A LIFE-COURSE PERSPECTIVE ON PHYSICAL AND MENTAL HEALTH DISPARITIES

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My appreciation to the SNOHD Workgroup - Kati Knight, Kiarri Kershaw, Briana Mezuk, Sha Juan Colbert, Darrell Hudson, and Jane Rafferty, for the analyses and charts and the “State of the Dream 2004” and “State of the Dream 2005” reports, United for a Fair Economy, 37 Temple Place, 2nd Floor Boston, MA 02111, for some of the slides in this presentation. I also thank the entire PRBA group for their assistance. Supported by grants from the National Institute of Mental Health, National Institute on Drug Abuse, Office of Behavioral and Social Science Research, National Institute on Aging, and National Center for Minority Health Disparities Research.
Dr. James Jackson presented “A Life-Course Perspective on Physical and Mental Health Disparities” as the UIC Institute for Health Research and Policy Distinguished Lecture at the School of Public Health auditorium in Chicago on Dec. 3, 2008. For more information, visit www.ihrp.uic.edu.
The Genesis of this Talk Resides in Three Different Realms
Lifetime Prevalence Rates: Major Depression by Race (in percentages)

*ECA does not distinguish between African American respondents and Caribbean respondents.*
“A Mind is a Terrible Thing to Lose”

- Vice-President Dan Quayle*

*date lost in antiquity on misquote of United Negro College Fund banner “A Mind is a Terrible Thing to Waste”
Janet Evanovich, Novelist

- Stephanie Plum – bail bond enforcer who is always having her life threatened, her cars torched or blown up, and her apartment broken into, is constantly eating doughnuts, cakes, pizza and similar comfort foods.

- “The ability to eat Cheez Doodles and Krispy Kremes and never get fat” (Janet Evanovich’s one superpower wish)
Outline of Presentation

- Social Determinants of Poor Health
- Law of Small Effects and Race Disparities
- Race & Race Differences in Opportunities
- Poor Structured Conditions of Living by Race
- Constant Environmental Stressors and Stress
- Environmental Affordances for Unhealthy Coping Strategies
- Chronic Activation of Stress Network (HPA Axis)
- Poor Health Behaviors to Cope with Stress
- Ensuing Physical Health Disorders
- Protection from Mental Health Disorders
Figure 1: Differences, Disparities, and Discrimination

- Clinical Appropriateness and Need
- Patient Preferences
- The Operation of Healthcare Systems and the Legal and Regulatory Climate
- Discrimination: Biases and Prejudice, Stereotyping, and Uncertainty
- UNKNOWN

Populations with Equal Access to Health Care

Quality of Health Care/Health
Social Inequalities and Health
RELATIVE POSITION AND HEALTH
HOW DOES IT OPERATE?

- POWER
- SOCIAL PARTICIPATION
- SOCIAL ENVIRONMENT
- BEHAVIOUR
- EARLY LIFE
Mortality by Grade of Employment
Whitehall Men 25 yr Follow-up

Marmot and Shipley, 1996
Mortality PSID USA
Aged 45-64 Years

ADJ for age, sex, race, family size, period  Mcdonough et al AJPH 1997
Mortality of Children Under 1 York, UK 1901

Rowntree (1901)
Infant Mortality/1000 England & Wales 2000

Health Statistics Quarterly 2001
LIFE EXPECTANCY BY SOCIAL CLASS I & V, MALES & FEMALES ENGLAND & WALES

Health Statistics Quarterly, 1999
Income Inequality and Mortality in Canada and USA

Ross et al; BMJ 2000
Race Matters

- Even if we don’t know what “IT” is
Life Expectancy at Birth, 1970 and 2000

- 1968:
  - White: 71.62
  - Black: 64.11

- 2000:
  - White: 77.4
  - Black: 71.7

Years to Parity: 71
Parity Year: 2071

State of the Dream 2004 Report
The Black-White Gap in Infant Mortality is increasing.

