

THE IMPACT OF GOAL-STRIVING STRESS ON PHYSICAL HEALTH OF WHITE AMERICANS, AFRICAN AMERICANS, AND CARIBBEAN BLACKS

Objective: To contribute to the growing understanding of US Black-White health disparities by examining psychosocial stress as an important contributor to physical health problems.

Methods: Data are from the National Survey of American Life, an integrated national household probability sample of White Americans, African Americans, and Caribbean Blacks. Regression analysis was used to assess associations between goal-striving stress and hypertension, BMI, physical health problems, and self-rated health.

Results: After accounting for sociodemographic factors and three additional stressors—personal problems, lifetime racial discrimination, and everyday racial discrimination—goal-striving stress was a significant predictor of hypertension, physical health problems, and diminished self-rated health. Ethnicity moderated the relationship; the negative association between goal-striving stress and physical health problems was strongest for Caribbean Blacks.

Conclusions: This study extends the research on goal-striving stress and adds to a growing literature documenting relationships between social processes and disease. (*Ethn Dis.* 2012;22(1):21–28)

Key Words: Goal-striving Stress, Physical Health, Health Disparities, Racial Discrimination

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INTRODUCTION

Despite recent efforts to narrow the health disparities gap, compared to Whites, Blacks in the United States have a higher death rate from breast, lung, and colorectal cancer, are at greater risk for cardiovascular disease, are more likely to be overweight or obese, and are two times more likely to rate their health as “fair” or “poor.”^{1–3} Interestingly, these racial health disparities do not hold for all Blacks living in the United States. Compared to US-born Blacks (herein referred to as African Americans), Black Caribbean^a immigrants report better physical health, and are at lower risks for hypertension, obesity, chronic conditions, and activity limitations.^{4,5}

However, the immigrant advantage erodes over time; by second and later generations, the health status of Caribbean Blacks begins to resemble that of African Americans.⁶

Factors associated with health erosion include acculturation, lifestyle changes and exposure to racism and discrimination.⁷ A causal mechanism linking racism and discrimination to health is thought to lie within the stress process.^{8,9}

One particular stress, goal-striving stress, has been associated with lower levels of mental health and wellbeing.^{10–12} To date, no study has examined associations of goal-striving stress and physical health. Goal-striving stress is the

Goal-striving stress is the discrepancy between aspirations and achievement, weighted by the subjective probability of success and the level of disappointment experienced if goals are not reached.

discrepancy between aspirations and achievement, weighted by the subjective probability of success and the level of disappointment experienced if goals are not reached. It has the characteristics of a chronic stressor—insidious, unrelenting, and continuous in the sense that it is embedded in daily roles and structures.^{10–13} Goal-striving stress captures some aspects of the American dream: individual accomplishment, upward social and economic mobility, and self-confident belief in one’s ability to overcome obstacles. These ideals may be particularly salient for immigrants and their children, as many have chosen the U.S. for the explicit purpose of pursuing this dream. Children of immigrants may be reminded of the sacrifices that their parents made and may be especially motivated to maximize their chances for achievement.^{14, 15, 16} But for those defined as “Black” the U.S. offers opportunities for achievement and upward mobility while simultaneously constraining their advancement through discrimination and group disadvantage.¹⁷ The resulting discrepancy between aspirations and achievement can

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^aWith 6–10% of the Black population reporting foreign ancestry, immigrant history and status are important sources of variation within the U.S. Black population. Caribbean Blacks are the largest subgroup of Black immigrants, comprising approximately 4.4% of the US.Black population.

be especially stressful and deleterious to health and wellbeing.

This article has two main aims: 1) to investigate the associations between goal-striving stress and physical health among White Americans, African Americans, and Caribbean Blacks, and 2) to assess race and ethnicity as potential moderators of these associations.

METHODS

Sample

The National Survey of American Life (NSAL) is part of a National Institute of Mental Health Collaborative Psychiatric Epidemiology Surveys initiative. The NSAL adult sample was an integrated national household probability sample of 3,570 African Americans, 891 non-Hispanic Whites, and 1,621 Blacks of Caribbean descent (Caribbean Blacks), for a total sample of 6,082 individuals 18 years and older. The African American sample, the core sample of the NSAL, is a nationally representative sample of households located in the 48 contiguous states with at least one Black adult 18 years and older.

