

**Title:** Disentangling the Stress Process: Race Differences in the Experience of Chronic Stressors

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**Abstract**

Stress exposure is linked to worse mental and physical health and is differentially distributed by race. Most evaluations, however, fail to consider differences in the subjective stressfulness of these exposures. We examine racial/ethnic differences in the number of reported chronic stressors and their subjective stressfulness. Data come from 6,878 adults age 52+ from the psychosocial subsample of the 2006 Health and Retirement Study. Results from regression models show that minorities, and especially blacks, report more stress exposure than whites but are, on average, less upset by these stress exposures after adjusting for demographic and socioeconomic characteristics. In fact, results from multinomial regression models show that blacks are generally less upset by family and interpersonal related chronic stressors relative to whites. The stress experience consists of both exposure and perceived stressfulness and there are conflicting race/ethnic differences across these measures, which may have important implications for understanding race differences in health.

## Introduction

Stress is an important determinant of poor mental and physical health as well as a potential mediator of the association between social factors and health over the life course (Seeman et al., 2010). Additionally, exposure to stressors is differentially distributed by social characteristics, including race/ethnicity, consequently offering an important explanation for social disparities in health. Yet, most evaluations of race based differences in stress exposure at the population level do not consider chronic stress as well as differences in the subjective stressfulness of these chronic stressors, specifically how differentially upsetting they may be for individuals of different race or ethnic groups. In light of this gap in the literature, this paper uses a more comprehensive stress assessment to examine race and ethnic differences in 1) exposure to chronic stress, or the conditions that elicit threat, and 2) the subjective stress response, or the perceived stressfulness.

### Differential stress exposure and vulnerability

Exposure to stress is patterned by an individual's social environment (Baum et al., 1999) and is not only the result of random occurring circumstance (Harrell, 2000). To understand race based health disparities, it is therefore essential to understand the stress process and its connection with health. Accordingly, the differential stress exposure hypothesis posits that racial minorities, and African Americans in particular, look worse on major health outcomes because they are exposed to greater levels of stress (Brown & Harris, 1978; Kessler, 1979b). Race, within this context, is a category of experiences that reflects a particular set of exposures and reactions within social and physical environments (Williams 1997; Williams, Spencer, and Jackson 1999). For older adults, the accumulation of differential exposures and experiences associated with these racial and ethnic categorizations over the life course contribute to racial disparities in health that become more pronounced at the end of life (Mezuk et al.).

Although the differential stress exposure argument is instrumental and generally well supported (CITES), this hypothesis is limited in perspective since it fails to consider an individual's subjective stress response in understanding the impact of stress on health. Individuals do not experience stress in a vacuum but rather in the context of different personal and environmental resources that shape the stressfulness of a life experience. Moreover, the stressfulness of a situation is determined, in part, by the meaning it has for an individual which is importantly linked to that individual's personal and social history (Cohen, 1983; Williams et al., 1997). For example, the emotional effects of ongoing caregiving strain will undoubtedly differ depending on the availability of financial resources to cope with the responsibilities, the ability to take time off work to care for that person, and the meaning of caregiving for that individual. Further, the caregiving literature has consistently found that African Americans do not view caregiving as burdensome as their white counterparts, largely due to differences in culture (Roth et al., 2015). Consequently, attributions related to the stress exposure should be distinguished

from those relevant to the individual stress appraisal since they may be entirely different (Amirkan, 1990; Harrell, 2000).

In order to incorporate elements of the subjective stress experience within the health disparities literature, the differential vulnerability hypothesis posits that, where there are equal levels of stress, blacks react more strongly to stressors since more vulnerable groups have fewer social and personal resources to buffer the negative effects of stress on health (Brown & Harris, 1978, Kessler 1979-Stress, social status, & psych Distress). Individuals with the dual burden of socioeconomic disadvantage and race related stressors may be at even greater risk since they have limited access to psychosocial and material coping mechanisms (Myers, 2009). For example, two studies examining race differences in exposure and vulnerability to stressful life events found both greater exposure and psychological distress among low SES nonwhites (Kessler, 1979, Ulbrich 1989). On the other hand, despite being related to experiences of prejudice and discrimination, minority status is also a source of psychosocial resources, such as a collective racial identity (Robert Sellers, 1998), that protect against the adverse mental health effect of these stressors (Kessler & Neighbors, 1983). Nationally representative samples of adults ages 18 and over have shown base-line levels of nonspecific psychological distress and stress related psychopathology (e.g. major depression and anxiety disorders) is statistically similar between African Americans and whites, and adjusted levels show that African Americans report less global distress and psychopathology (e.g. major depression and anxiety disorders) than non-Hispanic whites (Bratter & Eschbach, 2005, Breslau et al 2006, Schwartz & Meyer, 2010). Thus, it may be that racial and ethnic minorities are more prone to stress exposure but also less vulnerable to stress.

