Military Service and (Dis)Continuity in the Life Course:
Evidence on Disadvantage and Mortality from the HRS and AHEAD*

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Abstract

This study uses a life course framework and data from the HRS/AHEAD to examine three hypotheses related to (dis)continuity in the effects of early life disadvantage (African American race and low paternal education) and military service on later-life mortality. Specifically, we consider whether military service (and the age of enlistment) mediates or moderates the effects of early life disadvantage on later-life mortality and whether mid- to late-life socioeconomic status, health status, and health behaviors mediate the effects of military service on mortality. We find very little evidence to support the notion that there are any mortality benefits that accrue to men as a consequence of military service overall or enlistment at any particular age. Most of the evidence is consistent with life course disruption and continuity of disadvantage interpretations.

The question of how military service shapes men's life course trajectories has received limited but sustained attention in the literature for more than 25 years (Elder 1974, 1986, 1987; Elder, Shanahan, and Clipp 1994; Hogan 1978a; 1978b; 1981; Laub and Sampson 2003; Parker et al. 2001; Pavalko and Elder 1990; Sampson and Laub 1996; Xie 1990). Through comparisons of veterans and non-veterans, as well as analyses of age at mobilization effects on educational, occupational, marital, and health outcomes, these authors have sought to examine continuities and discontinuities in men's life course trajectories as a function of whether or not they served in the military and at what point in the life course they entered military service.

To date, research on the impact of military service on mortality outcomes in later life has been limited. The more extensive studies that have examined the experiences of World War II veterans have not systematically considered mortality as an outcome. Two studies of Vietnam War veterans, one based on U.S. data (Hearst, Newman, and Hulley 1986) and one based on Australian data (Adena et al. 1985), have come to differing conclusions about the effect of military service during the Vietnam War on mortality; the U.S. investigators concluded that veterans had a higher death rate primarily due to suicide and motor-vehicle accidents, while the Australian investigators reported no significant differences in the death rates of veterans and non-veterans. However, both of these analyses only considered mortality over the short-term and neither considered whether the effect of military service on mortality varied by race or earlier life circumstances.

In this paper, we adopt a life course approach to studying later-life mortality in relation to early-life disadvantage and military service. Specifically, we use nationally representative data from the Health and Retirement Survey (HRS) and the Study of Assets and Health Dynamics among the Oldest-Old (AHEAD) to investigate prospectively: the effects of disadvantage

emanating from being African American and having a father with low educational attainment respectively on mortality; whether military service, or age at enlistment, mediates or moderates the effects of African American race and low paternal education on later-life mortality; and whether mid- to late-life course socioeconomic and health statuses or health behaviors mediate the effects of early life course disadvantages or military service on later-life, civilian mortality over a 9 to 10-year period.

Theoretical considerations

There are a number of reasons to hypothesize that the experiences of veterans may be different than those of non-veterans in ways that would affect subsequent life course trajectories and experiences and, ultimately, mortality. On the one hand, the experience of being in the military could help men establish more disciplined health lifestyles, such as regular exercise regimes, which could carry health benefits over the life course. Additionally, access to health care through the Veteran's Administration hospital system and educational benefits available through the G.I. Bill may, over the life course, contribute to a later-life mortality advantage for veterans relative to non-veterans. For example, Xie (1992) showed that, after they exit the military, veterans gradually come to have higher educational attainments and earnings than non-veterans. On the other hand, active duty military service with combat may expose veterans to circumstances that lead them to be physically or psychologically impaired in ways that may contribute to a later-life health and mortality disadvantage. It addition, it can put them at risk of life events that are negatively associated with health outcomes. For example, it is well-established that there are health benefits to marriage, particularly for men (see Simon 2002), but World War II veterans are more likely to divorce than non-veterans (Pavalko and Elder 1990). This could place them at an increased risk of mortality in later life.

The literature on military service and the life course generally extends beyond straightforward comparisons of veterans and non-veterans to take into account the timing of military service in men's lives and how that intersects with earlier circumstances and later trajectories. By focusing on early versus late entry into the military, this literature on the effects of age at mobilization on later-life outcomes interrogates two corollary hypotheses grounded in the concepts and theories of the life course: the military as turning point and the life course disruption hypotheses. Both of these hypotheses emphasize the potential of military service to produce discontinuity in the life course.

The *military as turning point hypothesis* focuses on young age at entry into the military because it maximizes the chances for redirection of the life course and minimizes disruption to established life course trajectories. Elder (1987) argues that early entry into the military represents a social and psychological moratorium, which both delays the transition to adulthood and allows for the maximal utilization of service benefits. Early entry may reflect a selection of the most disadvantaged who see military service as a route out of difficult life circumstances; however, these are precisely the persons who may benefit most from the health and educational benefits available to veterans.