The term African American is used to describe persons who self-identified as Black and did not identify ancestral ties to the Caribbean. Caribbean Blacks are persons who self-identified as Black and indicated that they were of West Indian or Caribbean descent, that they were from a country included on a list of Caribbean countries presented by the interviewers, or that their parents or grandparents were born in a Caribbean country. For our study, we excluded first generation Caribbean Blacks because language, accent, clothing and culture, all distinguish first-generation Black immigrants from African Americans. For second and later generations these markers have faded such that children of Black immigrants have a more difficult time relaying their ethnic

identity as their racial context shifts.^{4,18} The White sample was a stratified, disproportionate sample of White adults residing in households located in census tracts and blocks that have a 10% or greater African American population. White Americans in this study represent 14% of the White population in the United States.

Most interviews (86%) were completed face-to-face using a computer-assisted instrument and lasted an average of 2 hours and 20 minutes. The remaining interviews were either partially or entirely conducted by telephone. All the interviews were conducted in English. Data collection was completed between February 2, 2001 and June 30, 2003.

The final response rate was 72.3% overall: 70.7% for African Americans, 77.7% for Caribbean Blacks, and 69.7% for White Americans. For all three race/ethnic samples, the NSAL weights were designed to correct for disproportionate sampling, nonresponse, and population representation across various sociodemographic characteristics.

Measures

Outcomes

Physical health was measured along four dimensions—hypertension, obesity, count of physical health problems, and self-rated health. Hypertension is a dichotomous variable to the question whether “a doctor has ever told you that you had hypertension,” with yes coded 1 and no coded 0. Obesity is a continuous variable measured by the respondent’s body mass index (BMI based on self-reported height and weight) and ranged from 10 to 66. Count of physical health problems was measured by asking respondents “whether a doctor or a health professional had ever told you that you had the health problem listed below.” The list included 18 problems such as arthritis, cancer, and osteoporosis. The

count of physical health problems is the sum of yes answers. It ranged from 0 to 13 with a mean of 1.3. Because self-rated health appears to be a robust measure of health and wellbeing, it was also included.¹⁹ Self-rated physical health was measured by asking respondents, “How would you rate your overall physical health at the present time?” Responses ranged from excellent (coded 5) to poor (coded 1).

Predictors

Race is a categorical variable defined as 1 – African American, 2 – Caribbean Black and 3 – White. Sex is defined as 1 – male and 2 – female. Age is a continuous variable measured in years, ranging from 18 to 94. Employment status assessed whether respondents were employed or not (1 = employed and 0 = not employed). Education was a self-report of the number of years of formal schooling completed and ranged from 0 to 17. Region contrasted those who resided in the South (more than half of the respondents) with those residing in other regions. Marital status compared those who were married or living with a partner to those who were never married or formerly married (ie, divorced, widowed, separated). Poverty status was measured by dichotomizing the ratio of household income to the 2001 census poverty threshold. If the ratio was less than or equal to 1, the respondent was classified as poor. Income was measured by asking respondents to estimate their total household income from all sources.

Goal-striving stress consisted of four items measuring the discrepancy between aspirations and achievement weighted by the chance of, and level of disappointment associated with, failing to achieve one’s goals. Respondents were asked to imagine a ladder with 10 steps “where step 10 represents your best way of life and step 1 represents your worst way of life.” Aspirations were measured by asking the step number that best described where the

respondent would like to be a few years from now. Achievement was measured by asking the step number that best described where the respondent was at the current time. Chance of actually reaching the goal was assessed by the respondents on a four-point scale from highly likely (coded 1) to highly unlikely (coded 4). Importance of the goal was measured by asking respondents, on a four-point scale, how disappointed they would be if they could never reach the step to which they aspired (very disappointed = 4). The goal-striving stress equation is (Aspirations-Achievement) * (Chances * Importance).