#### Methodological limitations in demographic stress research

The stress and health disparities literature, primarily in younger populations, has two significant shortcomings. First, prior population level research has suggested that using stressful life event measures tend to substantially under-estimate differences between African Americans and non-Hispanic whites in exposure to stress (Turner & Avison, 2003). Chronic and ongoing stressors are understudied yet critical within health disparities literature as they may be more consequential for mental and physical health than acute stressors or major life events (Pearlin, 2010) since mounting evidence suggests that people may not biologically or psychologically habituate to chronic stress (Herbert & Cohen, 1993; Lepore, 1995). Further, chronic stressors are capable of exerting powerful effects on the health and wellbeing of older adults since these type of adversities tend to surface within major social domains such as financial stability, employment and family, all of which are of vital importance to both the larger society and individuals (Pearlin, 2005). Thus, prior work has gradually made the case that these ongoing stress exposures that remain problematic may exert a more significant effect on health and wellbeing (Pearlin, 1983; Wheaton, 1994).

Second, much of the work examining race differences in stress that does focus on chronic stressors only examines the extent to which stress exposure is related to higher rates of disease among some groups, while less work has looked at the subjective stressfulness of that exposure. Evidence suggests that multidimensional measures of stress account for dramatically higher proportions of observed variation in health outcomes (Wheaton 1994; Turner et al. 1995; Turner and Lloyd 1999), making the case for use of both exposure and perceived stressfulness to help explain race based health disparities. Further, demographic health disparities research has been unable to establish precisely whether stress exposure or the subjective stress component is the link between stress and race differences in health in mid- and late-life, bringing about old debates on whether stress exposure is detrimental if it is not considered stressful. This shortcoming persists largely because stress measures suffer from a number of methodological deficiencies. Most stress measures at the population level refer only to objectively verifiable life situations such as death of a spouse or living in poverty, implying that exposure in and of itself is the precipitating cause of pathology or illness. In this way, measurement decisions have become embedded in stress theories confirming the potentially shallow or even incorrect relationship between stress exposure and health (Schnittker, 2012).

Recent work has attempted to improve the measurement of chronic stress given that there is general agreement that context and appraisal are critical for a full appreciation of life stressors on health. However, there is controversy about how to obtain this information. Prior research has asked respondents to rate their overall level of stressfulness, psychological distress, or depressive or anxiety symptoms. As a result, there are now measures that emphasize perception and thus come closer to actually measuring stressfulness, rather than the stress exposure itself (Wheaton et al, 2013). For example, the Perceived Stress Scale (PSS) includes items such as “In the last month, how often have you felt nervous and ‘stressed’?” or “In the last month, how often have you felt confident about your ability to handle your personal problems?” However, this often limits researchers as well since they are general or global assessments and do not provide specific information about the response to a specific stress exposure. Due to the insufficiency built into these measures, there remains a gap in the literature where prior work has been unable to evaluate both chronic stress exposure and the subjective evaluation of how stressful an ongoing stressor is.

As previously mentioned, most of the work done on race differences in stress only report exposure to stress and measure acute stress or major life events. Given the limited evidence on the influence of race/ethnicity on exposure and response to chronic stressors, the present study examines racial/ethnic differences in the number of reported chronic stressors and their subjective stressfulness. Based on the differential stress exposure and vulnerability hypotheses, we expect racial and ethnic minorities, specifically blacks, will report experiencing more ongoing chronic stress exposure and will perceive those exposures as more stressful or upsetting compared to whites. Since race/ethnicity and socioeconomic status (SES) are closely

linked, we also examine the joint effects of race and SES on stress exposure and the subjective stressfulness. We expect that less educated blacks will have a higher chronic stress burden than other groups and also report these stressors as more upsetting.

