RACIAL / ETHNIC DIFFERENCES IN THE RELATIONSHIP BETWEEN CHILDHOOD DISADVANTAGE, MILITARY SERVICE, AND MEN'S LATER-LIFE HEALTH

Janet M. Wilmoth*
Professor of Sociology
Senior Research Associate, Center for Policy Research
Director, Gerontology Center
Syracuse University

Andrew S. London
Chair and Professor of Sociology
Senior Research Associate, Center for Policy Research
Faculty Affiliate, Gerontology Center
Syracuse University

Wendy M. Parker
Doctoral Candidate, Sociology Department
Research Associate, Center for Policy Research
Syracuse University

Glen H. Elder, Jr.
Research Professor of Sociology and Psychology
Fellow, Carolina Population Center
Director, Population and Aging Training Program
The University of North Carolina at Chapel Hill

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* Please direct all correspondence to Janet M. Wilmoth, Professor of Sociology, Syracuse University, Maxwell School of Citizenship & Public Affairs, Center for Policy Research, 426 Eggers Hall, Syracuse, NY 13244-1020; (315) 443-5053; (315) 443-1081 (fax); jwilmoth@maxwell.syr.edu. We thank Maria T. Brown for her assistance with this research. Work on this paper was supported by NIH Grant #1R01AG028480-01, "Military Service and Health Outcomes in Later Life" (PI: Janet M. Wilmoth).

ABSTRACT

Data from the 1992-2006 HRS are used to examine whether the effects of childhood disadvantage on later-life health are mediated or moderated by military service, and whether the observed relationships vary by race/ethnicity. Comparisons are made between nonveterans, veterans with no wartime service, and veterans with wartime service. Growth curve models predicting ADL limitations and self-rated health are estimated. Additional analysis will estimate hazard models predicting mortality. Preliminary results indicate that military service does not mediate the observed relationship between childhood disadvantage and later-life health trajectories (the mortality analysis is not completed). Military service does moderate that relationship for Whites and Hispanics, but not Blacks; for Whites and Hispanics, military service offsets some of the negative effect of childhood SES disadvantage on later-life health. Military service also has independent effects on later-life health for all three racial/ethnic groups, although some of those effects are mediated by mid- to late-life characteristics.

INTRODUCTION

A growing body of demographic research uses life course and cumulative (dis)advantage perspectives to investigate the effects of childhood circumstances on later-life health, as well as the mechanisms by which early-life conditions influence later-life health trajectories and outcomes (Dannefer 1987, 2003; Ferraro and Shippee 2009; O'Rand 1996). Many studies have used data from the Health and Retirement Study (HRS) to investigate the influence of early and midlife characteristics on later-life health (Blackewell, Hayward, and Crimmins 2001; Bowen 2009; Freedman, Martin, Schoeni, and Cornman 2008; Glymour, Avendaño, and Berkman 2007; Glymour, Avendaño, Haas, and Berkman 2008; Haas 2008; Hughes and Waite 2009; Luo and Waite 2005; O'Rand and Hamil-Luker 2005; Rogers et al. 2009). These studies have examined a variety of early and midlife factors, such as race / ethnicity, parental education, place of residence in childhood, childhood socioeconomic status, childhood health, and marital biography in relation to a broad range of health outcomes, including: overall physical, mental, and cognitive well-being; disability and declines in later-life disability; functional limitations; chronic morbidity; first stroke; heart attack risk; and dementia. Some of these studies have focused specifically on assessing racial differences in later-life health outcomes, while others have specifically examined health trajectories. Few of these studies have specifically addressed racial / ethnic differences in later-life health trajectories. In addition, none of these studies has considered the potential role of military service in mediating or moderating the relationship between childhood disadvantage and later life health trajectories.

To date, the HRS has been under-utilized with regard to studying the influence of military service on later life health trajectories and outcomes (for exceptions, see London and Wilmoth 2006; Wilmoth, Brown, and London 2008; Wilmoth, London, and Parker 2009), and

only one study has examined whether military service mediates or moderates the effect of childhood conditions on later-life health (Parker, Wilmoth, and London 2009). No study of which we are aware has examined racial / ethnic differences in the effects of childhood conditions and military service on trajectories of later-life health or mortality.

