The Social Context of Disparities in Health: 

*Implications for Understanding the Biology of Disadvantage*

David R. Williams, PhD, MPH

Florence & Laura Norman Professor of Public Health
Professor of African & African American Studies and of Sociology
Harvard University
Context: Racial Disparities in Health

• African Americans have higher death rates than Whites for 12 of the 15 leading causes of death.

• Blacks and American Indians have higher age-specific death rates than Whites from birth through the retirement years.

• Hispanics have higher death rates than whites for diabetes, hypertension, liver cirrhosis & homicide.

• Minorities get sick younger, have more severe illness and die sooner than Whites.
Pattern

Racial Disparities In Health Are Persistent Over Time
Infant Mortality Rates, 1950-2000

Year
Deaths per 1,000 live births
B/W Ratio
White
Black
B/W Ratio
Life Expectancy Lags, 1950-2006

Murphy, NVSS 2000;
Diabetes Death Rates 1955-1998

Source: Indian Health Service; Trends in Indian Health 2000-2001
Pattern

Minorities get sick younger, have more severe illness and die sooner than Whites.
Earlier Onset – Breast Cancer

- White women have an overall incidence of breast cancer that is higher than that of blacks.

- The opposite pattern exists under the age 40, with African American women having a higher incidence of breast cancer compared to their white peers.
Earlier Onset -- CHD

A 20-year follow-up of adults in the CARDIA Study found that incident heart failure before the age of 50 was 20 times more common in Blacks than Whites, with the average age of onset being 39 years old.

NHANES data show that hypertension occurs earlier in Blacks than Whites.

Neonatal Mortality Rates (1st Births), U.S.

Maternal Age Mortality Rate
White
Black
Mexican
Puerto Rican

## Allostatic Load

<table>
<thead>
<tr>
<th>10 biomarkers</th>
<th>High-risk thresholds *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Systolic blood pressure</td>
<td>127 mm HG</td>
</tr>
<tr>
<td>2. Diastolic blood pressure</td>
<td>80 mm HG</td>
</tr>
<tr>
<td>3. Body Mass Index</td>
<td>30.9</td>
</tr>
<tr>
<td>4. Glycated hemoglobin</td>
<td>5.4%</td>
</tr>
<tr>
<td>5. Albumin</td>
<td>4.2 g/dL</td>
</tr>
<tr>
<td>6. Creatinine clearance</td>
<td>66 mg/dL</td>
</tr>
<tr>
<td>7. Triglycerides</td>
<td>168 mg/dL</td>
</tr>
<tr>
<td>8. C-reactive protein</td>
<td>0.41 mg/dL</td>
</tr>
<tr>
<td>9. Homocysteine</td>
<td>9 μmol/L</td>
</tr>
<tr>
<td>10. Total cholesterol</td>
<td>225</td>
</tr>
</tbody>
</table>

* = < 25th percentile for creatinine clearance; >75th percentile for others

Geronimus, et al., AJPH, 2006
Mean Score on Allostatic Load by Age

Geronimus, et al., AJPH, 2006
Socialization to Stigmatized Status?

-- Chicago adults: foreign born Hispanics had levels of illness and stress similar to whites while U.S.-born Hispanics were similar to blacks on these indicators (Sternthal, Slopen & Williams 2011)

-- Negative stigmatization changes of being black: for 1st generation black Caribbean immigrants, making race salient enhances academic performance while it reduces performance for the 2nd generation (Deaux et al 2007).