## Methods

Data come from the nationally representative Health and Retirement Study (HRS), an ongoing biennial study of U.S. adults age 51 and older that began in 1992 with the aim of improving our understanding of the social, economic, environmental, and behavioral factors associated with aging and the health of older adults. In 2006, the HRS began collecting data on psychosocial characteristics related to social and psychological well-being using a self-administered questionnaire (SAQ). A random half-sample of households, excluding nursing homes and other institutions, were selected to receive the SAQ in 2006 and the second half-sample received it in 2008. The questions related to ongoing chronic stress were not included in 2008, therefore, for this analysis we consider ongoing chronic stress cross-sectionally, limiting our sample to the 2006 SAQ respondents. In the 2006 sample, 9,570 individuals were eligible to receive the SAQ and 8,597 responded by mail or phone, for a completion rate of around 90%. Of the 8,597 respondents who completed the 2006 SAQ, 2,403 were excluded because they were not age eligible or they did not belong to the cohort included in the 2006 probability sample. We also excluded 137 respondents who did not identify as white, black or Hispanic. Finally, 152 were excluded since they were missing on important variables included in our analyses (2%) resulting in a final analytic sample of 6,878 adults with complete data on all measures assessed.

### Ongoing Chronic Stress

Participants were asked to indicate whether or not they had experienced any of the following current and ongoing problems during the last twelve months or longer and also rated how upsetting they were: ongoing health problems (in yourself), physical or emotional problems (in spouse or child), problems with alcohol or drug use in family member, financial strain, housing problems, problems in a close relationship, and helping at least on sick/limited/frail family member or friend on a regular basis. The item about assessing ongoing problems in the workplace was excluded in our analysis since more than 60% of respondent are retired or out of the labor force. Respondents could chose *0= no, didn't happen*, *1= yes, but not upsetting*, *2= yes, somewhat upsetting*, or *3= yes, very upsetting*.

In order to capture both stress exposure and perceived stressfulness, we created two different summary measures: 1) a count of the number of chronic stressors respondents were experiencing and 2) a scale assessing the subjective stressfulness of these exposures. To create the stress count, respondents were classified as being exposed to a particular stressor regardless of the perceived stressfulness. We then added up the number of stressors reported for each individual (range = 0-7). To

assess the perceived stressfulness of these exposures we created a stressfulness scale by averaging the reports of how upsetting each of the seven stressors was among respondents who experienced at least one stressor (range= 1-3).

### Race/Ethnicity

In our analyses, race/ethnicity was self reported and respondents were classified as non-Hispanic white, non-Hispanic black, or Hispanic.

### Covariates

We include sociodemographic and socioeconomic factors that might account for race/ethnic differences in stress exposure and the stress rating. Age is measured in years. Gender was dichotomized as male or female. Respondents were categorized as either foreign born or US born. Educational attainment was measured using number of years of completed schooling and dichotomized as high school degree or less (9-12 years) and some college or higher (13 or more years). Employment status was categorized as currently employed either full or part time, unemployed/not in the labor force, and retired. Total household income and wealth (assets minus debts) are self-reported. We created quartiles for income and wealth because these variables were highly skewed. Marital Status was categorized as married/partnered, divorced/separated, widowed, and never been married.

### Analytic Strategy

First, we used a one-way ANOVA to test for differences in the prevalence of exposure to chronic stress across race/ethnic groups. Next, we examined nested Poisson regression models to assess predictors of chronic stress exposure and their contribution to race differences in exposure. Poisson regression is appropriate here since the outcome measure is an over dispersed count variable. Model 1 looks at race/ethnic differences adjusting for age, gender, and foreign-born status. Model 2 adds education, income, and wealth. Model 3 adds employment status and marital status. We also included interaction terms for race and education however results were not significant and therefore not included in our final tables. Next, using OLS regression and the same model progression we estimate race/ethnic differences in perceived stressfulness, that is, how upsetting the stressor is among only those exposed to at least one chronic stressor. Additionally, this set of models controls for the total number of chronic stress exposures. Finally, logistic regression was used to predict race/ethnic differences in having been exposed to each of the chronic stressors, adjusting for age, gender and foreign born status, and multinomial logistic regression was used to determine race/ethnic differences in perceived stressfulness among those exposed to the specific stressor. All analyses used sample weights provided by the HRS to improve the generalizability of our findings to the older U.S population, and the SVY suite of commands in Stata 13.1 to account for the complex sample design.

