genetic traits may vary across geographic regions, no ensemble of linked characteristics exists that delineates distinct “races.” Empirical evidence supporting this view is now so well-established that contemporary population geneticists, other biologists, anthropologists, and social scientists all concur that racial categories reflect

social and ideological conventions, not meaningful natural distinctions (22, 103, 243, 247, 322). Or, as stated in the 1997 revision of the UNESCO statement: “Pure races, in the sense of genetically homogeneous populations, do not exist in the human species today, nor is there any evidence that they have ever existed in the past” (322).

Yet, despite this scientific consensus, the 1995 third edition of *Dictionary of Epidemiology* (sponsored by the International Epidemiological Association) continues to define “race” as “persons who are relatively homogeneous with respect to biological inheritance” (323, p. 139). Worse, flouting contemporary scientific knowledge, it baldly asserts that “In a time of political correctness, classifying by race is done cautiously,” as if only ideology, and not scientific evidence, were at issue. The net effect of such views has been an overemphasis in epidemiologic research on allegedly genetic explanations of racial/ethnic inequalities in health, and a disregard for how racism, rather than “race,” drives these disparities (6, 7, 76, 103–105, 246, 295, 298, 324–331). Tellingly, whereas the keyword “race” identifies 33,921 articles indexed in Medline since 1966, only the 16 studies (0.0005 percent) listed in Table 5 have attempted to study self-reported experiences of racial discrimination in relation to health. Correcting this imbalance requires explicit attention to theories guiding research to explain population patterns of health, disease, and well-being.

INTIMATE CONNECTIONS: EPIDEMIOLOGY AND THE TRUTHS OF OUR BODY AND BODY POLITIC

In summary, epidemiologists can draw on a variety of study designs (Figure 1) and concepts (Table 3) to develop and test epidemiologic hypotheses about health consequences of discrimination. Arguably the most fruitful approaches will systematically address discrimination in relation to (a) its varied aspects (type, form, agency, expression, domain, level); (b) cumulative exposure (timing, intensity, frequency, duration); (c) likely pathways of embodiment; (d) likely forms of responses and resistance and their health consequences; and (e) effects upon scientific knowledge.

Stated simply, the epidemiology of health consequences of discrimination is, at heart, the investigation of intimate connections between our social and biological existence. It is about how truths of our body and body politic engage and enmesh, thereby producing population patterns of health, disease, and well-being.

To research how discrimination harms health, we accordingly must draw on not only a nuanced understanding of the likely biological pathways of embodying discrimination, from conception to death, but also a finely tuned historical, social, and political sensibility, situating both the people we study and ourselves in the larger context of our times. Out of the epidemiologic commitment to reduce human suffering, we can extend our discipline’s scope to elucidate how oppression, exploitation, and degradation of human dignity harms health—and,

simultaneously, further knowledge and inspire action illuminating how social justice is the foundation of public health. Embodying equality should be our goal for all.

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