-- Middle-aged U.S.-born Mexican Americans and long-term Mexican immigrants had higher levels of allostatic load than recent Mexican immigrants, despite being higher in SES, and even after adjustment for health practices and medical care (Kaestner et al 2009).
Mean Allostatic Load, by Race & Nativity

<table>
<thead>
<tr>
<th>Race</th>
<th>Age Group</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>30-44</td>
<td>4.1</td>
</tr>
<tr>
<td>Black</td>
<td>45-60</td>
<td>4.8</td>
</tr>
<tr>
<td>Mexican</td>
<td>45-60</td>
<td>4.6</td>
</tr>
<tr>
<td>All</td>
<td>0 to 10 years</td>
<td>4.5</td>
</tr>
<tr>
<td>All</td>
<td>11 to 20 years</td>
<td>4</td>
</tr>
<tr>
<td>All</td>
<td>21 years or more</td>
<td>4.2</td>
</tr>
<tr>
<td>Foreign-born Mexicans</td>
<td>30-44</td>
<td>2.9</td>
</tr>
<tr>
<td>Foreign-born Mexicans</td>
<td>45-60</td>
<td>2.8</td>
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<td>2.9</td>
</tr>
<tr>
<td>Foreign-born Mexicans</td>
<td>45-60</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Kaestner, et al., Social Science Quarterly, 2009
Lower Incidence, But More Severe Disease: Breast Cancer

Compared to white women, black women are less likely to get breast cancer, **BUT** they are more likely to:

-- get breast cancer when young
-- be diagnosed at an advanced stage
-- have aggressive forms of breast cancer that are resistant to treatment
-- have triple negative tumors: grow quickly, recur more often, kill more frequently (Hispanic women also)
-- die from breast cancer

Chlebowski et al. 2005, JNCI; CA Study
Lower Incidence, Poorer Outcomes: Major Depression

National data reveal that Blacks have lower current and lifetime rates of major depression than Whites,

**BUT** depressed Blacks are more likely than their White counterparts to:

-- be chronically or persistently depressed
-- have higher levels of impairment
-- have more severe symptoms
-- not receive treatment

Williams et al. 2007; Archives of Gen. Psychiatry
Making Sense of “Racial” Differences

• Race reflects simultaneous unmeasured confounding for genetic (ancestral history and geographic origins) factors and environmental exposures

• Race reflects unmeasured confounding due to the current social environment

• Race reflects unmeasured confounding due to exposures over the life course (and generations) and biological adaptation to these environmental exposures. This includes changes in gene expression

Williams et al. 2010 An NY Acad Sci; Cooper et al. 2003, N Eng J Med
Central Role of Socioeconomic Status (SES)

Typically measured by income, education, or occupation, SES is one of the most robust determinants of variations in health in virtually every society.
SES: A Key Determinant of Heath

• The gap in all-cause mortality between high and low SES persons is larger than the gap between smokers and non-smokers.

• Americans who have not graduated from high school have a death rate two to three times higher than those who have graduated from college.

• Low SES adults have levels of illness in their 30s and 40s that are not seen in the highest SES group until after the ages of 65-75.
Relative Risk of Premature Death by Family Income (U.S.)

Family Income in 1980 (adjusted to 1999 dollars)

9-year mortality data from the National Longitudinal Mortality Survey
Lung Cancer Death Rates, Men, 2001

Deaths per 100,000

Education in Years

Albano et al. 2007, JNCI
Lung Cancer Death Rates, Women, 2001

Albano et al. 2007, JNCI
Percentage of College Grad+ by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>31.1</td>
</tr>
<tr>
<td>Black</td>
<td>17.8</td>
</tr>
<tr>
<td>Asian</td>
<td>50.2</td>
</tr>
<tr>
<td>Hisp. Any</td>
<td>13</td>
</tr>
<tr>
<td>PI</td>
<td>14.7</td>
</tr>
<tr>
<td>AI/NA</td>
<td>13</td>
</tr>
</tbody>
</table>

U.S. Census 2010
Percentage of Persons in Poverty
Race/Ethnicity

U.S. Census 2006
Racial/Ethnic Composition of People in Poverty in the U.S.