## Results

Table 1 presents weighted demographic and socioeconomic characteristics for the full sample and by race ethnicity. Women make up 54% of the sample, 84% are white and about half of the respondents have a high school degree or less. The average age is approximately 65 with respondents ranging in age from 52-104. Nearly 52% of the sample were retired and 69% were married or partnered. When looking at the sample characteristics by race and ethnicity, whites on average were younger, more educated, had higher incomes and wealth, and were more likely to be married than their black and Hispanic counterparts. Additionally, just over half of Hispanics in the sample are foreign born while only about 5% of blacks and whites were.

Table 2 shows differences in the prevalence of each stressor by race/ethnicity. Compared to whites, blacks and Hispanics are more likely to report experiencing ongoing personal health problems, problems with alcohol and drug use in a family member, financial strain, housing problems and problems in a close relationship. Blacks were particularly over exposed to ongoing financial strain (60.1%) and housing problems (23.8%) at almost double the rate of whites while Hispanics fell somewhere in between whites and blacks. The two stressors that did not differ by race/ethnicity were having ongoing physical and emotional problems in a spouse or child as well as ongoing caregiving for a sick, limited, or frail family member or friend. The most common chronic stressor regardless of race/ethnicity was ongoing person health problems. Importantly, when exposure to stressors are summed, blacks on average are exposed to 2.7 ongoing chronic stressors, Hispanics report exposure to an average of 2.4, and whites report an average of 2.1 stressors (range= 0-7).

Results from Poisson regression models examining race/ethnic differences in chronic stress exposure are shown in Table 3. Results show that blacks are more likely to report being exposed to a greater number of ongoing chronic stressors compared to whites even after adjusting for demographic and socioeconomic characteristics (Model 3:  $\beta = 0.07$ ;  $SE = 0.03$ ;  $p < 0.05$ ). Hispanics also report higher levels of stress exposure compared to whites (Model 1:  $\beta = 0.13$ ;  $SE = 0.04$ ,  $p < 0.01$ ), however, the difference between whites and Hispanics was attenuated after adjusting for income and wealth. The interaction of race/ethnicity and education (results not shown) were not significant suggesting that lower educated minorities do not report more stress exposure.

In Table 4 we shows linear regression models examining race/ethnic differences in the average perceived stressfulness among respondents reporting exposure to at least one chronic stressor, controlling for the total number of chronic stress exposures. Model 1 shows that blacks, on average, report being less upset by chronic stress exposure to compared to whites ( $\beta = -0.10$ ;  $SE = 0.03$ ,  $p < 0.001$ ), irrespective of higher levels of stress exposure. This difference between blacks and whites increased after adjusting for SES measures in model 2 and remained

unchanged in model 3 after controlling for other demographic characteristics. Hispanics were also, on average, less upset by chronic stress exposure relative to whites, but only after controlling for SES and demographic characteristics (M2:  $\beta = -0.10$ ;  $SE = 0.04$ ;  $p < 0.05$ ). Finally, the interaction between race/ethnicity and education (not shown) were not significant suggesting that lower educated minorities are not, on average, more upset by chronic stress exposure.

In Table 5 we examine race differences in both the exposure and perceived stressfulness of each specific chronic stressor. Odds ratios and relative risk ratios from are presented by race/ethnicity for: 1) each ongoing stressor and 2) the stressfulness of each stressor, adjusting for age, gender, and foreign-born status. Blacks were more likely to be exposed to ongoing personal health problems, drug or alcohol use in a family member, financial strain, housing problems, and problems in a close relationship compared to whites. The same was true for Hispanics, except they were not more likely to be exposed to problems in a close relationship. However, blacks were less likely to report that family and interpersonal related chronic stressors (physical or emotional problems in a spouse or child, alcohol drug use, ongoing problems in a close relationship, and caregiving roles) were somewhat or very upsetting to them relative to whites. Yet, blacks and whites did not differ in how upset they were by personal health problems and housing problems. Hispanics, on the other hand, were more likely to report being very upset by ongoing health issues and somewhat upset by housing problems relative to whites.

