Gendered Racial Stratification of Health Trajectories: Integrating Intersectionality and Life Course Perspectives

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Overview

Racial/ethnic and gender differences in adult health have been well-documented in the U.S. population health literature. Racial/ethnic minorities are disadvantaged on a wide array of physical health outcomes compared to whites (Williams 2012) and, although women live longer than men, they have higher morbidity and disability rates and poorer self-reported health (Gorman and Read 2006; Rieker and Bird 2008; Verbrugge 1985). However, the majority of studies on racial/ethnic and gender disparities have tended to examine the consequences of racial/ethnic and gender inequality separately, or assume that they have additive effects, which may obscure their multiplicative role in the production of health disparities. Moreover, age is rarely considered a dimension of inequality with which race/ethnicity and gender may intersect to shape long-term patterns of intra-individual stability and change in health.

This study aims to fill these gaps by examining how the simultaneous processes of racial/ethnic and gender inequality and aging impact health trajectories in mid- to late-life. We draw on intersectionality and life course perspectives to better understand the diversity of aging experiences. Intersectionality perspectives underscore the fact that dimensions of inequality are likely to interact with each other, often placing women of color in uniquely disadvantaged positions (Collins 1995; Crenshaw 1989; Cummings and Jackson 2008; Warner and Brown 2011;Shulz and Mullings 2006). Thus, investigating whether intersections of racial/ethnic and gender inequality produce multiplicative effects on health can provide a more complete picture of health disparities. This study is also informed by several life course hypotheses which suggest that, over time, health disparities increase *(cumulative advantage/disadvantage)*, decrease *(aging-as-leveler)*, or remain stable *(persistent inequality)*. Intersectional studies of health have rarely tested these life course hypotheses, and life course studies of health have tended to ignore the overlapping impacts of racial/ethnic and gender inequality. The purpose of this study, therefore, is to extend previous research by integrating intersectionality and life course approaches and testing hypotheses associated with three main research questions:

1) Are the health consequences of racial/ethnic and gender inequality multiplicative?

2) Do racial/ethnic-gender disparities in health unfold across the life course in ways consistent with cumulative disadvantage, aging-as-leveler or persistent inequality hypotheses?

3) To what extent do group differences in childhood SES, adult SES, health behaviors, and access to medical care account for racial/ethnic-gender-age disparities in health trajectories?

To answer these questions, we use panel data on a diverse sample and random coefficient growth curve models. Specifically, we estimate group differences in growth curve models of self-rated health among U.S.-born non-Hispanic Blacks, non-Hispanic Whites and Mexican Americans between the ages of 51 and 73. We use self-rated health because it has been shown to be a reliable and valid measure of health status across diverse samples. Results support intersectionality, aging-as-leveler and persistent inequality hypotheses, and show that the extent to which social and behavioral factors account for disparities in health trajectories varies across racial/ethnic-gender groups.

Data

Data from waves 1 through 7 of the Health and Retirement Study (HRS) are used to test the study hypotheses. The HRS uses a multi-stage area probability sample, with a target population of all English or Spanish-speaking adults in the contiguous United States, aged 51-61 in 1992, who reside in households (spouses of respondents were interviewed regardless of age-eligibility). Blacks and Hispanics were oversampled (1.86:1 and 1.72:1, respectively) to allow independent analysis of racial groups. Respondents were re-interviewed in 1994, 1996, 1998, 2000, 2002, and 2004 (response rates were

between 82%-89%). Only a minor proportion of individuals were institutionalized at the target ages of this study and respondents remain in the study in the event that they were institutionalized between 1992 and 2004 (see HRS 2008 for more details regarding the sampling strategy). Nonetheless, levels of morbidity and disability may be somewhat understated given the exclusion of institutionalized populations at baseline. To reduce the potential bias from the healthy immigrant effect or from return migration (Paloni and Arias 2004), the analytic sample excluded 612 foreign-born respondents. The final analytic sample was comprised of 1558 Blacks, 290 Mexican Americans, and 6551 Whites aged 51 to 61 in 1992. Other racial/ethnic groups were excluded due to small sample sizes. Other Hispanic subgroups were excluded for the same reason and because Hispanic subgroups have different health profiles (Markides et al. 2007; Hummer et al. 2000).