- 2+ races, 2.6%
- Hisp. Any, 23.9%
- AmI/AN, 1.6%
- NH/PI, 0.17%
- White, 46.1%
- Black, 23.1%
- Asian, 3.6%

U.S. Census 2006
Pattern: Racial/Ethnic Disparities in Health reflect more than just SES

Minorities have elevated levels of illness even at comparable levels of SES
## Life Expectancy At Age 25

<table>
<thead>
<tr>
<th>Group</th>
<th>White</th>
<th>Black</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>53.4</td>
<td>48.4</td>
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Murphy, NVSS 2000
# Life Expectancy at Age 25

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<td>48.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 0-12 Years</td>
<td>50.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. 12 Years</td>
<td>54.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Some College</td>
<td>55.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. College Grad</td>
<td>56.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>6.4</td>
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</tr>
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<td>52.3</td>
<td></td>
</tr>
<tr>
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<td>5.3</td>
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Murphy, NVSS 2000; Braveman et al. AJPH; 2010, NLMS 1988-1998
Infant Death Rates by Mother’s Education

Deaths per 1,000 population

<High School | High School | Some College | College grad. +

B/W Ratio

White | Black

B/W Ratio

NCHS, 1998
Meharry vs Johns Hopkins

A 1958-65, all Black, cohort of Meharry Medical College MDs was compared with a 1957-64, all White, cohort of Johns Hopkins MDs. 23-25 years later, the Black MDs had:

- higher risk of CVD (RR=1.65)
- earlier onset of disease
- incidence rates of diabetes & hypertension that were twice as high
- higher incidence of coronary artery disease (1.4 times)
- higher case fatality (52% vs 9%)

Thomas et al., 1997 J. Health Care for Poor and Underserved
Added Burden of Race

- National study of blood pressure risk (systolic, diastolic, and pulse rate), inflammation risk (C-reactive protein, fibrinogen, albumin) and metabolic risk (total cholesterol, HDL cholesterol, BMI and glycated hemoglobin) among adults age 40 and over.

- Even after multivariate adjustment (e.g. income, education, smoking, poor diet, physical activity), blacks had higher scores on blood pressure risk, inflammation risk, and total risk

Crimmins et al, 2007
Pattern

Some risk factors have more adverse impact on minorities compared to whites (the opposite pattern is also sometimes observed)
More Adverse Effects

- Alcohol-related mortality is twice as high for black males & females compared to whites (Stinson et al, 1996).
- Blacks more susceptible to liver damage (Stranges et al 2004)
- In NHEFS, no beneficial effect of moderate alcohol on all-cause mortality for Blacks (Sempos et al 2003)
- In the ARIC study, in contrast to protective effect for whites, moderate alcohol was positively related to incident CHD (Fuchs et al, 2004) and incident hypertension for Black men (Fuchs et al, 2001)
- In the CARDIA study, moderate alcohol positively related to CAC for Black men only (Pletcher et al, 2005).
Understanding More Adverse Effects

- A given level of tobacco also has more negative effects on blacks than whites

- Do these patterns reflect:
  - Interactions of these health behaviors with social, physical, chemical stressors?
  - Interactions of health behaviors with compromised biological systems due to environmental exposures (including epigenetic changes)
  - Mis-understanding of the associations between these health practices and health status?
Why Race Still Matters

1. All indicators of SES are non-equivalent across race.

2. Health is affected not only by current SES but by exposure to social and economic adversity over the life course.

3. Personal experiences of discrimination and institutional racism are added pathogenic factors that can affect the health of minority group members in multiple ways.
Non Equivalence of SES across Race

Compared to whites, blacks

-- Receive less income at the same levels of education,

-- have less wealth at the equivalent income levels, and

-- have less purchasing power (at a given level of income) because of higher costs of goods and services.

Williams & Collins, 1995; Ann Rev Soc
Distinctive Social Exposures

The minority poor are poorer than the white poor
## Wealth of Whites and of Minorities per $1 of Whites, 2000