In this paper, we use data from the 1992 to 2006 waves of the HRS to examine the extent to which the effect of childhood socioeconomic status (SES) disadvantage on later-life health is mediated or moderated by military service experience, and whether observed influences of military service status (nonveteran, veteran without wartime service, veteran with wartime service) vary by race / ethnicity. Prior research has shown that the effect of childhood SES disadvantage on ADL limitations is offset for veterans with and without wartime service, such that older men from disadvantaged backgrounds who served in the military had better physical functioning than comparable men who did not serve (Parker, Wilmoth, and London 2009). Building on this prior research, we examine whether this offsetting, beneficial effect of military service on functional limitations trajectories in later life varies by race / ethnicity. We also conduct parallel analyses of two other outcomes – self-rated health and mortality, which extends prior work (London and Wilmoth 2006; Wilmoth, London, and Parker 2009) and provides a more systematic assessment regarding whether later-life health trajectories and mortality vary by race/ethnicity and military service status.

BACKGROUND AND PRIOR RESEARCH

Building on the seminal work of Elder (1986, 1987), a growing body of demographic research also uses life course and cumulative (dis)advantage perspectives to investigate the influence of military service on health and mortality in later life (Elder, Shanahan, and Clipp 1994, 1997; London and Wilmoth 2006; Wilmoth, London, and Parker 2009). While

acknowledging and drawing from the substantial literature on the physical health of veterans that suggests that veterans are in poorer health and have more functional limitations and disabilities than nonveterans (Aldwin, Levenson, and Spiro, 1994; Beebe, 1975; Card, 1983; Centers for Disease Control, 1998; Frayne et al., 2006; Keehn, 1980; Schnurr, Spiro, and Paris, 2000), this life course research specifically focuses on population-based comparisons of veterans and non-veterans in order to elucidate the extent to which military service influences outcomes and trajectories. Over the past 25 years, life course researchers have demonstrated that the U.S. military is a critical social institution that can (re)shape educational, occupational, income, marital/family, health, and other life course trajectories and outcomes (London and Wilmoth, 2006; MacLean and Elder, 2007; Mettler, 2005; Modell and Haggerty, 1991; Settersten, 2006; Wilmoth, London, and Parker 2009) and that the potential of the military to transform lives varies across individual characteristics, the timing of military service in the life course, service experiences, and historical periods (Angrist, 1990; Angrist and Krueger, 1994; Gimbel and Booth, 1996; Teachman and Call, 1996; Teachman, 2004, 2005; Teachman and Tedrow 2004). Much of the extant life course literature on military service and health has specifically addressed the negative impact of military service during World War II on the health of men in the general population. The findings indicate that: men who entered the military late were more likely to experience health declines throughout life (Elder, Shanahan & Clipp, 1994); exposure to combat predicted physical decline and death during the 15-year post-war interval from 1945-1960 (Elder, Shanahan & Clipp, 1997); overseas active duty, particularly service in the Pacific arena or combat exposure, was related to an increased mortality risk through 2000 (Elder, Clipp, Brown, Martin, & Friedman, 2009); and military service caused an increase in work-limiting

disabilities for men between the ages of 40 and 60 and raised the premature death rate between the ages of 45 and 72 (Bedard and Deschênes, 2006).

Recent research using the HRS to examine health and mortality risks among older veterans and nonveterans has yielded paradoxical results. London and Wilmoth (2006) examined mortality outcomes over a ten-year period (1992/3-2002) and found no evidence that mortality benefits accrued to men who had served in the military. In fact, military service was related to a greater likelihood of death. Wilmoth, London, and Parker (2009) examined baseline (1992/3) self-rated health, as well as age-related health trajectories, and found that military service was related to better self-rated health in later life, although the effect of military service on health trajectories varied across cohorts and among veterans with and without wartime service. Specifically, veterans consistently had higher levels of self-rated health than nonveterans; however, across cohorts, there was substantial heterogeneity in age-related self-rated health trajectories by veteran status. Among the World War II and Korean War cohorts, veterans with wartime service had steeper declines than nonveterans, as did veterans without wartime service in the Korean War cohort. In most other instances, the veteran advantage in self-rated health was maintained with age. Taken together, these studies suggest that older veterans have better self-rated health overall, but a higher subsequent risk of dying. Studies of self-rated health and mortality using other data sets have yielded results that are broadly consistent with these findings with respect to better self-rated health among older veterans (London, Wilmoth, and Myers 2009; London and Wilmoth 2006). They have also shown that veterans do not experience a mortality advantage over time despite their better initial perceived health (London and Wilmoth 2006).