Measures

Outcome. Self-reported health was determined by respondents' answers to the question, "In general, would you say your health is: excellent, very good, good, fair, or poor?", at each wave of the survey. Self-rated health has been shown to be a reliable and valid measure of general health status. In particular, studies demonstrate that self-rated health predicts mortality (Idler and Benyamini 1997; Kaplan et al. 1988), morbidity (Ferraro, Farmer, and Wybraniec 1997), subsequent disability (Idler and Kasl 1995), and health care utilization (Malmstrom, Sundquist, & Johansson 1999). In fact, self-rated health remains a strong predictor of mortality even after accounting for known demographic, social, and medical risk factors (Idler & Kasl 1991; Idler & Benyamini 1997; Benyamini & Idler 1999; Strawbridge & Wallhagen 1999; Idler, Russell, & Davis 2000; Franks, Gold, & Fiscella 2003; DeSalvo et al. 2006), and it is more predictive of mortality than physician assessments (Hays et al. 1996; Idler & Angel 1990; Schoenfeld et al. 1994). In addition, studies have found that self-rated health is valid across population subgroups, including gender and racial/ethnic groups (McGee, Liao, Cao, & Cooper 1999). Moreover, although further investigation is warranted (Idler & Benyamini 1997), initial validity assessments across diverse populations indicate that the predictive validity of self-rated health is comparable for Latinos, African Americans, and whites (Finch, Hummer, Reindl, & Vega, 2002; Gibson, 1991; Johnson & Wolinsky, 1994).

Independent Variables. Three dummy variables index self-reported race/ethnicity: White (omitted), Black, and Mexican American. Respondents are classified as White or Black if they indicated that they were "primarily White or Caucasian" or "Black or African American" and did not report any Hispanic/Latino ethnicity. Individuals are classified as Mexican American if they reported that they were "Hispanic or Latino" and, in response to a follow-up question about Hispanic origin, they reported "Mexican American" or "Chicano". Gender is measured by a dummy variable. Both age and age^2 are included in the analysis to capture health changes with age.

Potential Mediators:

Childhood SES. Measures of childhood SES include indicators of whether the family was poor, and the respondents' father's and mother's educational attainment (less than or equal to high school=1; 0 otherwise). These conditions are known to anchor achievement processes and health throughout the life course (Elo and Preston 1992; Haas 2008).

Adult Social and Economic Resources. Respondents' educational attainment is measured in years of schooling (0-17). Indicators of economic capital included in the model are household earnings (sum of all wages and salaries), and net worth (total assets – total liabilities). Previous research has shown each of these to be important and proximate determinants of health and well-being in late-life (Warner and Brown 2011; Willson et al. 2007). We also include a measure of *marital status* (unmarried=1; 0 otherwise) because marriage is known to be protective of health (Umberson 1987; Umberson and Liu 2008) and to vary by race/ethnicity (Cherlin 1992).

Health Behaviors. Indicators of respondents' health behaviors include measures of obesity (1= BMI ≥ 30; 0=otherwise), smoking history (current smoker, former smoker, or never smoked [omitted]), and whether they drink heavily (1=yes (3+ drinks/day); 0=otherwise).

Medical Care. Health care access and utilization are measured by dummy variables indicating whether respondents have health insurance, and have visited a doctor's office or hospital in the past 12 months.

Control Variables. To account for different rates of dropout and death attrition, a measure of the number of waves interviewed (1-7) and a dummy indicator of whether the respondent died during the observation are included in the models (see Thomas 2011; Warner and Brown 2011).