Source: National Center for Health Statistics, National Vital Statistics Reports, Sept. 18, 2003, Table 3l.
State of the Dream 2004 Report
Pregnancy-Related Mortality Ratio by Education & Race, Michigan, 1990-1998

Joanne G. Hogan, Ph.D., Bao-Ping Zhu, MD, MS. Division of Epidemiology Services, Community Health Agency, Michigan Department of Community Health.
Probability of Survival From Age 15 to 65 Years Among US Blacks & Whites

Geronimus et al, NEJM 1996
Self–reported (or other reported) race/ethnicity most often used categorization in both biological and social research

Why should we observe such large and both consistent (African Americans), and inconsistent (Caribbeans, Latinos, Asians, etc), disparities among race/ethnic groups
### Figure 2: Self and Other Race Perceptions

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<th>Other</th>
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<td>Non-Hispanic White</td>
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<td>Afro Caribbean</td>
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Race and Chronic Stress
Chronic Stress Process: One Possible Pathway for Physical and Mental Health Disparities Among Racial and Ethnic Minorities
Discrimination and perceived racism as a class of stressors have been shown to have health and mental health effects among racial and ethnic minorities.

Discrimination operates in the context of social, political, economic, and cultural influences over the individual and group life-course.

Discrimination and perceived racism, as well as other non-race-related stressors tied to poor structural life conditions probably play a role in health and mental health processes, but the role is complex.
There is no one single factor that produces observed physical health disparities among race/ethnic groups in U.S.

Group of small differences which may accumulate over the life-course to produce observed differences in adulthood and older ages among different race/ethnic groups
Some Candidates

- Gene/gene and gene/environment interactions
- Discrimination and perceived racism (stress process)
- Accumulated stress (weathering, allostatic load, etc.)
- *Life course selection*
- Cultural factors
- Behavioral differences
- SES and institutional arrangement
- Accumulated Treatment Differences (e.g. Weathering – Geronimous, Allostatic Load – McEwen, etc.)
- Social & Psychological Factors (e.g. John Henryism, Self-efficacy, mastery, etc).
- Culturally & Environmentally Mediated Behavioral Coping Strategies

We cannot easily parse these potential effects into their constituent parts and assign individual contributions.
Blacks disproportionately in comparison to Non-Hispanic Whites remain materially disadvantaged and geographically segregated, especially in poor, core urban areas
Racial Composition of the U.S. by Income Quintile, 2004

Entire U.S. Population

Highest-Income Fifth

Lowest-Income Fifth

Unemployment Rate, 1972 and 2003

The Black-White Gap in Unemployment Rates has increased since 1972.

Median Household Net Worth, 1989 and 2001
(Adjusted for Inflation in 2001 dollars)

1989
- White: $97,800
- Black: $5,300

2001
- White: $121,000
- Black: $19,000

Years to Parity: 98
Parity Year: 2099

Figure 3. Official Poverty Rate, Persons Age 18-64, 1974-2004

Danziger, 2006
There are Large Disparities in Living Arrangements favoring non-Hispanic Whites
Negative Neighborhood Characteristics


- Differentially Stressful (e.g. Roux et al, 2001; 2002; Geronimous & Thompson, 2004; Massey, 2004)
Figure 4a: Hypothesized Interrelationships Among Environment, Stressors, and Physical Health Disorders
Neighborhood Affordances

- Afford Differential Opportunities, e.g. food, services, jobs (e.g. Morland, et al, 2001; 2002; Wing et al, 2002)

- Afford Differential Coping Resources (e.g. Fast Food Outlets, Liquor Stores, Illegal Drug Distributors, etc. Roux, 2002)
Figure 4b: Hypothesized Interrelationships Among Environment, Stressors, Negative Health Behaviors and Physical Health Disorders
Disparities in Health Status, Health Services and Mental Health: Physical and Psychological Inequalities

- Large disparities in all cause and specific cause death rates exist among ethnic and racial groups – these differences are not due in any simple way to socioeconomic status

- Infant mortality rates have declined but large difference exist between African Americans and whites

- There are large disparities in health care utilization between African Americans and whites
Diabetes – Females 2004-2005

Prevalence of Selected Chronic Conditions by Age, Sex, and Race/Ethnicity: United States, 1997-2005. National Health Interview Survey (NHIC05)
Prevalence of Selected Chronic Conditions by Age, Sex, and Race/Ethnicity: United States, 1997-2005. National Health Interview Survey (NHIC05)
Hypertension – Females 2004-2005