One possible explanation for these seemingly paradoxical results is that veterans may have steeper age-related declines in health and functioning than nonveterans. Ongoing work, supported by a grant from the National Institute of Aging (#1R01AG028480-01, "Military Service and Health Outcomes in Later Life"; PI: Janet M. Wilmoth), is evaluating this hypothesis, as well as the extent to which the effect of military service on later-life health trajectories and outcomes varies by cohort and among persons with different sociodemographic and military service characteristics. In addition to the work on mortality and self-rated health, noted above, other studies emerging from this project have examined the effect of military service on cognitive and functional limitations trajectories, respectively. Wilmoth, Brown, and London (2008) demonstrate that veterans have a cognitive functioning advantage over nonveterans that is maintained with age, which further adds to the veteran status-health-mortality paradox revealed by earlier research (London and Wilmoth 2006; Wilmoth, London, and Parker 2009).

Most germane to the present investigation, Parker, Wilmoth, and London (2009) used the HRS to examine whether the effect of childhood SES disadvantage on older men's later late-life activities of daily living (ADL) limitations, which had been documented previously (Haas 2008), was mediated or moderated by military service status. Military service might offset such disadvantage by improving: access to education and job training; marital prospects, social status, and integration; and access to health care through the Veteran's Administration health care system. This study differentiated nonveterans from veterans with no wartime service and veterans with wartime service (WWII, Korea, Vietnam), respectively, and measured childhood SES disadvantage in terms of lower paternal and maternal education, lower paternal occupational status, and family-of-origin's lower socioeconomic status. Controls included demographic

characteristics and mid- to later-life sociodemographic, economic, and health statuses, as well as health behaviors. Growth curve models indicated that childhood SES disadvantage was related to higher ADL limitations and a steeper age-related increase in ADL limitations. Compared to nonveterans, veterans with wartime service had significantly higher ADL limitations, which were partly explained by their poorer health. However, veterans with wartime service and nonveterans had similar age-related increases in ADL limitations. In contrast, compared to nonveterans, veterans without wartime service had an ADL limitation trajectory that did not increase as rapidly with age. The effect of childhood SES disadvantage on ADL limitations was offset for veterans with and without wartime service such that men from disadvantaged backgrounds who served in the military have better physical functioning (i.e., fewer ADL limitations) than comparable men who did not serve.

There are several reasons to think that the observed moderating effect of military service on the relationship between childhood SES disadvantage and men's later-life ADL limitations might vary by race/ethnicity. To the extent that such positive turning points among veterans result from access to service-related training, benefits, programs, and opportunities, one would hypothesize that these would be less available to older racial/ethnic minority men who served in the military at a times of lesser equity and inclusion than characterize the military in more recent periods and today (Lutz 2008; Mettler 2005; Turner and Bound 2003). Overall, racial/ethnic minority veterans may be less likely than White veterans to obtain benefits or accrue advantages from military service in their subsequent civilian lives. Taken together, racial/ethnic health disparities may reflect the continuity of disadvantage from childhood, although negative health effects might also emerge from different assignments in the military or differences in post-service experiences, which translate through processes of cumulative disadvantage in other life

domains, such as labor force participation, socioeconomic attainment, and marriage, into health trajectory differences. Prior research on mortality suggests that military service may offset some racial disadvantage. In both the HRS and AHEAD samples, London and Wilmoth (2006) found that African Americans had a higher likelihood of dying than Whites, which is consistent with a continuity of disadvantage interpretation. However, in the HRS sample only, African Americans who served in the military had a marginally lower likelihood of dying, which is consistent with a positive turning point interpretation. The current investigation extends this line of investigation by examining the extent to which military service mediates and moderates the effect of early life SES disadvantage on ADL limitations, self-rated health, and mortality, and the extent to which observed effects vary by race/ethnicity.

(Figure 1 about here)

CONCEPTUAL MODEL

The conceptual model that informs this study is depicted in Figure 1. Building on the life course principles of life span development, human agency, historical time and place, timing in lives, and linked lives, we argue that early-life participation in a particular social institution (i.e., the military) in specific historical periods shapes processes of cumulative (dis)advantage that lead to later-lifer disparities in various outcomes. Specifically, participation in the military can exacerbate, ameliorate, or have no mediating or moderating effect on early-life disadvantages. In addition, participation in the military may (re-)shape mid-life educational, occupational, income, marital, and health characteristics that influence later-life outcomes. The effects of cumulative (dis)advantage are shown in this figure by the solid line running from early life circumstances to outcomes in later life. This demonstrates how early-life effects might continue to have a direct effect on later-life outcomes regardless of military service or mid-to late-life characteristics. The