Analysis

Random coefficient growth curves are modeled within a mixed model (i.e., hierarchical linear model) framework to investigate racial/ethnic differences in health trajectories between mid- and late-life. These models are well-suited for the assessment of individual change with age (Raudenbush and Byrk 2002). A hierarchical strategy is used, where repeated observations (Level 1) are nested within respondents (Level 2). The growth curve models generate individual trajectories that are based on estimates of person-specific intercepts (initial value) and slopes (rate of change) that describe intra-individual patterns of change in health as a function of age. We use a quadratic growth curve with random intercepts and random linear and quadratic age slopes because comparisons of nested likelihood ratio tests (LRTs) of various shapes of health trajectories (e.g. linear, quadratic or cubic models), suggested that it provides the best fit to the data. We include interactions among race/ethnicity, gender, and age to estimate the multiplicative effects of these combinations on the trajectory slope,. For the sake of concision and to minimize the problem of collinearity, interactions between covariates and age^2 are included only when they were statistically significant or improved model fit (see Brown, O'Rand and Adkins 2012; Warner and Brown 2011; Yang and Lee 2009).

The different sets of covariates (i.e., childhood SES, adult social and economic resources, health behaviors and medical care) are added to the base model in a stepwise manner before estimating the full models with all of the covariates. To avoid confounding age-related changes and cohort differences, all models control for cohort differences in health levels and rates of change.

All variables are time-varying except measures of demographics, childhood SES, educational attainment, and smoking history. Continuous variables, with the exception of age and age^2, are mean-centered to facilitate model interpretation (Singer and Willett 2003).

We performed supplemental analyses (available upon request) modeling health trajectories separately for Whites, Blacks and Mexican Americans to determine whether the association between the covariates and health vary by race/ethnicity and gender. Two-tailed t-tests used to assess the equality of coefficients across models, suggested that there are few group differences in the effects of the covariates on health.

Preliminary Results

Due to space limitations, descriptive statistics are not shown (available upon request).

Multiplicative Consequences of Racial/Ethnic and Gender Inequality

Growth curve estimates of self-rated health trajectories between ages 51 and 73 are presented in Table 1. Overall, results reveals that, while all groups experience declines in self-rated health as they age,

self-rated health levels and rates of change vary by race/ethnicity and gender. Model 1 of Table 1 includes the effects of demographic characteristics on the intercept, as well as the linear and quadratic slopes, controlling for attrition. On average, white men rate their health as "very good" (3.901 out of 5) at age 51 and their reported health declines with age at a decelerating rate, as evidenced by the statistically significant, negative linear (-.047, p<.001) and positive quadratic (.0003, p<.01) slopes.

The significant, negative coefficients for Blacks (-.436, p<.001), Mexican Americans (-.479, p<.001), women (-.063, p<.001), and the interactions between Black and women (-.242, p<001) and Mexican American and women (-.363, p<001), indicate that racial/ethnic minorities and women, and especially those who fall in both of those categories, have worse self-rated health intercepts than White males. Moreover, the significant interactions between the race/ethnicity and gender coefficients suggest that the effects of racial/ethnic and gender inequalities are multiplicative, consistent with the intersectionality hypothesis.

Figure 1 presents a graphical illustration of results from Model 1, and reveals that all racial/ethnic-gender groups experience worse initial levels of self-rated health than White men. Specifically, Mexican American women have the lowest initial levels of self-rated health followed in ascending order by Black women, Mexican American men, Black men, White women, and White men.

Leveling and Persistent Inequality

Regressing coefficients for race/ethnicity, gender and their interactions on the slope allows us to test life course hypotheses, thereby providing information about the pattern of the health disparities over time. Whereas the non-significant coefficients for the impact of race/ethnicity on the age slope are consistent with the persistent inequality hypothesis, the positive impact of being female on the age slope suggests that women's self-rated health declines at a slower rate than men's. This difference results in a gender crossover among Whites, with White men actually exhibiting better self-rated health than White women between ages 62 and 73. Although the gender gaps among Blacks and Mexican Americans appear to decline slightly with age, women in these racial/ethnic groups remain at a distinct health disadvantage relative to their male counterparts across the full age range. Importantly, the significant interactions between race/ethnicity and gender on the health intercept in tandem with their non-significant interactions on the health slope suggests that the health consequences of racial/ethnic and gender inequality are multiplicative and persistent with age.