There is considerable evidence in the literature that early entry into the military can produce discontinuity in the life course trajectories of initially disadvantaged men. For example, Elder (1986) reports that early entrants had more disadvantaged family backgrounds, poorer grades, and lower feelings of self-adequacy, but in part through a later transition to adult roles and responsibilities, they were able to equal the occupational achievements of non-veterans, to have more stable marriages than non-veterans, and to experience larger gains in psychological strength through mid-life than non-veterans. This is consistent with the beliefs of the majority of early entrants, who were much more likely than later entrants to report retrospectively that their

lives had followed a different and more rewarding course as a result of their military service (Elder 1987). Other studies have also provided evidence in support of the military as turning point hypothesis. For example, Sampson and Laub (1996: 364) conclude: "Military service in the World War II era provided American men from economically disadvantaged backgrounds with an unprecedented opportunity to better their lives though on-the-job training and further education" (see also Laub and Sampson 2003). If this is the case, then those who serve in the military (particularly those who enlisted at a relatively young age) should have lower mortality in later life than those who did not serve. In addition, early life disadvantage associated with being African American or having a father with lower educational attainment should be ameliorated to some extent by serving in the military.

The *life course disruption hypothesis* is a corollary to the military as turning point hypothesis. According to this hypothesis, relatively late entry into the military has the potential to disrupt established marital, parenting, and occupational trajectories, which may have consequences for the subsequent patterning of the life course and later-life outcomes. Later entrants often come from more advantaged backgrounds than earlier entrants. Because later entrants are more likely to have completed their educations and will have less time upon completion of their service to take advantage of educational benefits for veterans, the gains that accrue to more disadvantaged, earlier entrants may not materialize to the same degree or with the same effects in the lives of later entrants. In addition to the corollary evidence regarding late entry that is reported in the studies that focus on early entrants, military service as turning point, and life course discontinuity, Elder, Shanahan, and Clipp (1994) provide direct evidence in support of this life course disruption hypothesis. They report that each year entrance into military service was delayed reduced the economic and job benefits associated with military service and increases the risk of life disruption and related costs. Moreover, partly as a result of

the work-life disadvantages they experienced, late-mobilized men were at greatest risk of negative physical health trajectories over the life course. Consequently, according to the life course disruption hypothesis, late entrants into the military should have higher mortality in later life than those who entered the military at a younger age. These effects should be exacerbated for relatively advantaged men, including Whites and those whose fathers had higher educational attainments.

The military as turning point and life course disruption hypotheses focus on discontinuities in the life course produced by military service. In the first instance, early life disadvantage yields to some extent to the opportunities and benefits emanating from attachment to the military. In the second instance, relatively more advantaged early beginnings, which partly contribute to a successful transition to adult occupational, marital, and parenting roles, is disrupted by military service.

While models of discontinuity have been the primary focus of analyses that aim to understand how military service shapes the life course of men, an alternative *cumulative (dis)advantage hypothesis*, can also be derived from the life course perspective (Dannefer 1987; O'Rand 1996; Settersten 2003). If a social institution is not organized to ameliorate the effects of, or otherwise reproduces, existing systems of social stratification then participation in that social institution is unlikely to enable individuals to overcome early life disadvantage, which creates continuity in the life course and may serve to reinforce processes of cumulating (dis)advantage. Therefore the cumulative (dis)advantage perspective reminds us that for military service to generate life course discontinuity the military as a social institution must enable individuals to overcome early life disadvantage by providing opportunities that alter life chances and choices. But, if social hierarchies of (dis)advantage are reproduced within the military or in the implementation of benefits then it is possible that earlier (dis)advantages will be propelled

forward through the life course in a more or less continuous manner. In this case, military service would have no effect on mortality in later life and would not mediate or moderate the effects of early-life (dis)advantage on later-life mortality.

Data and Methods

The analysis is based on two nationally representative longitudinal data sets: the Health and Retirement Study (HRS) and the Study of Assets and Health Dynamics among the Oldest-Old (AHEAD). The HRS contains an initial sample of over 12,600 pre-retirement adults between the ages of 51 and 61 years. The baseline data were collected in 1992 with biennial follow-ups in 1994 and 1996. The AHEAD sample consists of 7,447 older adults, aged 70 years and above. Baseline data were collected in 1993, with a follow-up in 1995. In 1998 the HRS and AHEAD were combined into a single data collection effort that contains a steady state design, with additional waves of data gathered in 2000 and 2002. The present study includes the baseline male respondents who were either White or African American (HRS N = 5,639; AHEAD N = 2,899). We do not include women in this analysis because military service was rare among women in these cohorts.