## **Discussion**

Overall, our findings support our hypothesis that racial minorities, and blacks in particular, are more likely to be exposed to chronic stress relative to whites. Racial/ethnic minorities were disproportionately exposed to ongoing personal health problems, problems with alcohol and drug use in family members, financial strain, housing problems and problems in a close relationship. Blacks were particularly burdened by ongoing financial strain and housing problems. Although, Hispanics tended to experience greater exposure to chronic stressors similar to blacks, the difference between Hispanics and whites was accounted for by differences in SES factors. Thus, differences in income and wealth between whites and Hispanics contribute to differential exposure to chronic stress. However, counter to our hypothesis, it is not true that minorities or blacks also report higher perceived stressfulness, specifically that these stressors are more upsetting for them than for whites. After accounting for chronic stress exposures, demographic and SES factors, the average perceived stressfulness from stress exposure was lower among blacks and Hispanics than whites. Moreover, blacks were less upset by ongoing stressors related to the family and interpersonal problems. Thus, racial/ethnic differences in stress exposure are not mirrored in differences in perceived stressfulness.

Differences in stress exposure



Our findings that minorities, and especially blacks, reported more exposure to ongoing chronic stress after adjusting for relevant characteristics suggest that differences in exposure to stress are rooted in and arise out of the social and structural contexts of peoples lives (Pearlin, 1989). Importantly, social statuses defined by race/ethnicity and SES contributes to the enduring differences in social stressors over the life course to which individuals tend to be subjected. Further, these differences in exposure to personal health problems, problems with alcohol and drug use in family members, financial strain, housing problems appear to be common correlates of the structurally based social disadvantage that impinge upon the lives of minority groups and lower status populations. Thus, it is plausible that differences in exposure to chronic stress may be a key determinant of race based disparities in health (Turner & Avison, 2003).

Additionally, it may be important to consider that exposure to one stressor, regardless of whether it is an event or more chronic hardship, may lead over time to exposure to other secondary stressors, through a process identified as stress proliferation. It has been noted, for example, that financial hardship and family conflict often follow involuntary job loss (Pearlin, Lieberman, Menaghan, & Mullan, 1981) or that having a caregiving role can lead to problems in balancing work related responsibilities (Pearlin, Aneshensel, & LeBlanc, 1997). This type of stress proliferation can result in people's lives becoming consumed by clusters of related stressors, some of which may persist and contribute to cumulative lifetime adversity (O'Rand, 1996) and to physiological dysregulation (McEwen & Seeman, 1999). Since racial minorities are disproportionately exposed to chronic stressors, they may be at greater risk for stress proliferation and the adverse psychological and physiological consequences of this process (Pearlin, 2010). Thus, as hypothesized by the stress process model (Pearlin, 1981) and the differential exposure hypothesis, the extent to which the exposure to stressors are socially patterned may account for social disparities in health.

### Differences in perceived stressfulness

Race/ethnic differences in the perceived stressfulness were contrary to our expectations and the differential vulnerability hypotheses since racial minorities, and especially blacks, reported being less upset, on average, by exposure to chronic stressors after adjusting for cumulative stress exposure, demographic and SES measures. Differences in perceived stressfulness between Hispanics and whites were only present after adjusting for income and wealth. Further, when looking at each stress exposure individually, Hispanics considered personal health problems and financial strain to be more upsetting relative to other groups, which suggests that the severity of these issues may be greater or that their position within the social structure deprives them of access to the resources needed to effectively cope with ongoing chronic stress (Harrell, 2000).

For blacks the story is quite different. While blacks were over exposed to chronic stressors, they were less likely to perceive that exposure as upsetting and they were

less likely to consider family and interpersonal chronic stressors as upsetting. Blacks were more likely to report that ongoing physical or emotional problems in a spouse or child, alcohol drug use in a family member, ongoing problems in a close relationship, and caregiving roles were not upsetting to them relative to whites. Showing greater stress exposure but less perceived stressfulness suggest that many things we think of as potentially stressful turn out not to be reported as stressful by certain groups. Thus exposure to chronic stress may not translate equivalently into increased distress across race/ethnic groups (Wheaton et al, 2013).