Prevalence of Selected Chronic Conditions by Age, Sex, and Race/Ethnicity: United States, 1997-2005. National Health Interview Survey (NHIC05)
Hypertension – Males 2004-2005

Prevalence of Selected Chronic Conditions by Age, Sex, and Race/Ethnicity: United States, 1997-2005. National Health Interview Survey (NHIC05)
Trends in Heart Disease Mortality, 1980-1995
Age-adjusted death rates per 100,000 population

[Bar chart showing trends in heart disease mortality by ethnicity from 1980 to 1995]
There are links from childhood (infancy, neonatal, pregnancy, etc.) social conditions to race/ethnic disparities in adulthood and older age (e.g. Warner & Hayward, 2003)

Over the life course blacks more than any other group live the fewest years and a high proportion of these years is in poor health (e.g. Hayward & Heron, 2002)

Health, race, ethnicity and mobility (SES) are linked in complex ways across childhood, adolescence, adulthood, and old age (e.g. Hayward et al, 2003; Whitfield & Hayward, 2003; Crimmins et al, 2000; Crimmins & Saito, 2001)
Pregnancy to Death

Blacks May be More Highly Selected for Positive Health Than Whites Early in Life and Late in Life

National Center for Health Statistics. 2006; and unpublished numbers.
Endocrine, Nutritional, and Metabolic Diseases – 1999-2004

Endocrine, Metabolic, and Nutritional Diseases – 1999-2004

All-Cause Mortality
Poor health behaviors parallel the race/ethnic disparities found in health status
Smoking among Females - 2004

Smoking among Males - 2004

Obesity – Females 2003-2004

Percentage of Females with Low Social Economic Status Reporting Obesity by Age Group and Race

Percentage of Females with Moderate Social Economic Status Reporting Obesity by Age Group and Race

Percentage of Females with High Social Economic Status Reporting Obesity by Age Group and Race

Vigorous Physical Activity – Females 2005

Centers for Disease Control and Prevention (CDC). *Youth Risk Behavior Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2005

Vigorous Physical Activity – Males 2005

Centers for Disease Control and Prevention (CDC). Youth Risk Behavior Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2005

Percentage of Males Reporting Heavy Alcohol Use, by Age Group and Race
National Household Survey on Drug Abuse, 1992

NOTE: Heavy alcohol use is defined as drinking five or more drinks per occasion on 3 or more days in the past 30 days.
NOTE: Drug use is defined as the use of any illicit drug in the past year.
Percentage of Males Reporting Marijuana Use, by Age Group and Race
National Household Survey on Drug Abuse, 1995

NOTE: Marijuana use is defined as the use of marijuana in the past 30 days.
Mental Health Disparities
In comparison to health statuses, mortality, and poor health behaviors, prevalence rates for major psychiatric disorders reveal very few, if any, black/white disparities favoring whites, and for most lower prevalence rates for African Americans.
Household surveys of mental disorder prevalence estimates since the 1980s all reveal equivalent, or higher, rates (especially MDD) for whites in comparison to blacks.

- Weissman & Myer (1978) - Community
- Somervall et al (1989) - ECA
- Jackson et al (2003) NSAL

At the same time these and other studies have shown higher rates of dysthymic disorder and psychological distress among blacks in comparison to whites.
Lifetime Prevalence Rates of Major Depressive Disorder

Black/White, Hispanic/White Life-Time Psychiatric Disorder Ratios: National Comorbidity Study, 1990
Lifetime Any Disorder**
by Race
(in percentages)

Note: Adjusted for age.
*NSAL Whites living in areas with Black population of 10% or more.
**Includes 7 disorders asked of all races: Major Depression, Dysthymia, Mania, Panic Disorder, Social Phobia, Generalized Anxiety Disorder, and Agoraphobia
12-Month Any Disorder**
by Race
(in percentages)

Note: Adjusted for age.
*NSAL Whites living in areas with Black population of 10% or more.
**Includes 7 disorders asked of all races: Major Depression, Dysthymia, Mania, Panic Disorder, Social Phobia, Generalized Anxiety Disorder, and Agoraphobia
Percentage of Females Reporting Major Depression by Race and Age Group, 1997*