Dependent variable: For each sample, information was gathered from proxy respondents at subsequent waves regarding the occurrence of respondent *deaths*. The dependent variable for this analysis measures whether the respondent died between the baseline interview and the 2002 interview (0 = no, 1 = yes). As shown in Table 1, almost 14% of the HRS sample and over 51% of the AHEAD sample died during this period.

(Table 1 about here)

Independent variables: There are three primary independent variables in this analysis: *race, father's education,* and *military service*. Race and father's education, which are considered family background characteristics, serve as indicators of relative (dis)advantage in early life. As

previously mentioned, the analysis focuses on the experience of White and African American males. Males in other racial/ethnic groups were not included in this study because there was an insufficient number to reliably detect differences in mortality between those with and without military service. As shown in Table 1, less than 10% of the HRS and AHEAD samples were African American. The family background measure is based on father's education (less than 8 years, 8 years or more, missing). Mother's education is also available in the data sets, but is not used in this analysis because it is so highly correlated with father's education. Table 1 indicates that the majority of HRS respondents' fathers had 8 years or more of education (66%), whereas the fathers of the AHEAD respondents were split evenly between those with less than 8 years of education (45%) and 8 years or more of education (44%).

There are two measures of military service in this analysis. The first is a measure of whether the respondent reported that they had served in the military, where military service was defined as "active military service" not including service in the military reserves. Nearly 57% of both the HRS and AHEAD samples reported that they had served in the military, which is consistent with what would be expected. The HRS sample includes persons born from 1931 to 1941 and the AHEAD sample includes persons born before 1924. According to Hogan (1981), the percentage of men in the HRS birth cohorts who served on active duty in the armed forces for six months or longer declined steadily from 67.2% for those born in 1931 to 40.3% for those born in 1941. The percentage of men in the AHEAD birth cohorts who had six months or more of active duty service declined steadily from 76.6% for those born in 1924 to 24.3% for those born in 1907; however, it is important to note that there are relatively few respondents from the oldest cohorts in the AHEAD. It is also important to note that the six birth cohorts that fall outside of both the HRS and AHEAD sampling frames (i.e., those born from 1925 to 1930) had

substantially higher percentages with six months of active duty service, ranging from a low of 67.7% to a high of 79.5%.

The second measure takes into account the timing of military service during the life course. Previous research (e.g., Elder 1986; 1987; Elder, Shanahan, and Clipp 1994; Sampson and Laub 1996; Xie 1990) suggests that early enlistment in the military is less disruptive to men's lives and is associated with greater accumulated advantage over the life course than later enrollment. Given this, we constructed an age of enlistment variable with the following categories: no military service, enlisted before the age of 20 years, enlisted between the ages of 20 and 23 years, enlisted at age 24 years or older. Table 1 indicates there are substantial differences between the HRS and AHEAD samples in the age at enlistment. Although approximately 43% of each sample did not serve in the military, the HRS respondents tended to enlist at younger ages than the AHEAD respondents: over one-quarter of the HRS sample enlisted prior to age 20 years whereas only 7% of the AHEAD sample enlisted prior to age 20 years.

Control variables: With the exception of some preliminary descriptive tabulations, all analyses control for age. Some analyses also control for variables that represent mid- to late-life course characteristics that were acquired after any military service and were measured in the baseline HRS and AHEAD interviews prior to the measurement of the dependent variable. These include several *demographic/socioeconomic characteristics*, such as respondent's education (years), annual household income (dollars), current employment status (not working, working for an employer, self-employed), and various measures of respondents' *health status and behaviors*, such as self-rated health (where 1=poor and 5=excellent), number of health conditions, body mass index (normal weight [18.5<=BMI<.24.9], underweight [BMI<18.5],

overweight [25.0<=BMI<=29.9], obese [BMI=>30.0]), smoking behavior (never, past smoker, current smoker), and alcohol consumption (number of drinks per day).