There are a few hypotheses that may explain why minority groups report less perceived stressfulness relative to whites, despite reporting more stress exposure. First, minority status is a source of psychosocial resources and positive coping strategies (Jackson & Knight, 2006; Jackson et al., 2009), such as religious participation (Chatters et al, 2008) and social support (Glass et al, 1999; Thoits), that might protect against the adverse mental health effect of these stressors. Additionally, when measuring respondents' ratings of perceived stressfulness, it may already reflect or include individual buffering or modifying effects that may already be operating by reducing subjective perceptions of stress exposure (Dohrenwend & Dohrenwend 1981). Second, earlier and more frequent exposure to adversity may render minorities and blacks more accustomed to dealing with stress or perhaps they have developed more effective, context-specific coping resources (Williams et al, 1997).

An underlying commonality in the theoretical hypotheses outlined above suggests that minorities cope differently, or perhaps better, with adversity or stress. This is a critical distinction that may shed light on the important physical and mental health paradox within the health disparities literature (Williams et al., 1997). Stress theory suggests blacks should look worse than whites on health outcomes due to their disadvantaged social status and excess exposure to stressors (Williams et al, 1997). Yet, while African Americans demonstrate higher levels of chronic stress exposure relative to whites, they also report lower rates of common stress related psychopathology (i.e. anxiety and major depression) (Breslau et al 2006), a paradox that the literature has largely failed to address. Status based characteristics, including race, effect the psychological and behavioral responses to stress. Minorities facing chronic adversity may be driven to reorganize their outlook on life (Epel et al, 2009) and develop cognitive shifts or changes in their mental filter that promote a more beneficial stress appraisal process. In the psychology literature, these cognitive shifts have been termed psychological thriving. Thriving includes a range of positive resources that serve as a larger or meta back drop for ones life, thus these positive resources may stay with a person, and impact appraisal in the face of a chronic stressor. In this way, minorities may promote a collective state of lower appraised stressfulness, however exposure may still exert a direct stress effect on health (Epel et al, 2009).

Prior research has shown that appraisal-based measures of stress perform better as predictors of mental and physical health than does an exposure-based measure of stress (Hayman, Lucas & Porcerelli, 2014). Yet, while not directly measuring health, our research justifies using both types of measures, rather than simply relying one or the other since both have different relationships with social characteristics. Further, when we define stress as simply by the occurrence or existence of a stressor, we imply that exposure is enough to elicit deleterious effects on health. However, stressors and the perceived stressfulness can occur in different and divergent ways that may depend on context. This nuanced evaluation of the stress process calls into question how we define stress and whether it should require that a stressor elicit a biological response to define something as stressful. Moreover, some situations people face may not be defined as a “stressor” for them since it was not appraised as stressful. But does this mean that it will have an impact on their mental or physical health over time? Does only “upsetting” stress impact health? Future research should attempt to distinguish if stressors that bypass the conscious stress appraisal process contribute to disparities in health (Wheaton et al., 2013).

## Limitations

This study has a few limitations in the way we measure and conceptualize stress exposure and perceived stressfulness. One limitation is the retrospective timing in which we are asking these questions. Respondents are reporting the stressfulness of these situations even if it isn’t impacting them in that exact moment which means they may be relying on memory to report their stress response. Further, feelings of current distress, perhaps acute or unrelated to the ongoing chronic stress, may cause individuals to distort these perceptions and so create an inflated estimate of the relationship between exposure and stress rating. Finally we are measuring chronic stress cross-sectionally and we may get a more realistic account of the perceived stressfulness if we had repeated measurements. Studies that examine the links between trajectories of exposure to stressors, perceived stress, and physiological response to stress (e.g., cortisol levels) that is not available for this data set would provide further insight into the links between stress and health in late life.

## Conclusion

The stress experience consists of both exposure to stressors and subjective stressfulness. Research on race/ethnic differences in both may improve our understanding of how differential exposure and perceptions of stress contributes to race differences in health. Although the manifestations of health consequences as a result of stress exposure seem similar across individuals, our findings suggest that the processes underlying these health risks may vary by race/ethnicity.