*NHSDA 1997, National Household Survey on Drug Abuse
**Data not available for respondents aged 12-17 years old
Percentage of Males Reporting Major Depression by Race and Age Group, 1997*

*NHSDA 1997, National Household Survey on Drug Abuse

**Data not available for respondents aged 12-17 years old
Figure 4c: Hypothesized Interrelationships Among Environment, Stressors, Negative Health Behaviors and Psychiatric Health Disorders
THE SELF-REGULATION OF HEALTH BEHAVIORS

THE INTERRELATIONSHIPS AMONG PHYSICAL AND MENTAL HEALTH DISPARITIES

UTILIZATION OF STRESS COPING MECHANISMS OVER THE LIFE-COURSE
Possible Health and Mental Health Interrelationships Among African American and other Ethnic/Racial Groups

- Structural life inequalities are hypothesized to “cause” both health and mental health disparities
- Structural life inequalities in income, wealth, employment and educational opportunities are large and unfavorable for African Americans and other minorities
- Physical health disparities are large and unfavorable for African Americans and other minorities
- Mental health disparities in comparison to whites are small and often favorable for African Americans, but variable for other groups
Figure 4d: Hypothesized Interrelationships Among Environment, Stressors, and Physical and Mental Health Disorders
Figure 4e: Hypothesized Interrelationships Among Environment, Stressors, Negative Health Behaviors and Physical and Mental Health Disorders
Coping strategies in the face of non-race, and race specific, stressors may themselves be harmful to health (Jackson, 2002; Jackson & Knight, 2006).

Stress-related precursors of serious mental health problems are more available to consciousness than are those of physical health problems.

This psychological awareness motivates individuals to action.


It is proposed that other behaviors, e.g. smoking, alcohol and drug use have similar, immediate, effects to reduce activation of the stress-response network.
Figure 4f: Possible Interrelationships Among Environment, Stressors, Negative Health Behaviors and Physical and Mental Health Disorders (Jackson & Knight, 2006; Jackson, et al, under review) *hypothalamic-pituitary-adrenal
Hypothesized Effects Through the HPA Axis

- Complex interactions between endocrine and neurological systems (Sapolsky)
- Under chronic stress negative feedback breakdown and there is continued release of CRF and cortisol
- Long term chronic activation of HPA axis may be related to etiology of some mental disorders (Barden, 2004; McEwen, 1989; Young et al, 2004a; 2004b)
1. Stress response rapidly abolishes the stressor
   - transient activation of the stress response network
2. Stress response slowly removes the stressor
   - prolonged activation of the central response network
3. Stress response cannot remove the stressor
   - consistently activated central response network
HPA Axis and Consequences of Poor Health Behaviors

- Comfort Foods (high in fats and carbohydrates) may aid in shutdown of stress response by inhibiting release of CRF (e.g. Dallman et al)
- Alcohol, nicotine, and drug use stimulate release of dopamine and beta-endorphins aiding in shutdown of stress response and leading to feelings of relaxation and calm (e.g. Akil & Cicero; Piazza & LeMoal; Marinelli & Piazza).
- Paradoxically these drugs may also further activation of the HPA axis – thus individuals may be psychologically released from stress, but they are not physically released from the effects of stress (Dallman, 2003)
“In other words, when we are under stress, it's important whether we reach for the bag of potato chips or go for a swim or a jog. Eating a rich diet and drinking alcohol feed into the allostatic load -- they increase the levels of these stress mediators and, thus, make hypertension and insulin resistance, among other consequences, more likely (McEwen & Krahn, 1999)”
General Hypotheses

- **Weak:** Poor health behaviors mask the stress response cascade of neural and hormonal events that have long-term effects on the development of mental disorders. Individuals are not able to report on stress-related symptoms that are ameliorated by poor health behaviors, though the physical cascade continues.