<table>
<thead>
<tr>
<th>Household Income</th>
<th>White</th>
<th>B/W Ratio</th>
<th>Hisp/W Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$79,400</td>
<td>9¢</td>
<td>12¢</td>
</tr>
<tr>
<td>Poorest 20%</td>
<td>$24,000</td>
<td>&lt;1¢</td>
<td>2¢</td>
</tr>
<tr>
<td>2nd Quintile</td>
<td>$48,500</td>
<td>11¢</td>
<td>12¢</td>
</tr>
<tr>
<td>3rd Quintile</td>
<td>$59,500</td>
<td>19¢</td>
<td>19¢</td>
</tr>
<tr>
<td>4th Quintile</td>
<td>$92,842</td>
<td>35¢</td>
<td>39¢</td>
</tr>
<tr>
<td>Richest 20%</td>
<td>$208,023</td>
<td>31¢</td>
<td>35¢</td>
</tr>
</tbody>
</table>

Source: Orzechowski & Sepielli 2003, U.S. Census
Race and Economic Hardship

African Americans were more likely than whites to experience the following hardships\(^1\):

1. Unable to meet essential expenses
2. Unable to pay full rent on mortgage
3. Unable to pay full utility bill
4. Had utilities shut off
5. Had telephone shut off
6. Evicted from apartment

\(^1\) After adjustment for income, education, employment status, transfer payments, home ownership, gender, marital status, children, disability, health insurance and residential mobility.

Bauman 1998; SIPP
Early Life Adversity

• How is early life stressors linked to adult inflammation (CRP, IL6, Interleukin-6, Fibrinogen, E-selectin, sICAM-1)?

• In the MIDUS study, a measure of early life adversity (stressful events during childhood, relationship with parents, and verbal or physical abuse by parents) was significantly associated with 4 of 5 markers of inflammation for African Americans.

• No association among Whites.

Slopen et al 2010, Psychosomatic Med
Distinctive Social Exposures

The added burden of racism
Racism and Health: Mechanisms

- Institutional discrimination can restrict socioeconomic attainment and group differences in SES and health.
- Segregation can create pathogenic residential conditions.
- Discrimination can lead to reduced access to desirable goods and services.
- Internalized racism (acceptance of society’s negative characterization) can adversely affect health.
- Racism can create conditions that increase exposure to traditional stressors (e.g. unemployment).
- Experiences of discrimination may be a neglected psychosocial stressor.
Perceived Discrimination:

Experiences of discrimination are a neglected psychosocial stressor
Discrimination Persists

- Pairs of young, well-groomed, well-spoken college men with identical resumes apply for 350 advertised entry-level jobs in Milwaukee, Wisconsin. Two teams were black and two were white. In each team, one said that he had served an 18-month prison sentence for cocaine possession.

- The study found that it was easier for a white male with a felony conviction to get a job than a black male whose record was clean.

Devah Pager; Am J Sociology, 2004
## Percent of Job Applicants Receiving a Callback

<table>
<thead>
<tr>
<th>Criminal Record</th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>34%</td>
<td>14%</td>
</tr>
<tr>
<td>Yes</td>
<td>17%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Devah Pager; Am J Sociology, 2004
Race, Criminal Record, and Entry-level Jobs in NY, 2004

Devah Pager et al Am Soc Review, 2009; 169 employers
Subtle Racial Clues and Employment

- 5,000 fictitious applications sent to 1,300 ads for white-collar job openings in Boston and Chicago
- No explicit identification of race
- Scientific matching of applicants on first name based on
  - Distinctively White names: Allison, Emily, Brad and Greg
  - Distinctively Black names: Latisha, Aisha, Jamal and Darnell
- White first names produced more favorable results than identical resumes with Black first names
- White applicants send out 10 applications to get a call for a job interview. Black applicants had to send 15.

Bertrand and Mullainathan, 2004, American Economic Review
Every Day Discrimination

In your day-to-day life how often do the following things happen to you?

- You are treated with less courtesy than other people.
- You are treated with less respect than other people.
- You receive poorer service than other people at restaurants or stores.
- People act as if they think you are not smart.
- People act as if they are afraid of you.
- People act as if they think you are dishonest.
- People act as if they’re better than you are.
- You are called names or insulted.
- You are threatened or harassed.
Progress: 2009 Review

- Several longitudinal studies
- Effects of discrimination persist after adjusting for potential confounders (social desirability, neuroticism, self-esteem, negative affect, hostility)
- Studies of all major racial/ethnic groups in the U.S.
- International studies:
  -- national: New Zealand, Sweden, & South Africa
  -- Australia, Canada, Denmark, the Netherlands, Norway, Spain, Bosnia, Croatia, Austria, Hong Kong, and the U.K.