Three other stressors were included—personal problems, lifetime racial discrimination, and everyday racial discrimination. The personal problems measure was assessed using a checklist of six life problems that might have been experienced during the month preceding the survey. Problems with money, children, marriage, crime, the police, and gambling were assessed. The possible range of this count is from 0 to 6, with scores closer to 6 indicating more problems and implicitly signifying a higher level of stress.²⁰

Lifetime racial discrimination is assessed by asking if the respondent, during his/her lifetime, had experienced unfair treatment in areas such as employment, by police, and by a teacher or advisor. For each situation, respondents were asked to indicate what they believed to be the main reason for their unfair treatment. Options included ancestry, sex, race, age, height/weight, or shade of skin color. Those indicating either race or ancestry as the cause for the unfair treatment were categorized as having experienced lifetime racial discrimination. The possible range of this count is from 0 to 9, with scores closer to 9 signifying a higher level of lifetime racial discrimination.

Everyday racial discrimination is assessed by the Everyday Discrimination Scale which measures routine experi-

Table 1. Mean differences of goal-striving stress and its components across race/ethnicity

	African Americans n=3570	Caribbean Blacks n=445	White Americans n=891
Goal striving stress^a	11.05 (0.30)	14.66 (2.99)	10.55 (0.36)
Discrepancy^{b*}	2.40 (0.05)	2.76 (0.25)	2.21 (0.06)
Aspiration (Step In a Few Years) ^{***}	9.64 (0.02)	9.58 (0.09)	9.40 (0.03)
Achievement (Step Now) [†]	7.24 (0.04)	6.82 (0.18)	7.19 (0.06)
Chances^{c****}	1.56 (0.01)	1.57 (0.07)	1.79 (0.02)
Importance^{d****}	2.81 (0.02)	3.01 (0.08)	2.58 (0.06)

F-test for mean differences. †P < .1 * P < .05 ** P < .01 *** P < .001 (standard deviations)

^a The goal-striving stress equation is (Aspirations-Achievement) * (Chances * Importance).

^b Discrepancy = (Aspirations-Achievement)

^c Chances: likelihood of reaching step. Four-point scale, with 4=highly unlikely

^d Importance: Four point scale, with 4=very disappointed

ences of unfair treatment.²¹ Respondents indicated whether experiences in different life domains occurred to them on a daily basis during the year preceding the NSAL survey. Ten domains were included, such as being treated with less courtesy than others, being treated with less respect than others, and receiving poorer service than others. To create the everyday discrimination scale, a score of 0 was assigned if it never occurred, 1 if occurred less than once a year, 2 if a few times a year, 3 if a few times a month, 4 if at least once a week and 5 if almost everyday. Respondents answering “a few times a year” to “almost everyday” to any of these questions were asked to attribute the treatment to ancestry, sex, race, age, height/weight or shade of skin color. Those indicating that unfair treatment was due to race or ancestry were categorized as having experienced everyday racial discrimination. Responses were then summed, with scores ranging from 0–50, with higher scores signifying a higher level of everyday racial discrimination.

Statistical Analysis

As hypertension is dichotomous, logistic regression was used to study its relationships with goal-striving stress. Ordinary least squares regression was used to study BMI. A generalized linear model was used to study the count of

physical health problems, where the dependent variable was assumed to follow a Poisson distribution. As the responses to self-rated health were ranked from 1 to 5, ordered logistic regression was applied in the model.

The analysis proceeded in three stages. First, regressions were run with the sociodemographic variables and goal-striving stress as predictors. Next, three more stressors known to be associated with health were added. Finally, multiplicative interaction terms were created to examine the moderating effects of race/ethnicity on the relationships of goal-striving stress with physical health outcomes. Given the complex sampling design, standard errors and test of significance were estimated with Taylor Linearization Procedures in Stata 9.2.

RESULTS

Analysis of mean differences of the four physical health outcomes and the four stressors indicated that White Americans report lower rates of hypertension and BMI than Black Americans or Caribbean Blacks. No significant differences were found for health problems or self-rated health. There were no significant differences in goal-striving stress scores among the three groups. For other measures of stress, White

TABLE 2. Regression models of physical health measures on demographics and stressors