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Table 1. Descriptive Statistics for the Full Sample and by Race/Ethnicity, Health and Retirement Study, 2006

	Full Sample (n=6,878)	Whites (n=5,496)	Blacks (n=877)	Hispanics (n=505)
	%	%	%	%
Age (mean[SE])	65.4(0.2)	65.8(0.3)	63.9(0.4)	63.1(0.9)
Female	54.1	53.4	60.7	54.0
Foreign Born	7.4	4	5.1	51.5
Education				
High school or less	51.0	47.5	65.8	75.0
HH Income				
1st quartile	22.3	18.2	44.8	43.1
2nd quartile	21.7	21.1	23.7	25.6
3rd quartile	25.3	26.6	17.9	19.4
4th quartile	30.8	34.1	13.6	12.0
HH Wealth				
1st quartile	25.1	19.6	56.4	51.4
2nd quartile	25.0	25.2	25.7	21.4
3rd quartile	24.9	26.9	11.9	17.2
4th quartile	25.1	28.3	6.0	10.1
Employment Status				
Currently Employed	37.4	37.7	33	40
Retired	51.6	53.2	52.1	31.1
Not in the Labor Force	11.1	9.2	14.8	29.1
Marital Status				
Married	68.6	70.9	48.9	65.7
Divorced/Separated	12.2	10.8	22.5	16.2
Widowed	15.5	15.2	21.7	11.4
Never Married	3.7	3.1	7	6.7



Table 2. Weighted Descriptive Statistics Showing the Prevalence of Exposure to Each Type of Chronic Stressor by Race/Ethnicity, Health and Retirement Study, 2006 (n=6,878)

	Whites	Blacks	Hispanics	p-value
Ongoing personal health problems	61.1	68.5	65.1	<0.001
Ongoing physical/emotional problems in spouse or child	36.8	39.7	37.6	0.38
Ongoing problems with alcohol/drug use in family member	15.2	20.5	20.4	<0.001
Ongoing financial strain	37.2	60.1	50.1	<0.001
Ongoing housing problems	8.5	23.8	16.9	<0.001
Ongoing problems in a close relationship	18.9	25.0	23.1	<0.001
Helping at least one sick, limited or frail family member or friend regularly	35.6	40.3	37.5	0.06
Stress count (mean[SE])	2.1(0.0)	2.7(0.1)	2.4(0.1)	<0.001

Table 3. Regression models predicting exposure to chronic stress by race/ethnicity adjusting for socioeconomic & demographic characteristics, Health and Retirement Study, 2006 (n=6,878)

Independent Variables	Model 1			Model 2 (+SES measures)			Model 3 (+demographics)		
	$\beta$	SE		$\beta$	SE		$\beta$	SE	
Race/Ethnicity (ref=white)									
Black	0.23	0.03	***	0.07	0.03	*	0.07	0.03	*
Hispanic	0.13	0.04	**	-0.02	0.05		-0.02	0.05	
Age	-0.01	0.00	***	-0.01	0.00	***	-0.01	0.00	***
Female	0.09	0.02	***	0.06	0.02	**	0.07	0.02	**
Foreign Born	-0.03	0.05		-0.02	0.05		-0.01	0.05	
High school or less (ref=college+)				-0.04	0.02	*	-0.06	0.02	**
Income (ref=4th quartile)									
1st quartile				0.20	0.05	***	0.22	0.05	***
2nd quartile				0.17	0.05	**	0.17	0.05	**
3rd quartile				0.09	0.04	*	0.09	0.04	*
Wealth (ref=4th quartile)									
1st quartile				0.34	0.03	***	0.37	0.03	***
2nd quartile				0.14	0.04	***	0.16	0.04	***
3rd quartile				0.05	0.03	+	0.06	0.03	+
Employment Status (ref=employed)									
Retired							0.09	0.03	**
Not in labor force							0.09	0.04	+
Marital Status (ref=married)									
Divorced/Separated							-0.08	0.03	*
Widowed							-0.09	0.03	**
Never Married							-0.24	0.05	***
Intercept	1.35	0.06	***	1.27	0.07	***	1.33	0.09	***