- **Strong:** Poor health behaviors through their actions on the HPA axis and other brain hormones actually interfere with the cascade of neural and hormonal events that ordinarily would lead over time to mental disorders.
AN EXAMPLE

AMERICANS CHANGING LIVES (ACL)
PANEL STUDY : WAVES I-IV 1986-2003
Analytic Variables

- Negative Structural Conditions and Controls (Wave I)
  Gender, Age, Region, Education, Occupational and Employment Status, Family Income, Poverty
- Negative Stressful Events (count) (Wave I)
  Serious illness, moved, lost job, robbed, anything else bad
Analytic Variables

- Poor Health Behaviors (count) (Wave I)
  Currently smoke, ever smoke, drink, BMI

- Poor Self-Reported Health (Wave II)

- Poor Chronic Health (count) (Wave II)
  Arthritis, lung disease, hypertension, diabetes, etc.

- Number of Depressive Symptoms (Wave II)

- Psychological Distress (Wave II)

- DSM IIIR Depression (Wave II)
  Early Version of Composite International Diagnostic Instrument – WHO-CIDI
Relationships Among Structural Life Inequalities, Chronic Stress, Negative Behaviors and Physical Health Disparities

Structural Life Inequalities

Chronic Stressors/Stress

Behaviors

Physical Health Disparities
Relationships Among Structural Life Inequalities, Chronic Stress, Negative Behaviors and Poor Physical Health

Structural Life Inequalities

Chronic Stressors/Stress

Behaviors

Poor Physical Health

Whites
Blacks
Relationships Among Structural Life Inequalities, Chronic Stress, Negative Behaviors and Poor Physical Health

Structural Life Inequalities

Chronic Stressors/Stress

Behaviors

Poor Physical Health

Whites

Blacks
Structural Life Inequalities

Chronic Stressors/Stress

Behaviors

Psychiatric Health Disorders

Whites

Blacks
Relationships Among Structural Life Inequalities, Chronic Stress, Negative Behaviors and Psychiatric Health Disparities

- Structural Life Inequalities
  - Chronic Stressors/Stress
  - Behaviors
  - Psychiatric Health Disparities

- Whites
- Blacks
Predicting DSMIII Depression by Stressors at Levels of Unhealthy Behaviors (UHB): Whites

Jackson, Knight & Rafferty (under review)
Predicting DSMIII Depression by Stressors at Levels of Unhealthy Behaviors (UHB): Blacks

Jackson, Knight & Rafferty (under review)
Predicting DSMIII Depression by Stressors at Levels of Unhealthy Behaviors (UHB): Whites

Jackson, Knight & Rafferty (under review)
Predicting DSMIII Depression by Stressors at Levels of Unhealthy Behaviors (UHB): Blacks

Jackson, Knight & Rafferty (under review)
A Replication: The Baltimore Epidemiologic Catchment Area (ECA) Study*

Sample

- Baltimore Epidemiologic Catchment Area (ECA) Study
  - Population-based multi-stage probability sample
    - Baseline N = 3481
      - 67% female
      - 34% African American
      - 18+ years old in 1981
    - Four waves – 23 years – of follow-up

Eaton Acta Psychiatrica Scandinavica 2007
Wave 3 (Total N = 1920)

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<td>Age (Mean, SD)</td>
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<td>59.7%</td>
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<td>28.5%</td>
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<td>Lifetime Depression Syndrome (Wave 3)</td>
<td>14.4%</td>
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<td>Prevalent CVD</td>
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<td>Prevalent Type 2 Diabetes</td>
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<td>Fair/Poor Self-Rated Health</td>
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### Sample Description

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<td>&gt;2 Alcoholic drinks/day</td>
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Preliminary Results
Baltimore ECA
Predicting Depression Syndrome by Stressors at Levels of Unhealthy Behaviors (UHB): Whites

Baltimore ECA
Predicting Depression Syndrome by Stressors at Levels of Unhealthy Behavior (UHB): Blacks