discontinuities predicted by the "military as a positive turning point" and "life course disruption hypotheses," which have be substantiated in the extant research on the World War II cohort, are indicated by the dashed lines. This represents the notion that the effects of early-life circumstances can be offset by military service, which places individuals on a different life path that influences subsequent mid-life characteristics and ultimately later-life outcomes. In this instance, the effect of early-life circumstances and military service would be either mediated or moderated by mid-life characteristics. The dotted line demonstrates the direct effect military service can have on later-life outcomes, controlling for early-life circumstances and mid-life characteristics. Finally, the line with dashes and two dots is indicative of selection into military service. It reminds us of the importance of considering the implications of non-random selection into military service. Since all of the processes we examine are embedded in historical time, it is important to pay close attention to differences across birth cohorts who experienced military service and lived their lives in different historical periods.

DATA AND METHODS

Sample

The analysis is based on data from the 1992 through 2006 longitudinal HRS (Health and Retirement Study, 1993). The data contain a nationally representative study of adults aged 51 and older (N=30,887). The longitudinal HRS initially collected data in 1992 from pre-retirement adults who were born from 1931 to 1941. This sample was followed-up biennially in 1994 and 1996. The longitudinal HRS also includes data from older adults born before 1923, who were interviewed in 1993 and 1995 as part of the Assets and Health Dynamics in Later Life (AHEAD) study. In 1998, both cohorts were surveyed in a single data collection effort that contained a steady state design with systematic sampling from two additional cohorts: the Children of the

Depression (CODA), who were born between 1924 and 1930, and the War Babies (WB), who were born from 1942-1947. Subsequent data collection occurred in 2000, 2002, 2004, and 2006, including systematic sampling of the Early Baby Boom (EBB) cohort, who were born between 1947 and 1953. This analysis is based on information in these wave-specific data files as well as the RAND HRS file, which provides cleaned derived variables that are named consistently across waves (St. Clair, Blake, Bugliari, Chien, Hayden, Hurd et al., 2008).

The analytic sample for this study included 12,330 White, Black, and Hispanic men who were born between 1890 and 1953. These male subjects contributed over 55,000 observations over the fourteen year study period to the person-period file that is used to estimate the growth curve models. Only the observations from years in which the subject was a HRS age-eligible respondent were included in the person-period file. The analysis did not include women because military service was rare among women in these cohorts: among the 14,491 women in the HRS, only 134 (less than 1%) served in the military.

Measures

Three dependent variables are modeled, two of which come from the RAND HRS file: activities of daily living (ADL) limitations and self-rated health (we have not yet conducted the analysis of mortality, which is the third dependent variable). Activities of daily living (ADL) limitations measure whether the respondent has any difficulty bathing, dressing, eating, getting in/out of bed, or walking across a room. The ADL scale ranges from zero, indicating no difficulty on any of the items, to 5, indicating difficulty on all five items. Self-rated health is a standard, five-category, ordinal self-rated heath measure that asks respondents to rate their health as excellent, very good, good, fair, or poor. For this analysis, the scale was reverse-coded such that higher numbers indicate better self-rated health.

The analysis is stratified by race/ethnicity and includes the following groups: Non-Hispanic White, Non-Hispanic Black, and Hispanic (of any race). Subjects in the "Non-Hispanic other race" category are excluded from the analysis because there is an insufficient number to reliably model health trajectories.

Retrospective reports of service in the military are available for these subjects, where military service is defined as "active military service" not including service in the military reserves. Respondents who reported military service were asked follow-up questions about military service start and stop dates. We assumed that men's service was continuous and used these dates to determine service during WWII (1941-1945), Korea (1950-1953), and/or Vietnam (1961-1972). We then constructed a veteran status variable with three categories: nonveteran (reference), veteran without wartime service, and veteran with wartime service.

The childhood disadvantage scale is based on the following measures: mother's education, father's education, father's occupation, and family SES. Mother's education and father's education were binary coded (1=less than 8 years of education and 0=more than 8 years of education). Father's occupation and family SES were similarly coded (1=low SES and 0=not low SES and missing). We then summed mother's education, father's education, father's occupation, and family SES to create a childhood disadvantage scale that ranges from zero to four, with higher numbers indicating more disadvantage. Given the relatively large proportion of the sample that had missing values on at least one childhood disadvantage item due to father absence or attrition prior to the 1998 survey when these measures were first gathered, we included a variable in the analysis that is equal to one for all individuals for whom at least one of these variables was missing and set to zero. Due to the way we coded missing data, our measure

of childhood disadvantage is likely to yield conservative estimates of the effects of early-life conditions on later-life health.