	Hypertension			Obesity - BMI			Count of Physical Problems			Self Rate Health		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Race (Reference = White)												
African	0.583***	0.498***	0.518**	1.972***	1.649***	1.704***	-0.021	-0.132+	-0.151+	0.114	0.218*	0.073
se	0.172	0.132	0.183	0.320	0.356	0.437	0.067	0.071	0.084	0.092	0.094	0.121
American	0.907***	0.865**	0.537	2.856***	2.539**	3.131***	0.330*	0.224	-0.037	-0.168	-0.118	-0.132
se	0.246	0.255	0.449	0.774	0.844	0.866	0.154	0.147	0.113	0.209	0.200	0.206
Black												
Age												
coeff	0.068***	0.071***	0.071***	0.031+	0.035*	0.035*	0.027***	0.031***	0.031***	-0.022***	-0.028***	-0.028***
se	0.006	0.007	0.007	0.016	0.016	0.016	0.002	0.002	0.002	0.003	0.004	0.004
Sex (Reference = Male)												
Female												
coeff	-0.112	-0.160	-0.158	0.896***	0.846**	0.846**	0.101+	0.119+	0.120+	0.028	0.013	0.005
se	0.135	0.150	0.149	0.226	0.261	0.261	0.060	0.062	0.063	0.111	0.107	0.106
Employment (Reference = Not Working)												
Working												
coeff	0.081	0.105	0.107	0.143	0.280	0.267	-0.241***	-0.249***	-0.239***	0.472***	0.493***	0.507***
se	0.147	0.142	0.146	0.265	0.260	0.265	0.043	0.047	0.044	0.135	0.149	0.142
Poverty (Reference = Not Poor)												
Poor												
coeff	0.271+	0.30	0.134	-0.088	-0.143	-0.155	0.212***	0.145***	0.152***	-0.395*	-0.322+	-0.316+
se	0.146	0.150	0.151	0.406	0.430	0.432	0.044	0.037	0.037	0.196	0.194	0.190
Education												
Education												
coeff	-0.074*	-0.077*	-0.077*	-0.139**	-0.161**	-0.161**	-0.024*	-0.022*	-0.022*	0.087***	0.083***	0.081***
se	0.028	0.031	0.031	0.049	0.051	0.052	0.010	0.011	0.011	0.100	0.109	0.020
Region (Reference = Non-South)												
South												
coeff	0.004	0.014	0.014	0.667*	0.642*	0.643*	-0.001	0.027	0.027	0.015	-0.041	-0.046
se	0.113	0.126	0.127	0.305	0.269	0.269	0.069	0.065	0.065	0.110	0.103	0.102
Marriage (Reference = Married)												
Formerly married												
coeff	-0.169	-0.190+	-0.190+	-0.680*	-0.789**	-0.797**	0.036	0.011	0.012	0.012	0.061	0.076
se	0.104	0.107	0.105	0.293	0.296	0.301	0.045	0.042	0.042	0.101	0.095	0.095
Never married												
coeff	-0.080	-0.007	-0.008	-1.088*	-0.943+	-0.941+	-0.253***	-0.175***	-0.181***	0.068	-0.053	-0.053
se	0.188	0.216	0.219	0.503	0.509	0.508	0.049	0.053	0.053	0.102	0.105	0.101
GSS												
GSS												
coeff	0.014**	0.011*	0.011	0.027*	0.018	0.022	0.008***	0.005***	0.003	-0.042***	-0.039***	-0.046***
se	0.005	0.005	0.009	0.012	0.012	0.020	0.002	0.002	0.003	0.005	0.005	0.010
Problems checklist												
Problems checklist												
coeff	0.247***	0.247***	0.247***	0.492**	0.488**	0.488**	0.199***	0.199***	0.201***	-0.350***	-0.347***	-0.347***
se	0.071	0.071	0.070	0.160	0.157	0.157	0.025	0.025	0.025	0.057	0.057	0.057
Lifetime race disc												
Lifetime race disc												
coeff	0.002	0.002	0.001	0.100	0.100	0.099	0.056*	0.056*	0.058*	0.016	0.016	0.018
se	0.045	0.045	0.046	0.145	0.145	0.146	0.025	0.025	0.025	0.035	0.035	0.035