Analysis Strategy: The analysis focuses on the overall effect and the timing of military service on mortality in later life and whether the effects of military service on mortality differ for Whites and African Americans and those with fathers who have less than 8 or 8 or more years of education. We conduct separate analyses on the HRS and AHEAD samples because the period from baseline to 2002 during which the dependent variable is observed differs by one year across the two studies, and because of age differences between the samples that influenced their eligibility to serve in particular wars and military conflicts. The younger HRS sample was more likely to serve in the Vietnam War, whereas the older AHEAD sample was more likely to serve in World War II. The age differences of these samples also influence the relative opportunity for social mobility available to White and African American men, and men of different social classes, who grew up in the particular historical circumstances that contextualized their early life courses.

After presenting descriptive statistics on the percentage of respondents who died during each study by race, father's education, and military service, we present a series of hierarchical logistic regression models predicting the likelihood of death. As these models are elaborated, death is predicted as a function of early life background characteristics (i.e., race and father's education), age, and military service (age at enlistment); these variables plus interactions between the background characteristics and military service (age at enlistment); and these variables plus the mid- to late-life socioeconomic status, health status, and health behavior control variables. The overall effect of military service and the effects of enlistment age are tested in separate models. The descriptive and multivariate analyses take into account the effects of the survey design by using the SVY options in STATA, which enable us to employ the

weights, adjust the estimates for clustering in the sample, and calculate robust standard errors (STATA 2001).

Results

Both being African American and having a less well-educated father are, on average, associated with relative disadvantage that emerges early in the life course. Such early-life disadvantage is expected to increase the odds of mortality over the life course through cumulating disadvantage unless some intervening events or processes redirect the life course in ways that circumvent early-life disadvantages in favor of health and longevity.

We begin our examination of whether military service produced discontinuity in the life course of men in the HRS and AHEAD cohorts by examining the bivariate relationship between race, paternal education, and military service respectively and mortality later in life. In both the HRS and the AHEAD, African Americans and those whose fathers had less than 8 years of education were significantly more likely to have died between 1992/3 and 2002 than Whites and those whose fathers had higher educational attainments respectively. In the HRS, 23.3% of African Americans had died compared to 12.9% of Whites, while in the AHEAD, 60.0% of African Americans and 51% of Whites had died. With respect to father's education, in the HRS, 17.6% of those whose fathers had less than 8 years of education had died (compared to 12.1% of those whose fathers had 8 or more years of education) and in the AHEAD the parallel estimates were 53.9% and 47.8%. In the HRS, there was no significant difference in the likelihood of dying between 1992 and 2002 between those who had and had not served (14.9% versus 12.7%). In the AHEAD, men who served in the military were significantly less likely to have died between 1993 and 2002 than were men who had not served in the military (46.4% versus 59.7%).

(Table 2 about here)

Table 2 presents results from a multivariate logistic regression analysis of the effect of military service on the likelihood of death in the period from 1992/3 to 2002. The top panel of Table 2 presents the results for the HRS, the bottom panel presents the results for the AHEAD. Model 1 includes race, father's education, and age. In order to evaluate the effect of military service on mortality and the extent to which it mediates or counteracts the effects of early-life racial and socioeconomic disadvantage on mortality, we add a dichotomous variable for military service to Model 2. Models 3 and 4 add interactions between race and military service and father's education and military service respectively in order to examine whether military service moderates the effects of early-life disadvantage on later-life mortality.

As seen in Model 1 in the top panel of Table 2, in the HRS, race, father's education, and age each have significant independent effects on later-life mortality in the expected directions. Military service has no significant effect on later-life mortality (Model 2) and the addition of this variable to the model does little to change the effects of the other variables. Model 3 reveals marginally significant evidence that military service moderates the effect of race on mortality. Relative to Whites who had not served in the military (the reference group), Whites who had served in the military were marginally more likely to have died (log likelihood = .2282; p = .053). African Americans were significantly more likely than Whites to have died; however, there is a marginally significant interaction between race and military service (p = .059) such that, relative to Whites who had not served in the military, African Americans with no military service were more likely to have died (log likelihood = .8616) than were African Americans with military service (log likelihood = .2282 + .8616 -.4115 = .6783). There is no evidence that military service moderates the effect of low paternal education on later-life mortality (Model 4).

As seen in Model 1 in the bottom panel of Table 2, in the AHEAD, the likelihood of dying in the period from 1993 to 2002 was higher for African Americans and older persons;

however, in contrast to the results for the HRS, low paternal education was not associated with a higher likelihood of dying in this older cohort once race and age were taken into account. In contrast to the significant, negative association between military service and mortality evident in the bivariate results, the effect of military service in Model 2 is positive and non-significant. Supplemental analyses (not shown) indicate that controlling for age alone reduces the military service coefficient to non-significance. In fact, respondents in the AHEAD who served in the military were, on average, five years younger than those who reported no military service. Therefore, the lower likelihood of dying among the AHEAD respondents with military service that was apparent at the bivariate level is due to their younger average age rather than military service per se. Models 3 and 4 provide no evidence that military service moderates the effects of African American race and low paternal education respectively on later-life mortality.