Mediation of Disparities in Health Trajectories

Results provide moderate evidence of mediation and suppression of racial/ethnic-gender health disparities, though it varies across subgroups. For example, whereas Black men's poorer self-rated health intercept relative to White men's is only partially mediated by adult SES (Model 3) and all covariates (Model 6), these factors completely account for Mexican American men's worse self-rated health. Furthermore, White women's poorer health at age 51 and slower declines in health with age are accounted for after controlling for adult SES (Model 3) and all covariates (Model 6). Finally, results reveal that if adult SES and medical care access and utilization were equivalent across racial/ethnic-gender groups, the gendered nature of racial/ethnic disparities in health intercepts would be even greater. Although the magnitude of the intersecting consequences of racial/ethnic and gender inequality would decline slightly with age (see Models 3, 5 & 6). Overall, results demonstrate the utility of integrating intersectionality and life course perspectives for understanding population health patterns.

Table 1. Race/Ethnicity, Gender and Self-Rated Health Trajectories of Among Adults Ages 51-73: Random Coefficient Growth Curve Models

Fixed Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	3.901***	3.935***	3.532***	4.085***	4.026***	3.867***
Black[a]	-.436***	-.358***	-.165***	-.437***	-.410***	-.133**
Mexican American	-.479***	-.385***	-.105	-.451***	-.481***	-.098
Woman	-.064*	-.073*	.047	-.111***	-.043	.022
Black × Woman	-.243**	-.235**	-.352***	-.210**	-.249***	-.318***
Mexican American × Woman	-.363*	-.365*	-.357*	-.393***	-.357*	-.367***
Linear Slope (Age)	-.047***	-.047***	-.038***	-.046***	-.037***	-.027***
Black	.003	.003	.002	.004	.002	.001
Mexican American	.009	.009	.010	.009	.009	.011
Woman	.006**	.006**	.004	.006**	.004*	.003
Black × Woman	.010	.010	.011*	.009	.010*	.011*
Mexican American × Woman	.003	.002	.002	.003	.002	.002
Quadratic Slope (Age^2)	.0003**	.0004**	.0004**	.0003*	.0001	.0002
Early Life Social Origins						
Family was Poor		-.189***				-.104***
Mother had > H.S. Education		.240***				.080*
Father had > H.S. Education		.241***				.095**
Adult Socioeconomic Status						
Years of Education			.095***			.083***
Income (Ln)			.020***			.021***
Net Worth (Ln)			.014***			.013***
In the Labor Force			.235***			.216***
Unmarried			-.031*			-.031*
Health-Related Behaviors						
Obese				-.147***		-.146***
Smoking Status (ref. never)						
Former Smoker				-.217***		-.135***
Currently Smokes				-.187***		-.144***
Heavy Drinker (3+ Drinks/Day)				-.115*		-.079*
Medical Care						
Uninsured					-.025	.013
Doctor Visit					-.172***	-.196***
Hospital Visit					-.303***	-.295***
Controls						
Measurement Occasions	.031***	.014	.021**	.032***	.029***	.006
Died	-.836***	-.826***	-.666***	-.799***	-.761***	-.586***
Random Effects						
Level 1 Residual .	.639***	.639***	.640***	.639***	.635***	.637***
Level 2 Age	.075***	.075***	.073***	.075***	.065***	.064***
Level 2 Age^2	.003***	.003***	.003***	.003***	.002***	.002***
Level 2 Intercept	.926***	.913***	.823***	.913***	.891***	.775***
Log Likelihood	-59127.7	-58964.6	-58152.0	-58716.0	-58036.5	-56687.4

Notes: [a] White serves as the reference group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1. Self-Rated Health Age-Trajectories by Race/Ethnicity and Gender