Table 2. Continued

	Hypertension			Obesity - BMI			Count of Physical Problems			Self Rate Health		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Everyday race disc												
coeff		0.002	0.002		0.016	0.013		0.004	0.003		-0.010*	-0.011*
se		0.007	0.007		0.015	0.015		0.004	0.004		0.005	0.005
Moderating effects												
GSS*AA			-0.002		-0.005				0.002			0.014
se			0.010		0.023				0.003			0.011
GSS*CB			-0.022		-0.041				0.132***			0.003
se			0.030		0.042				0.027			0.015
Constant												
coeff	-3.48***	-3.70***	-3.71***	26.57***	26.41***	26.37***	-7.08*	-1.09***	-1.08***			
se	0.586	0.702	0.75	1.474	1.394	1.466	0.288	0.293	0.296			
N	4701	4488	4488	4571	4369	4369	4704	4490	4490	4704	4490	5558
F	39.84	27.04	31.93	21.21	24.33	21.25	82.45	99.92	88.53	52.70	44.40	52.70
P-val	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared				0.0513	0.0547	0.0549						

Note: Odds ratios reported in text.
 +P<.1, * P<.05, ** P<.01, ***P <.001
 GSS =goal-striving stress; AA=African American; CB=Caribbean Blacks

Americans reported experiencing fewer personal problems and less lifetime and everyday racial discrimination.

Table 1 reports comparison of mean scores on components of goal-striving stress. Although there were no significant differences between the three groups on goal-striving stress scores, there were significant differences within the components of the measure. Caribbean Blacks (M=2.76) reported significantly higher discrepancy between aspirations and achievements. Within the discrepancy component, White Americans reported significantly lower aspirations (M=9.40) than did African Americans (M=9.64) or Caribbean Blacks (M=9.58). As indicated by the chances score, African American (M=1.56) and Caribbean Blacks (M=1.57) were more pessimistic about their chances for achievement than were White Americans (M=1.79), while Caribbean Blacks scored highest on how disappointed they would be if they could never reach the step to which they aspired.

Table 2 presents the regression models. Model 1 regress the physical health outcome variables with the socio-demographic variables and goal-striving stress as predictors. Goal-striving stress is associated with all four physical health outcomes; with every unit increase in goal-striving stress, the odds of having hypertension increased by 1.4%, BMI increased by .027, the count of physical problems increased by .8%, and the odds of reporting better health decreased by 4.1%.

Model 2 includes three additional stressors. Most results from Model 1 stay intact except goal-striving stress is reduced to insignificance for BMI. Personal problems are positively associated with all four physical health outcomes. Every additional personal problem increased the odds of high blood pressure by 28.0%, increased BMI by 0.5%, increased the count of physical problem by 22.0%, and decreased the odds of reporting better

health by 29.5%. Lifetime racial discrimination is significant in predicting the count of physical health problems. With a one count increase in lifetime racial discrimination, there was an average 5.8% increase in count of physical health problems. Everyday racial discrimination was significant in predicting self-rated health. The odds of reporting better health decreased by 1.0% if the measure for everyday racial discrimination increased by 1 unit. Interestingly, African Americans report better overall health compared to White Americans after personal problems and racial discrimination measures were introduced into the model. There were no significant differences between Caribbean Blacks and White Americans on self-rated health after accounting for the other stressors.

To examine whether race/ethnicity moderates the associations among goal-striving stress and physical health outcomes, we created multiplicative interaction terms. As indicated in Model 3, one interaction was significant. The interaction was interpreted by solving the unstandardized regression equation to predict physical health problems separately for the three racial/ethnic groups.²² For all groups, as goal-striving stress increased, the number of physical health problems also increased. However, the increase for Caribbean Blacks

was substantially greater than that for African Americans or White Americans.

DISCUSSION

This article examined racial-ethnic differences in the association of goal-striving stress with physical health and assessed whether race and ethnicity moderated these associations. We found that goal-striving stress was inversely related to hypertension, BMI, count of physical health problems, and self-rated health for White Americans, African Americans, and Caribbean Blacks. Further, these associations held after accounting for other stressors for three of the four outcomes. We are not sure why the relationship between goal-striving stress and BMI was attenuated once other measures of stress were added. Perhaps self-reports of weight and height were inaccurate; waist-to-hip ratio, which was not included in the dataset, might have provided a more accurate measure. It is also possible that BMI is associated with self-concept in a way that differs from other measures of physical health.²³

Contrary to our expectations, no group differences were found in goal-striving stress scores for the three groups. However, we found significant differences in the discrepancy and achievement components of the goal-striving stress scale, which indicates some variation among the groups (Table 1). This finding suggests the need to more fully investigate respondents' interpretations of the goal-striving stress items. The goal-striving stress measure is self-anchoring; each respondent determined his or her own goal(s), which varied. Striving for material wealth, for example, could overshadow striving for more intrinsic rewards. Since extrinsic goals may be more dependent on actions and reactions of others, this lack of control over one's predominate life goal(s) could widen the gap between aspirations and achievements.