Discrimination matters for more than mental health

Williams & Mohammed, J Behav Med 2009
Perceived Discrimination and Health

- Discrimination is associated with elevated risk of:
  -- C-reactive protein (CRP)
  -- coronary artery calcification (CAC)
  -- breast cancer incidence
  -- uterine myomas (fibroids)
  -- subclinical carotid artery disease (IMT; intima-media thickness
    -- Delays in seeking treatment, lower adherence to treatment regimes, lower rates of follow-up
- Discrimination accounts, in part, for racial/ethnic disparities in health, in U.S., and elsewhere

Williams & Mohammed, J Behav Med 2009
Discrimination & Visceral Fat

Lewis et al. Am J Epidemiology, 2011
Distinctive Social Exposure

Levels of Negative Racial Stereotypes are High

These stereotypes undergird our behavior
Race and Medical Care

• Across virtually every therapeutic intervention, ranging from high technology procedures to the most elementary forms of diagnostic and treatment interventions, minorities receive fewer procedures and poorer quality medical care than whites.

• These differences persist even after differences in health insurance, SES, stage and severity of disease, co-morbidity, and the type of medical facility are taken into account.

• Moreover, they persist in contexts such as Medicare and the VA Health System, where differences in economic status and insurance coverage are minimized.

Institute of Medicine, 2002
Ethnicity and Analgesia

A chart review of 139 patients with isolated long-bone fracture at UCLA Emergency Department (ED):

• All patients aged 15 to 55 years, had the injury within 6 hours of ER visit, had no alcohol intoxication.

• 55% of Hispanics received no analgesic compared to 26% of non-Hispanic whites.

• With simultaneous adjustment for sex, primary language, insurance status, occupational injury, time of presentation, total time in ED, fracture reduction and hospital admission, Hispanic ethnicity was the strongest predictor of no analgesia.

• After adjustment for all factors, Hispanics were 7.5 times more likely than non-Hispanic whites to receive no analgesia.

Todd, et al. 1993
Disparities in the Clinical Encounter: The Core Paradox

How could well-meaning and highly educated health professionals, working in their usual circumstances with diverse populations of patients, create a pattern of care that appears to be discriminatory?
Unconscious Discrimination

• When one holds a negative stereotype about a group and meets someone who fits the stereotype s/he will discriminate against that individual.

• Stereotype-linked bias is an
  – Automatic process
  – Unconscious process

• It occurs even among persons who are not prejudiced.
"I am not racist: I know I don’t stereotype"

- Conclusive evidence that stereotypes are activated automatically (without intent).
- Individuals frequently are not aware of activation nor impact on their perceptions, emotions and behavior.
- They are activated more quickly and effortlessly than conscious cognition.
- Many cognitive processes result in confirmation of expectancies (we process information in ways that support our beliefs).

van Ryn, 2003
Percent Support

Percent of Whites Agreeing that Blacks are

- Lazy: 44%
- Prefer Welfare: 56%
- Prone to Violence: 51%
- Unintelligent: 29%

General Social Survey (Davis and Smith), 1990
Percent of Whites Agreeing that Blacks and Whites are

General Social Survey (Davis and Smith), 1990
Percent of Whites Agreeing that Blacks and Whites are

- Hardworking: Black 17, White 55
- Prefer self-support: Black 13, White 71
- Not Violence Prone: Black 15, White 37
- Intelligent: Black 20, White 56

General Social Survey (Davis and Smith), 1990
Percent of Whites Agreeing that Group Prefers to Live Off Welfare (1990)

General Social Survey (Davis and Smith), 1990
Percent of Whites Agreeing that Blacks are Lazy (1990-2006)

General Social Survey, 1990-2006
Percent of Whites Agreeing that Blacks are Hardworking (1990-2006)