The analysis includes several control and mediator variables that are related to later-life health and disability. Two of these control variables are not time varying: childhood health and education. Childhood health to age 16 includes the following categories: excellent, very good or good health (reference category), poor or fair health, and missing. Education was measured at the HRS baseline and included high school or less (reference), college, and graduate school. The other variables, which capture mid- to late-life characteristics that may mediate the relationship between military service and later life self-rated health, are measured many years after military service. All of these mid- to late-life measures are time-varying across the fourteen year study period. Marital status contained four categories: married (reference), never married, divorced/separated, and widowed. Household income was measured in dollars. Labor force status was recoded as a binary variable (0=not in the labor force, 1=in the labor force). Self-reports of the following six current health conditions were each measured with a binary variable (0=not reported, 1=reported): high blood pressure, heart disease, stroke, lung disease, diabetes, and cancer. In addition, a summary measure of the number of these conditions the respondent has ever had was included. The models also included measures of ever smoking (0=no, 1=yes) and drinking alcohol (0=no, 1=yes). Finally, body mass index was used to identify subjects who are underweight (BMI<18.5), normal weight (reference category, 18.5<=BMI<.24.9), and overweight (BMI>=25.0).

Analytic plan

The analysis estimated a series of conditional growth curve models for the entire sample and by cohort (Bryk and Raudenbush, 1992; Rao, 1965; Rogosa, Brant, and Zimowski, 1982;

Willett, 1987) using the PROC MIXED procedure in SAS (Littell, Milliken, Stroup and Wolfinger, 1996). A person-period file was used to estimate ADL limitations and self-rated health growth curve models by race/ethnicity. A series of models were estimated to determine the extent to which the effect of childhood disadvantage is mediated or moderated by military service and mid- to late-life characteristics: the first model included only age, childhood disadvantage, and childhood health; the second model added military service; the third model specified interactions between childhood disadvantage and military service; the fourth model included the mid- to late-life control variables. In all of these models time was defined in terms of chronological age (as opposed to time in study) because we were interested in modeling age-related changes in health. Fixed effects for age (grand mean centered) and the other covariates, as well as random effects for the intercept and age, were estimated. To simplify the presentation of the stratified models, only the intercept and the fixed effects for childhood disadvantage and military service are presented in the tables (full models are available from the first author upon request). Also it should be noted that the linear effect for the interaction between childhood disadvantage and military service was specified in preliminary versions of Model 3, but those interactions were not included in the analysis because they were not significant.

PRELIMINARY RESULTS

Table 1 presents the growth curve models predicting ADL limitations by race/ethnicity. Model 1 indicates that among Whites, men from disadvantaged backgrounds have higher initial ADL limitations and steeper increases in ADL limitations with age. Adding military service in Model 2 does not substantially changes these patterns. White men with wartime service are not significantly different from nonveterans in their initial ADL limitations or change in ADL limitations with age. However, White men with non-war service have marginally higher initial

ADL limitations and less steep increases in ADL limitations with age. Model 3 suggests it is important to take moderation into account when modeling these effects among Whites. Model 3 provides evidence that military service offsets the effect of childhood disadvantage on initial ADL limitations for White veterans with and without wartime service. Compared to nonveterans, veterans with wartime service have higher initial ADL limitations, but their rate of change over time is not significantly different. Inclusion of mid- to late-life sociodemographic and health characteristics does not substantially alter these findings. The effect of wartime service on initial ADL limitations is reduced by approximately 40%, which suggests that a substantial amount of initial ADL limitations among war veterans operates through mid- to late-life sociodemographic and health characteristics.

Among black men, childhood disadvantage is associated with higher initial ADL limitations, but is not significantly associated with age-related changes in ADL limitations. These findings are similar when military service is included in Model 2. Although the initial ADL limitations of Black war veterans is not significantly different than nonveterans, their ADL limitations increase more rapidly with age. In contrast to Whites, military service does not moderate the effects of childhood disadvantage on ADL limitations for Blacks. The results in Model 4, which includes mid- to late-life characteristics, are consistent with the exception that the coefficient for the effect of wartime service on age-related changes in ADL limitations is marginally significant.