## Logistic Regression of Wave 3 Characteristics Predicting Depression Syndrome at Wave 4 (13 years later)

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<th>Non-Hispanic Whites</th>
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<td>Model 2 Odds ratio</td>
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<td>Model 2 Odds ratio</td>
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<td>0.89</td>
<td>3.00*</td>
<td>2.92*</td>
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<td>DepSx Wave 3 (ref No DepSx)</td>
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<td>12.48*</td>
<td>7.77 *</td>
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<td>1.30*</td>
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<td>1.50 (p&lt;0.220)</td>
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<td>African Americans</td>
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<td>Sex (Female=1)</td>
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<td>13.52*</td>
<td>7.76 *</td>
<td>7.79*</td>
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<td>Education (yrs)</td>
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<td>(Median-centered)</td>
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<td>44.0*</td>
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<td>Life events X PHB</td>
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<td>0.81*</td>
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<td>N</td>
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<tr>
<td>LRT (1 df)</td>
<td>6.82 (p&lt;0.009)</td>
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<td>1.56 (p&lt;0.212)</td>
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Disparities in physical health and mental health statuses and services do exist - but we do not know exactly why - Law of Small Effects

The differences between physical & mental health disparities by race/ethnicity are not easy to understand

But one route by which these differences may be mediated is through behaviors used by some race/ethnic groups to cope with the psychological consequences of chronically stressful life conditions

These behaviors are influenced by gender, culture and environmental opportunities (affordances)
Specifically, behavioral coping strategies, in the face of chronic stressful conditions, that may be effective in “preserving” African American mental health, may simultaneously contribute, along with structural inequalities and stressful life conditions, to observed physical health disparities in morbidity and mortality among some race and ethnic groups (Jackson, 2002; Jackson & Knight, 2006; Jackson, et al under review).

And this effect may be mediated by the stress response network (Dallman et al, 2003).
“Habitually attempting to relieve stress-induced dysphoric effects of the CRF- (corticotropin-releasing factor) driven (neurons) central chronic stress-response network may make one feel better, but is likely to be bad for long-term health” (Dallman et al, 2003; McEwen, 2003)
Summary

- Blacks have early-learned, environmentally mediated, effective coping strategies to deal with stressful conditions of life; these behaviors are not “merely” hedonic but reflect adaptive responses to maladaptive environments.

- These behaviors may be effective, perhaps through the chronic stress-response network, in impeding the biological cascade to mental disorders, resulting in positive mental disorder disparities for Blacks in comparison to non-Hispanic Whites.

- These behaviors contribute, however, along with poor living conditions, lack of resources, and environmentally produced chronic stress, over the life-course, to negative race disparities in physical health morbidity and mortality.
Conclusions
What Framework Addresses

- Consistent Negative Physical Health Disparities for Blacks vs. White
- Positive Mental Disorder Disparities for Blacks vs. Whites
- Major Effects of Chronic Stressors
- Gender Differences in Poor Health Behaviors
- Patterns of Change over the Life-Course in Physical and Mental Health and Poor Health Behaviors
Conclusions

- Physical health and psychiatric disorder disparities are not reducible in any simplistic way to differences in social and economic statuses among groups (Report of the Surgeon General, 2001)

- Complex, multi-faceted -- racial, ethnic, culturally, environmentally and life-course, influenced

- Succinctly, blacks and other groups in this society may buy their reduced rates of psychiatric disorders with higher rates of physical health morbidities and excess and early mortality
Conclusions

Physical health and psychiatric disorder disparities cannot be understood outside of a Bioecological model that emphasizes the interrelationships of history, life-span influences, period, context, race/ethnicity, and individual resilience and coping capacities.
“A Mind is a Terrible Thing to Lose”

Human Agency and Individual Motivation Must be Considered in any Theoretical Formulation Related to “Explaining” Health Disparities
- The health differentials by race/ethnicity are not easy to understand

- Why should self-reported race be related to physical and mental health outcomes?

- Pathways for how “self” and “other conceptions of race affect health outcomes is potentially explicable

- New bio-behavioral studies are needed that take a more complex view of gene x gene and gene x environment interactions.

- Greater attention needs to be paid to understanding “environment” in any evolutionary, genetic, and bio-behavioral view of complex human behaviors and diseases
We must develop effective strategies for this society to make social and political changes for this, and the next, generation of black Americans -- who after all comprise one of our oldest groups of American citizens.

This strategy will not only benefit black Americans but will be of benefit to the growing ethnic and racial populations in this country, and, in fact, our society as a whole.
THANK YOU

http://rcgd.isr.umich.edu/prba/nsal.htm

http://www.icpsr.umich.edu/sumprog/courses/2007-03-44.html

http://www.icpsr.umich.edu/training/index.html