General Social Survey, 1990-2006
Stereotypes in Our Culture

- BEAGLE (Bound Encoding of the Aggregate Language Environment) Project contains about 10 million words from a sample of books, newspapers, magazine articles, etc.
- A good representation of American culture
- Equivalent to what the average college-level student has read in her lifetime
- Statistically analyzed the associative strength between pairs of words
- Provides estimate of how often Americans have seen or heard words paired over their lifetime

Verhaeghen et al. British J Psychology, 2011
<table>
<thead>
<tr>
<th>Stereotypes in Our Culture</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK poor</td>
<td>.64</td>
<td>WHITE wealthy</td>
</tr>
<tr>
<td>BLACK violent</td>
<td>.43</td>
<td>WHITE progressive</td>
</tr>
<tr>
<td>BLACK religious</td>
<td>.42</td>
<td>WHITE conventional</td>
</tr>
<tr>
<td>BLACK lazy</td>
<td>.40</td>
<td>WHITE stubborn</td>
</tr>
<tr>
<td>BLACK cheerful</td>
<td>.40</td>
<td>WHITE successful</td>
</tr>
<tr>
<td>BLACK dangerous</td>
<td>.33</td>
<td>WHITE educated</td>
</tr>
<tr>
<td>FEMALE distant</td>
<td>.37</td>
<td>MALE dominant</td>
</tr>
<tr>
<td>FEMALE warm</td>
<td>.35</td>
<td>MALE leader</td>
</tr>
<tr>
<td>FEMALE gentle</td>
<td>.34</td>
<td>MALE logical</td>
</tr>
<tr>
<td>FEMALE passive</td>
<td>.34</td>
<td>MALE strong</td>
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Verhaeghen et al. British J Psychology, 2011
Unconscious Discrimination

Can be reduced under certain conditions
Reducing Racial Bias Among Health Care Providers: Lessons from Social-Cognitive Psychology

Diana Burgess, PhD\textsuperscript{1,2}, Michelle van Ryn, PhD, MPH\textsuperscript{1,3}, John Dovidio, PhD\textsuperscript{4}, and Somnath Saha, MD, MPH\textsuperscript{5}
Counteracting unconscious prejudice and stereotypes: Individuation

- Individuation: provider focuses on the individual attributes of specific patient (vs categorization: perceiving patient through filter of group (e.g., race)

- With adequate motivation, cognitive resources, and effort, people can learn to focus on the unique qualities of individuals, rather than the groups they belong to, in forming impressions and behavior.

- Even automatically activated prejudice and stereotypes can be inhibited when people are perceived more in terms of their particular qualities vs. primarily as members of social categories.

Recognizing unconscious biases

Implicit tests (such as the Implicit Association Test) can reveal unconscious prejudice and stereotypes.

These can engender negative emotional states that motivate people to be more sensitive to and attempt to counteract unconscious prejudice and stereotypes.

implicit.harvard.edu/implicit/

Distinctive Social Exposures

Place Matters!

Geographic location determines exposure to risk factors and resources that affect health
Distinctive Social Exposures

Place Matters!
Geographic location determines exposure to risk factors and resources that affect health
Heart Disease Rates Mississippi 1996-2000

White Women
Heart Disease Rates Mississippi 1996-2000

Black Women
Heart Disease Rates Mississippi 1996-2000

Women

Black

White

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Residential Segregation is a place-based example of Institutional Discrimination that has pervasive adverse effects on health.
Racial Segregation Is ...  

1. "basic" to understanding racial inequality in America (Myrdal 1944).

2. key to understanding racial inequality (Kenneth Clark, 1965).

3. the "linchpin" of U.S. race relations and the source of the large and growing racial inequality in SES (Kerner Commission, 1968).

4. "one of the most successful political ideologies" of the last century and "the dominant system of racial regulation and control" in the U.S. (John Cell, 1982).