Among Hispanic men, initial ADL limitations are higher among those with more childhood disadvantage, but, similar to blacks, childhood disadvantage is not significantly related to age-related changes in ADL limitations. As shown in Model 2, military service does not mediate the effect of childhood disadvantage on initial ADL limitations for Hispanics.

Compared to nonveterans, non-war veterans have fewer initial ADL limitations and experience less rapid declines in ADL limitations with age. As was the case for Blacks, Model 3 indicates military service does not moderate the effect of childhood disadvantage for Hispanics. Taking mid- to late- life characteristics into account in Model 4 reduces the effect for childhood disadvantage by 37%; the childhood disadvantage coefficient is marginally significant. There is also a marginally significant interaction between childhood disadvantage and wartime service, suggesting that, similar to Whites, war service may offset the effect of childhood disadvantage on initial ADL limitations for Hispanics. The effects for non-war service remain statistically significant in this fully specified model.

Table 2 presents the growth curve models predicting self-rated health by race/ethnicity. Among Whites, Model 1 shows that men from more disadvantaged backgrounds have substantially lower initial self-rated health but slightly slower age-related declines in self-rated health than men from more advantaged backgrounds. Including military service in Model 2 does not substantially alter these effects, suggesting military service does not mediate the relationship between childhood disadvantage and later-life self-rated health for Whites. However, compared to nonveterans, veterans with non-war service have better initial self-rated health, but similar self-rated health declines with age. Veterans with wartime service are not initially different from nonveterans, but do experience steeper decreases in self-rated health with age. Model 3 reveals a slightly different story, which again suggests that it is essential to account for moderating effect of military service on childhood disadvantage among Whites. Veterans with wartime service have significantly lower initial self-rated health than nonveterans. In addition, the effect of childhood disadvantage is offset for White men who served during wartime. This indicates that White men from more disadvantaged backgrounds who served in war have better self-rated

health in later life than comparably disadvantaged men who did not serve during war. Taking mid- to late-life characteristics into account in Model 4 reduces the coefficient for wartime service on initial self-rated health to non-significance. However, the effect of childhood disadvantage on initial levels of self-rated health is offset among veterans who did and did not serve during war. In addition, the age-related decline in self-rated health is not as pronounced among veterans who did not serve during wartime. Interestingly, among Whites, the effect of age is reduced to non-significance once time-varying mid- to late-life sociodemographic and health characteristics are included in the model.

Childhood disadvantage operates the same among Blacks as it does among Whites. In Model 1, more childhood disadvantage is associated with poorer initial self-rated health, but slightly slower changes in self-rated health with age. Military service does not mediate or moderate this relationship, as shown in Models 2 and 3. Black men with wartime service have significantly higher initial levels of self-rated health, and those with non-war service have marginally better initial self-rated health (which is similar to the non-war service finding for White men). Like White men, Black men with wartime service have greater declines in self-rated health with age, although the effects are only marginally significant for Blacks. These effects are reduced to non-significance in Model 4, suggesting that the effect of wartime service on Black men's age-related change in self-rated health operates through mid- to late-life characteristics (most notably health conditions).

As was the case for White and Black men, among Hispanic men, childhood disadvantage is associated with poorer initial self-rated health, but a slower age-related decline in self-rated health (Model 1). Model 2 suggests military service does not mediate this effect. Hispanic men with wartime service have significantly higher initial self-rated health, but age-related change in

self-rated health that is similar to that for nonveterans. Those with non-war service also have significantly higher initial self-rated health and less steep age-related declines in self-rated health. Model 3 indicates the effect of childhood disadvantage is not moderated by military service for Hispanic men, but controlling for mid- to late-life characteristics in Model 4 suggests there might be some moderation. The negative effect of childhood disadvantage is completely offset for Hispanic men who served during war. In contrast, it is magnified for Hispanic men who have non-war service. Both of these effects are marginally significant and thus should be interpreted with caution.

PLANS FOR ADDITIONAL ANALSIS

This preliminary analysis provides compelling evidence that the relationship between childhood disadvantage, military service, and later life health operates differently among Whites, Blacks, and Hispanics. The next step in this research involves examining how these relationships influence mortality risk. A series of hazard models predicting mortality over the fourteen year HRS study period from 1992 to 2006 will be estimated separately by race/ethnicity. Similar to the preliminary analysis, these models will focus on identifying whether the relationship between childhood disadvantage and later life mortality is mediated or moderated by military service, controlling for mid- to late-life characteristics. In addition, we will test alternative measures of childhood disadvantage to determine the extent to which the findings are sensitive to the operationalization of that concept. In particular, we will separately test the four components of childhood disadvantage (i.e., father's education, mother's education, father's occupation, and family SES) and consider other specifications of the childhood disadvantage scale that use different approaches for taking the missing cases into account.