Taken together, the results presented in Table 2 suggest that military service did not substantially improve the life chances of men in the HRS or AHEAD cohorts in ways that influence later life mortality. Analysis of the HRS data provides limited evidence that military service mitigated to some extent the effects of racial inequality on later-life mortality. Overall, the results are more suggestive of life course continuity and cumulative disadvantage than they are of discontinuity resulting from the positive influence of military service on later-life mortality.

The analyses presented thus far have focused on an overall measure of military service that does not take into account the age at which men entered military service. Life course theory and prior empirical research suggest that the benefits of military service are most likely to accrue to those who enter military service at younger ages, while those who enter at older ages are subject to more life course disruption as a result of their military service. Thus, it is possible that the non-significant findings for the military service dichotomous variable reflect countervailing

positive and negative influences that can be teased apart by focusing on age at enlistment. In order to investigate this possibility, we turn now to an examination of age at enlistment on later-life mortality.

(Table 3 about here)

Table 3 replicates the analyses presented in Table 2, with the exception that age at enlistment (< 20, 20-23, and 24+ years old at enlistment versus no military service) is substituted for the military service dichotomous variable. There is no need to replicate Model 1 from Table 2, as it would be identical in this analysis to that which was already presented; thus, Model 1 in this table presents the main effects of age at enlistment controlling for race, father's educational attainment, and age. Models 2 and 3 analyze whether age at enlistment moderates the effects of race and paternal education on later-life mortality. The top panel of Table 3 presents the results for the HRS; the bottom panel presents the results for the AHEAD.

The results from Model 1 for the HRS respondents are partially consistent with theoretical expectations emerging from the life course disruption hypothesis; however, they are not consistent with the military as turning point hypothesis. Both those who enlisted early (before age 20 years) and those who enlisted late (at age 24 or older) were significantly more likely to have died in the period between 1992 and 2002 than those who had never served in the military. The results from Models 2 and 3 provide no evidence that age at enlistment moderates the effects of being African American or having a father with low educational attainment on mortality.

The results from Model 1 for the AHEAD respondents reveal no significant differences by age at enrollment. As was the case with the HRS respondents, Models 2 and 3 reveal no evidence that age at enlistment interacted with race or paternal education to influence later-life mortality for better or worse.

Taken together, these results provide no evidence that age at enlistment, particularly early enlistment as suggested by prior research, differentially benefited the men in either the HRS or AHEAD cohorts or contributed to a disruption of the mortality disadvantage emanating from being African American and having a father with lower educational attainment. The results from the HRS provide some evidence that is consistent with the life course disruption hypothesis.

(Table 4 about here)

A final set of analyses examines whether the effects of military service or age at enlistment on later-life mortality are mediated by mid- to late-life course socioeconomic and health status or health behaviors. We focus in the text on the HRS sample because we observed no significant military service or age at enlistment effects on mortality in the AHEAD; however, we report parallel results for the AHEAD in Table 4 and discuss a few findings that emerged unexpectedly. For each analysis, Model 1 in Table 4 replicates the preferred model from prior analyses, although some coefficients presented in the earlier tables are not shown here (i.e., age and father's education missing). In Model 2, respondents' socioeconomic statuses (education, household income, employment) measured in 1992 are added. In Model 3, we control for respondents' health status and health behaviors in 1992 (but not their socioeconomic statuses), and in Model 4, we control for respondents' socioeconomic status, health status, and health behaviors.

Although there is some shifting in statistical significance with respect to the military service and military service*race coefficients depending on whether socioeconomic status or health status and behaviors are controlled, the results presented in Model 4 in the top, left-hand panel indicate that adding the full set of control variables does not change the pattern of results observed earlier. The effects of military service on later-life mortality are not mediated by these later-life socioeconomic and health statuses or health behaviors. It is, however, noteworthy that

these characteristics measured later in life but prior to the measurement of the mortality outcome add considerably to the predictive power of the model and explain a substantial portion of the effect of race on mortality, although that effect remains large and statistically significant. These factors reduce to non-significance the effect of low paternal education on later-life mortality. (Results not shown; full models are available from the authors.)