5. "the key structural factor for the perpetuation of Black poverty in the U.S." and the "missing link" in efforts to understand urban poverty (Massey and Denton, 1993).
How Segregation Can Affect Health

1. Segregation determines quality of education and employment opportunities.

2. Segregation can create pathogenic neighborhood and housing conditions.

3. Conditions linked to segregation can constrain the practice of health behaviors and encourage unhealthy ones.

4. Segregation can adversely affect access to high-quality medical care.

Source: Williams & Collins, 2001
Residential Segregation and SES

A study of the effects of segregation on young African American adults found that the elimination of segregation would erase black-white differences in

- Earnings
- High School Graduation Rate
- Unemployment

And reduce racial differences in single motherhood by two-thirds

Cutler, Glaeser & Vigdor, 1997
Proportion of Black & Latino Children in Poorer Neighborhoods Than Worst Off White Children

Source: Massey 2004; Iceland et al. 2002; Glaeser & Vigitor 2001
Racial Differences in Residential Environment

- In the 171 largest cities in the U.S., there is not even one city where whites live in ecological equality to blacks in terms of poverty rates or rates of single-parent households.

- “The worst urban context in which whites reside is considerably better than the average context of black communities.”

Source: Sampson & Wilson 1995
Segregation: Distinctive for Blacks

- Blacks are more segregated than any other racial/ethnic group.
- Segregation is inversely related to income for Latinos and Asians, but is high at all levels of income for blacks.
- The most affluent blacks (> $50,000) are more segregated than the poorest Latinos and Asians (<$15,000).
- Thus, middle class blacks live in poorer areas than whites of similar SES and poor whites live in much better neighborhoods than poor blacks.
- African Americans manifest a higher preference for residing in integrated areas than any other group.

Source: Massey 2004
Research Implications: Distinctive Patterns?

- What effects do these distinctive residential environments have on normal physiological processes?
- How are normal adaptive and regulatory systems affected by the harsh residential environment of blacks?
- To what extent does African Americans’ biological adaptation to their residential environments lead to some biological profiles that are different from other groups and some distinctive patterns of interactions (between biological and psychosocial factors)?
Attend to the Continuum of Disease

• Social disparities exist across the continuum of disease

• Risk factors for the onset of illness are sometimes different than the determinants of the severity and progression of disease

• Disparities in the course of disease are sometimes larger than disparities in disease incidence

• Research is needed to identify both the determinants of disease and the optimal intervention strategies at each specific point of the disease continuum
Conceptual and Analytic Models

- We need to move beyond analytic models that focus on individual risk factors and develop models that capture the clustering of multiple exposures.
- These models need to capture exposures across multiple domains (social, psychological, physical, chemical, etc.) and assess the possibility of additive and synergistic effects.
- Some research indicates that psychosocial stressors interact with physical-chemical exposures (lead and psychosocial stress; air pollution and social stressors).
- Failure to measure stress comprehensively understates its impact on health.
Gene-Environment Interactions

As research on the human genome moves forward, there is an increasing need for comprehensive, detailed, and rigorous characterization of the risk factors/resources in the psychological, social, chemical and physical environment that may interact with biological predispositions to affect health risks.

Much of the research to date on race and genetics has, emphasized gene frequency differences over gene expression differences. Given racial and SES differences in residential and occupational environments, more systematic attention should be given to understanding the contribution of epigenetics to disease risk.
More Systematic Attention to Identifying Potential Epigenetic Effects

- Recent research has highlighted the potential of the social environment to produce epigenetic changes.
- By analyzing the brain tissue from adults who had committed suicide one study found genetic changes in those who had been abused as a child.\textsuperscript{31} That is, hippocampal gene expression was decreased in victims of child abuse compared to controls with no abuse.
- Another recent study found changes in prostate gene expression among men with low-risk prostate cancer in response to lifestyle changes in diet, exercise, stress management and social support.\textsuperscript{32}

We need a more integrated science to better elucidate:
-- how multiple dimensions of the social and physical environment,
-- combine, additively and/or interactively with each other,
-- and with innate and acquired biological factors,
-- and accumulate over the life course,
-- to affect the onset of illness
-- and the progression of disease processes