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Figure 1: Conceptual Model for the Effect of Military Service on Later-Life Outcomes

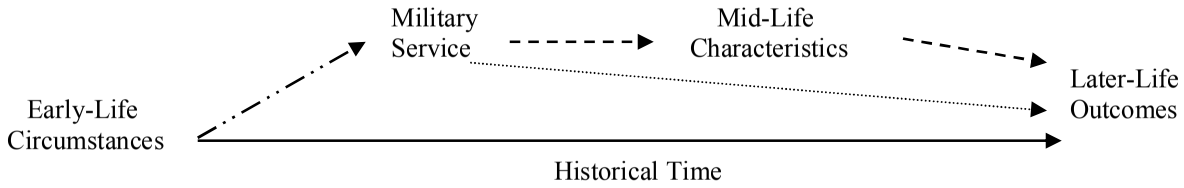

Table 1. Growth Curve Model Predicting Activities of Daily Living (ADL) Limitations by Race/Ethnicity												
	White				Black				Hispanic			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	-0.0920*** (0.018)	-0.1061*** (0.02)	-0.1490*** (0.02)	-0.0383 (0.02)	-0.0988 (0.08)	-0.1037 (0.08)	-0.0998 (0.09)	-0.0786 (0.09)	-0.0633 (0.11)	-0.0528 (0.11)	-0.0713 (0.12)	0.1115 (0.11)
Initial Effects												
Childhood Disadvantage	0.0530*** (0.01)	0.0526*** (0.01)	0.0955*** (0.01)	0.0628*** (0.01)	0.0760** (0.02)	0.0755** (0.02)	0.0728** (0.03)	0.0583** (0.02)	0.0783** (0.03)	0.0773** (0.03)	0.0900** (0.04)	0.0566+ (0.03)
War Service	-	0.0094 (0.01)	0.0839*** (0.02)	0.0495** (0.02)	-	-0.0056 (0.04)	0.00163 (0.08)	-0.0357 (0.07)	-	-0.0844 (0.07)	0.1075 (0.14)	0.0501 (0.12)
Non-War Service	-	0.0352+ (0.02)	0.0140 (0.03)	0.0132 (0.03)	-	0.0487 (0.09)	-0.0390 (0.13)	-0.0003 (0.12)	-	-0.3271** (0.12)	-0.4889* (0.22)	-0.4523** (0.18)
Childhood Disadvantage *War Service	-	-	-0.0768*** (0.01)	-0.0631*** (0.01)	-	-	-0.0052 (0.04)	-0.0060 (0.04)	-	-	-0.1053 (0.06)	-0.1002+ (0.05)
Childhood Disadvantage *Non-War Service	-	-	-0.0490*** (0.02)	-0.0501** (0.02)	-	-	0.0591 (0.07)	0.0381 (0.06)	-	-	0.0820 (0.09)	0.1033 (0.08)
Linear Effects												
Age (mean centered)	0.0206*** (0.00)	0.0221*** (0.00)	0.0207*** (0.00)	0.0045** (0.00)	0.0312*** (0.00)	0.0282*** (0.00)	0.0281*** (0.00)	0.0041 (0.00)	0.0256** (0.00)	0.0286*** (0.01)	0.0290*** (0.01)	0.0036 (0.01)
Childhood Disadvantage	0.0025*** (0.00)	0.0023** (0.00)	0.0029*** (0.00)	0.0026*** (0.00)	0.0005 (0.00)	0.0007 (0.00)	0.0008 (0.00)	0.0014 (0.00)	0.0012 (0.00)	0.0016 (0.00)	0.0012 (0.00)	-0.0001 (0.00)
War Service	-	0.0001 (0.00)	0.0016 (0.00)	-0.0006 (0.00)	-	0.0087* (0.00)	0.0088* (0.00)	0.0074+ (0.00)	-	-0.0037 (0.01)	-0.0020 (0.01)	-0.0043 (0.01)
Non-War Service	-	-0.0127*** (0.00)	-0.0116*** (0.00)	-0.0113*** (0.00)	-	0.0002 (0.01)	-0.0010 (0.01)	-0.0002 (0.01)	-	-0.0378** (0.01)	-0.0374** (0.01)	-0.0275* (0.01)
Number of observations	40363	40363	40363	40363	6524	6524	6524	6524	4160	4160	4160	4160
Number of subjects	9389	9389	9389	9389	1644	1644	1644	1644	1035	1035	1035	1035
+p<.10, *p<.05, ** p<.01, ***p<.0001												
Model 1 includes mean centered age, cohort, childhood disadvantage, and childhood health. Model 2 adds military service. Model 3 adds the interaction between childhood disadvantage and military service. Model 4 adds mid- to late-life sociodemographic and health characteristics.												