As seen in the bottom, left-hand panel in Table 4, the results for age at enlistment yield a similar conclusion; these socioeconomic status, health status, and health behavior variables do not mediate the effects of early or late age at entry into the military on later-life mortality. For the men in the HRS cohorts, some other set of variables must link military service per se, and early and late entry, to increased risk for mortality.

Turning now to the parallel analysis of age at enlistment in the AHEAD data, we focus on the bottom, right-hand panel of Table 4 and note that adding controls for later-life health status and health behavior variables increased substantially the effect of early age at entry into the military on the likelihood of mortality. Model 3 indicates that those who entered prior to age 20 years were significantly more likely than those who had not served to have died between 1993 and 2002. In Model 4, that coefficient remains statistically significant, and the coefficient for age at enlistment between the ages of 20 and 23 years increased to marginal significance.

Discussion

At the outset of this paper, we drew upon the extant literature and the life course framework to posit three plausible hypotheses: the military as turning point and life course disruption hypotheses, which focus on the role of the military in producing discontinuity in the life course trajectories of men, and the cumulative (dis)advantage hypothesis, which focuses on life course continuity emanating from social structural (dis)advantages that military service is unable to overcome.

Our analyses of later-life mortality as a function of early-life racial and socioeconomic disadvantage and military service using the HRS and AHEAD data provides some evidence in support of both hypotheses that predict discontinuity in men's life course trajectories as a consequence of military service. We also found evidence in support of life course continuity in that race and low paternal education continued to exert an influence on later-life mortality in almost all of the analyses.

In the HRS, we found that the effect of military service varied by race. Controlling for age and father's education, among Whites, military service increased the odds of dying between 1992 and 2002 relative to Whites who had not served in the military. African Americans had a higher likelihood of dying than Whites regardless of military service; however, African Americans who served in the military had a marginally lower likelihood of dying than African Americans who had not served in the military. In the HRS, the higher likelihood of dying for Whites who had served in the military is consistent with the life course disruption hypothesis; the amelioration of racial disadvantage that military service afforded African American men is consistent with the military as turning point hypothesis.

In the AHEAD, we find no evidence that military service per se influenced later-life mortality or moderated the effects of early-life disadvantage on later-life mortality. The apparent bivariate association, which suggested that military service substantially and significantly reduced mortality, was fully accounted for by the five-year age difference, on average, between those who had and had not served.

Our analyses of the effects of age at enlistment on later-life mortality provided some additional evidence that is consistent with the life course disruption hypothesis; however, it also revealed evidence that directly counters theoretical expectations and prior evidence regarding the military as turning point hypothesis as developed on the basis of early age at entry to the

military. In the HRS, we found that both those who had entered the military early (at ages less than 20 years) and those who entered the military late (at ages 24 years or older) were significantly more likely than those who had not served in the military to have died between 1992 and 2002. In the AHEAD, those who entered the military early (at ages less than 20 years) were more likely to have died between 1993 and 2002 than those with no military service once later life health status and behaviors were controlled. We found no evidence in either the HRS or the AHEAD that age at enlistment moderated the effects of racial and father's educational attainment on later-life mortality. Although the higher likelihood of dying among those who entered the military late is consistent with the life course disruption hypothesis, none of the hypotheses predicted that early entrants would be more likely to die than those who did not serve. If, as is suggested by the literature, early entry is associated with greater disadvantage, than this effect is consistent with an interpretation of life course continuity and cumulating disadvantage that does not yield as a consequence of military service (and is not explained by race and father's educational attainment, or as we demonstrate, mid- to late-life socioeconomic and health status or a range of health behaviors).

Taken together, we find selected evidence that supports each of the three hypotheses. However, we find very little evidence to support the notion that there are any benefits that accrue to men and materialize in their lives as a lower likelihood of dying as a consequence of military service overall or at any particular age at enlistment. Most of the evidence is consistent with life course disruption and continuity of disadvantage interpretations, which is evidenced by the continuing influence of African American race and low paternal education on later-life mortality and the non-significance of military service in the analyses of the AHEAD data.

Our attempt to elucidate the mechanisms by which military service exerted its influence on later-life mortality was not particularly successful, but was nonetheless instructive. All of the

findings regarding military service and age at enlistment remained essentially unchanged when we controlled for a broad array of mid- and late-life socioeconomic and health statuses and health behaviors. The one exception was the unexpected finding of a suppression effect in the AHEAD data, in which early age at enlistment emerged as a significant, positive predictor of later-life mortality and enlistment at age 20-23 years emerged as a marginally significant, positive predictor of later-life mortality once the mid- and later-life socioeconomic status, health status, and health behavior variables were controlled. Overall, the findings suggests that the mechanisms by which military service influences later-life mortality for better (in the case of African Americans in the HRS) or worse (for Whites in the HRS and early and late entrants in the HRS) operates through some pathway or pathways that are not indexed by this set of control variables.