+p<0.10   \*p<0.05   \*\*p<0.01   \*\*\*p<0.001

Table 4. Regression models predicting perceived stressfulness by race/ethnicity adjusting for chronic stress exposure, socioeconomic, and demographic characteristics, Health and Retirement Study, 2006 (n=5,772)

Independent Variables	Model 1			Model 2 (+SES measures)			Model 3 (+demographics)		
	$\beta$	SE		$\beta$	SE		$\beta$	SE	
Race/Ethnicity (ref=white)									
Black	-0.10	0.03	***	-0.14	0.03	***	-0.14	0.03	***
Hispanic	-0.07	0.05		-0.10	0.04	*	-0.09	0.04	*
Age	0.00	0.00		0.00	0.00	*	0.00	0.00	***
Female	0.12	0.02	***	0.11	0.02	***	0.09	0.02	***
Foreign Born	0.06	0.04		0.05	0.04		0.06	0.04	
Chronic stress exposure (0-7)	0.08	0.01	***	0.08	0.01	***	0.08	0.01	***
High school or less (ref=college+)				-0.02	0.02		-0.02	0.02	
Income (ref=4th quartile)									
1st quartile				0.12	0.03	***	0.05	0.03	*
2nd quartile				-0.02	0.03		-0.05	0.03	
3rd quartile				-0.02	0.03		-0.04	0.03	
Wealth (ref=4th quartile)									
1st quartile				0.00	0.04		0.01	0.04	
2nd quartile				-0.07	0.03	*	-0.06	0.03	+
3rd quartile				-0.02	0.03		-0.02	0.03	
Employment Status (ref=employed)									
Retired							0.09	0.02	***
Not in labor force							0.10	0.03	**
Marital Status (ref=married)									
Divorced/Separated							0.06	0.03	*
Widowed							0.07	0.03	*
Never Married							0.00	0.06	
Intercept	1.51	0.09	***	1.62	0.09	***	1.72	0.09	***

+p<0.10   \*p<0.05   \*\*p<0.01   \*\*\*p<0.001

Table 5. Odds and relative risk ratios from selected logistic and multinomial logistic regression models of experiencing stress and how upsetting that stressor maybe by race/ethnicity

Model 1			Model 2		
Independent Variables	<i>n</i>	Experiencing the stressor OR	<i>n</i>	Yes, somewhat upsetting RRR	Yes, very upsetting RRR
<b>Ongoing health problems</b>	6,808		4,375		
Race/Ethnicity (ref=white)					
Black		1.47 ***		0.89	1.22
Hispanic		1.37 +		0.95	1.60 +
<b>Ongoing physical/emotional problems in spouse or child</b>	6,716		2,504		
Race/Ethnicity (ref=white)					
Black		1.10		0.59 **	0.66 +
Hispanic		0.99		0.58 **	0.31 **
<b>Ongoing problems with alcohol/drug use in family member</b>	6,780		1,024		
Race/Ethnicity (ref=white)					
Black		1.35 **		0.51 *	0.62 +
Hispanic		1.44 *		1.03	0.84
<b>Ongoing financial strain</b>	6,757		2476		
Race/Ethnicity (ref=white)					
Black		2.41 ***		0.79 +	0.87
Hispanic		1.57 **		1.52 +	0.66
<b>Ongoing housing problems</b>	6,749		664		
Race/Ethnicity (ref=white)					
Black		3.27 ***		0.71	0.79
Hispanic		2.46 ***		1.56	1.14
<b>Ongoing problems in a close relationship</b>	6,749		1,187		
Race/Ethnicity (ref=white)					
Black		1.33 **		0.45 ***	0.45 **
Hispanic		1.04		0.65	0.64
<b>Helping at least one sick, limited or frail family member or friend regularly</b>	6,733		2,398		
Race/Ethnicity (ref=white)					
Black		1.16		0.60 *	0.51 **
Hispanic		0.96		0.67	0.53

All models adjusted for age, gender, & foreign born status

+p<0.10   \*p<0.05   \*\*p<0.01   \*\*\*p<0.001

Model 1 (logistic regression): referent is no, didn't happen

Model 2: referent is yes, but not upsetting