We found limited support for the hypothesis that the impact of goal-striving

stress on physical health would vary by race and ethnicity. Only one interaction was significant: compared to African Americans and White Americans, Caribbean Blacks who experienced more goal-striving stress reported more physical health problems. In contrast, a recent study found the relationship of goal-striving stress to mental health was conditional upon race. Specifically, goal-striving stress had a stronger effect among White Americans than African Americans.¹⁹ Clearly, more research on how exposure and response to stress influence both mental health and physical health is needed.

Several limitations common to cross-sectional, self-reported data must be mentioned. The cross-sectional nature of this study means that we cannot rule out reciprocal effects or alternative causal explanations. We cannot determine whether goal-striving stress influences physical health, as presented, or the reverse. Likewise, poor health may heighten sensitivities such as perceptions of unfair treatment, enhance feelings of disappointment, and lower perceptions of chances for success.^{24, 25} Related, our study relied on asking respondents to imagine their level of disappointment rather than actually having the opportunity to observe participants over time.

Our study was limited to three groups. Additionally, we restricted our analysis to second and later generations of Caribbean Blacks as this strategy allowed for more comparability across the three groups. However, we also performed all of the analysis with the entire Caribbean sample (not shown), and results were similar to those presented here.^b We also

^b In analysis including all Caribbean Blacks, mean goal-striving stress scores declined from 14.66 to 13.49. Second and later generations reported higher levels of goal-striving stress; a finding consistent with the view that second and later generations may be especially motivated to maximize their chances to achieve their goals. Other results were comparable, although the interaction for count of physical health problems did not reach significance.

We found that goal-striving stress was inversely related to hypertension, BMI, count of physical health problems, and self-rated health for White Americans, African Americans, and Caribbean Blacks.

note that the sample of Whites comes from areas that are at least 10% African American. This sampling design aimed to optimize comparative analyses in which residential, environmental, and socioeconomic characteristics are controlled in the Black–White statistical contrasts.¹² Given that Blacks are one of the most highly segregated groups in the United States,^{26,27} it is possible that Whites in the NSAL may be somewhat unique. Consistent with a recent study, it is possible that Whites in the NSAL perceive more stress than their counterparts in neighborhoods that contain few or no Blacks. Thus, we must exercise caution in generalizing these findings.²⁸

We did not control for other factors that may influence the physical health/goal-striving stress relationship, such as health behaviors, mental health, and coping styles and resources. Coping styles are a particularly important area for further study. One coping style, John Henryism, a strong behavioral predisposition to engage in high effort coping with barriers to success, is closely aligned with notions of achievement and has been implicated as a risk factor for hypertension among African Americans.²⁹ However, recent studies suggest that John Henryism may be health protective for higher SES racial/ethnic minority groups.^{30,31} These studies hint at complex stress-coping processes that are embodied in individual biographical differences, in group variations, and social-cultural context. Additional research on stress moderators, particularly those that may be culturally specific, is needed.

Despite these limitations, this study has several important strengths. We extend the growing body of research on goal-striving stress, examine, for the first time to our knowledge, associations of goal-striving stress and physical health, use data that allow for comparisons across racial and ethnic groups with particular attention to heterogeneity within US-Black populations, and add to the literature on the stress-

physical health relationship and the social determinants of health.

Physical health is perhaps one of the best indicators of success in US society.^{32,33} The persistent disparities between racial/ethnic groups are a major public health concern. Policies and practices designed to alleviate chronically stressful conditions—such as job loss, living in dangerous communities, and overt discrimination—are clearly important. Equally important, but perhaps less easily achieved, are policies and practices that facilitate a balance between the cultural value of achievement and efforts to expose and eliminate barriers to upward social mobility. These policies would benefit the health of all.

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IMPACT OF GOAL-STRIVING STRESS ON HEALTH - Sellers et al

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