In conclusion, we note that the extant literature is compelling for its theoretical articulation of life course models and innovative analyses of longitudinal data. However, the results we present in this paper suggest that more research is needed to ascertain the extent to which findings reported for specific cohorts or subgroups are generalizable to broader populations and to articulate whether and how life course processes play out in terms of later-life outcomes and mortality.

We believe this study has several strengths and some limitations that are important to note. First, we frame our analyses and draw upon theories that are anchored in the perspectives of the life course to guide our empirical analyses. Second, this study uses two nationally representative data sets that together allow for an examination of mortality from mid- to late-life. Third, most other studies focus on veterans of one war (e.g., World War II veterans, Vietnam veterans) or a particular historical cohort. However, the HRS/AHEAD data allowed us to examine the experiences of two cohorts who were born in different historical periods and

participated in different military conflicts. Fourth, our study examines racial differences in the effects of military service on mortality, and asks whether military service and the timing of military service matter in the same ways and to the same degree for men whose military and life experiences during the 20th century were markedly different as a consequence of the color of their skin.

A potential limitation of this study, which is related to the fourth point above, concerns our ability to detect statistically significant differences in mortality between Whites and African Americans (Ferraro and Wilmoth, 2000). It is noteworthy, however, that despite concerns about statistical power, statistically significant main effects in the HRS and AHEAD analyses, and a military*race interaction effect in the HRS analysis, were documented consistently. Given that this is the first study, to our knowledge, to examine the effect of military service on later life mortality using the HRS/AHEAD data, our goal was to explore the overall effects of military service and age of enlistment. We intentionally did not measure in detail the experience of those who served in the military. However, the HRS/AHEAD does contain information on the dates that service began and ended, which will allow us to ascertain in future studies the historical context during which men served, for how long they served, whether the historical timing or duration of service differentially affected mortality. Future studies will also consider how military service affects mid- and later-life health and disability trajectories. Therefore, this study represents a important starting point for understanding whether military service creates discontinuity or perpetuates continuity across the life course in ways that affect later life health, disability, and mortality.

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Table 1: Weighted Descriptive Statistics by Study Membership.

	HRS 1992			AHEAD 1993		
Variables	%	Mean	SE	%	Mean	SE
Dependent variable:						
Died 1992-2002	13.93			51.43		
Independent variables:						
Early life background characteristics						
Race (White)	90.12			92.18		
Father's education						
- Less than 8 years (ref.)	23.07			44.63		
- 8 years or more	65.97			44.09		
- Missing cases	10.96			11.28		
Military Service						
% Yes	56.93			56.82		
Age of Enlistment						
- No military service	43.07			43.18		
-<20	27.79			7.00		
-20-23	24.16			27.69		
-24>	4.66			22.11		
Control Variables:						
Demographic/SES						
Age (years)		55.87			76.90	
Education (years)		12.53			11.11	
Household income		58,592			29,685	
Employment						
- Not working (ref.)	20.83			86.53		
- Working	60.68			6.04		
- Self-employed	18.49			7.43		
Health Status/ Behaviors						
Self-rated health (1~5)		3.51	.04		2.97	.04
Health conditions (0~8)		1.17	.03		1.61	.03
BMI		27.22	.06		25.51	.10
- Normal Weight (ref.)	30.35				43.42	
- Underweight	.49				2.31	
- Overweight	48.65				43.73	
- Obese	20.51				10.54	
Smoking						
- Never smoked (ref.)	25.65				23.87	
- Former smoker	46.09				64.02	
- Current smoker	28.26				12.11	
Alcohol consumption (0~4 per day)		1.07	.03		.77	.04
Unweighted N	5639			2899		

Table 2: Survey Logistic Regression Analysis of the Effect of Military Service on the Likelihood of Death between 1992/3 and 2002 in the HRS and AHEAD.