Table 2. Growth Curve Model Predicting Self-Rated Health by Race/Ethnicity												
	White				Black				Hispanic			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	3.7595*** (0.03)	3.7685*** (0.03)	3.8316*** (0.03)	3.6993*** (0.03)	3.2711*** (0.08)	3.1562*** (0.09)	3.1410*** (0.09)	3.1104*** (0.09)	3.3064*** (0.11)	3.2421*** (0.11)	3.2562*** (0.12)	2.9328*** (0.11)
Initial Effects												
Childhood Disadvantage	-0.1624*** (0.01)	-0.1638*** (0.01)	-0.2244*** (0.01)	0.1307*** (0.01)	-0.1135*** (0.02)	-0.1033*** (0.02)	-0.0932** (0.03)	-0.0609** (0.03)	-0.1487*** (0.03)	-0.1408*** (0.03)	-0.1512*** (0.04)	-0.0897** (0.03)
War Service	-	0.0081 (0.02)	-0.1022** (0.03)	0.0040 (0.02)	-	0.1812** (0.05)	0.2133* (0.09)	0.1779 (0.07)	-	0.2175** (0.07)	0.0037 (0.16)	0.0487 (0.13)
Non-War Service	-	0.0741* (0.04)	0.0289 (0.05)	0.0480 (0.04)	-	0.1805+ (0.09)	0.2348 (0.16)	0.1200 (0.13)	-	0.4255** (0.13)	0.7373** (0.27)	0.6495** (0.22)
Childhood Disadvantage *War Service	-	-	0.1123*** (0.02)	0.0823*** (0.02)	-	-	-0.0205 (0.05)	0.0142 (0.04)	-	-	0.1176 (0.08)	0.1125+ (0.06)
Childhood Disadvantage *Non-War Service	-	-	0.0416 (0.04)	0.0590* (0.03)	-	-	-0.0359 (0.09)	0.0084 (0.07)	-	-	-0.1564 (0.12)	-0.1622+ (0.09)
Linear Effects												
Age (mean centered)	-0.0413*** (0.00)	-0.03768*** (0.00)	-0.0363*** (0.00)	0.0004 (0.00)	-0.0351*** (0.00)	-0.0320*** (0.00)	-0.0323*** (0.00)	0.0105** (0.00)	0.0445*** (0.01)	-0.0441*** (0.01)	-0.0440*** (0.01)	-0.0059 (0.01)
Childhood Disadvantage	0.0020** (0.00)	0.0020* (0.00)	0.0015+ (0.00)	0.0012+ (0.00)	0.0052** (0.00)	0.0050** (0.00)	0.0050** (0.00)	0.0020 (0.00)	0.0056* (0.00)	0.0049+ (0.00)	0.0050+ (0.00)	0.0046* (0.00)
War Service	-	-0.0084*** (0.00)	-0.0101*** (0.00)	-0.0040** (0.00)	-	-0.0076+ (0.00)	-0.0072+ (0.00)	-0.0060 (0.00)	-	-0.0040 (0.01)	-0.0058 (0.01)	0.0027 (0.00)
Non-War Service	-	0.0014 (0.00)	0.0005 (0.00)	0.0052* (0.00)	-	-0.0018 (0.01)	-0.0011 (0.01)	0.0006 (0.01)	-	0.0221* (0.01)	0.0223** (0.01)	0.0231* (0.01)
Number of observations	43750	43750	43750	43750	7236	7236	7236	7236	4571	4571	4571	4571
Number of subjects	9571	9571	9571	9571	1702	1702	1702	1702	1057	1057	1057	1057
+p<.10, *p<.05, ** p<.01, ***p<.0001												
Model 1 includes mean centered age, cohort, childhood disadvantage, and childhood health. Model 2 adds military service. Model 3 adds the interaction between childhood disadvantage and military service. Model 4 adds mid- to late-life sociodemographic and health characteristics.												