	HRS			
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Military Service	-----	.1645	.2282+	.2235
		(.10)	(.12)	(.14)
Race (1 = African American)	.6467***	.6720***	.8616***	.6734***
	(.08) [a, b]	(.08)	(.14)	(.08)
Father's Education < 8 Years	.3389***	.3518***	.3531***	.4779**
(Reference = 8+ Years)	(.09)	(.09)	(.09)	(.15)
Father's Education Missing	.2734+	.2861+	.2752+	.2668
	(.14)	(.15)	(.15)	(.18)
Age (in Years)	.0976***	.0931***	.0929***	.0935***
	(.02)	(.02)	(.02)	(.02)
Military Service * Race	-----	-----	-.4115+	-----
			(.21)	
Military Service * Father's	-----	-----	-----	-.2228
Education < 8 Years				(.22)
Military Service * Father's	-----	-----	-----	.0435
Education Missing				(.27)
Constant	-7.5103***	-7.3589***	-7.3874***	-7.4227***
	(1.08)	(1.04)	(1.04)	(1.13))
No. of Observations	5639	5639	5639	5639
F	38.96***	31.82***	26.25***	21.80***
		AHEAD		
Military Service (Yes = 1)	-----	.1052	.1206	.1036
		(.08)	(.09)	(.12)
Race (1 = African American)	.2720*	.2837*	.3767+	.2788*
	(.12)	(.12)	(.19)	(.12)
Father's Education < 8 Years	.1130	.1200	.1207	.1622
(Reference = 8+ Years)	(.07)	(.07)	(.07)	(.12)
Father's Education Missing	.4864**	.4898**	.4937**	.2900
	(.17)	(.16)	(.16)	(.23)
Age (in Years)	.1423***	.1466***	.1468***	.1468***
	(.01)	(.01)	(.01)	(.01)
Military Service * Race	-----	-----	-.1909	-----
			(.26)	
Father's Education Missing	-----	-----	-----	-.0784
				(.17)
Military Service * Father's	-----	-----	-----	.3425
Education Missing				(.29)
Constant	-	-	-	-

	10.9487***	11.3436***	11.3650***	11.3532***
	(0.66)	(.78)	(.78)	(.78)
No. of Observations	2899	2899	2899	2899
F	82.85***	65.13***	54.66***	46.85***

Notes:
[a] Standard errors shown in parenthesis.
[b] Chi-square test: +p<.10, * p<.05, ** p<.01, ***p<.001

Table 3: Survey Logistic Regression Analysis of the Effect of the Age of Entry into Military Service on the Likelihood of Death between 1992/3 and 2002 in the HRS and AHEAD.

		HRS	
Variables	**Model 1**	**Model 2**	**Model 3**
Age of Enlistment < 20 Years	.3753**	.4402***	.4413**
(Reference = No Service)	(.11) [a, b]	(.12)	(.14)
Age of Enlistment 20-23 Years	-.2161	-.1537	-.1535
	(.14)	(.16)	(.19)
Age of Enlistment 24+ Years	.5084*	.5603*	.5880+
	(.25)	(.25)	(.30)
Race (1 = African American)	.6806***	.8670***	.6772***
	(.08)	(.14)	(.08)
Father's Education < 8 Years	.3477***	.3484***	.4759**
(Reference = 8+ Years)	(.09)	(.09)	(.15)
Father's Education Missing	.2529+	.2424+	.2622
	(.14)	(.14)	(.17)
Age (in Years)	.1010***	.1007***	.1009***
	(.02)	(.02)	(.02)
Enlisted < 20 * Race	-----	-.4240	-----
		(.26)	
Enlisted 20-23 Years * Race	-----	-.3929	-----
		(.33)	
Enlisted 24+ Years * Race	-----	-.3485	-----
		(.61)	
Enlisted < 20 Years * Father's	-----	-----	-.3144
Education < 8 Years			(.28)
Enlisted 20-23 Years * Father's	-----	-----	-.0919
Education < 8 Years			(.25)
Enlisted 24+ Years* Father's	-----	-----	-.1575
Education < 8 Years			(.48)
Enlisted < 20 Years * Father's	-----	-----	.1550
Education Missing			(.29)
Enlisted 20-23 Years * Father's	-----	-----	-.3597
Education Missing			(.41)
Enlisted 24+ Years * Father's	-----	-----	-.4791
Education Missing			(.74)
Constant	-7.7948***	-7.8208***	-7.8318***
	(1.08)	(1.08)	(1.07)
No. of Observations	5639	5639	5639
F	23.13***	15.09***	12.28***
		AHEAD	
Age of Enlistment < 20 Years	.2117	.1819	.1535
(Reference = No Service)	(.17)	(.17)	(.26)

Age of Enlistment 20-23 Years	.1259	.1328	.1459
	(.13)	(.14)	(.17)
Age of Enlistment 24+ Years	.0757	.1205	.0667
	(.12)	(.13)	(.17)
Race (1 = African American)	.2879*	.3808*	.2964*
	(.12)	(.19)	(.12)
Father‘s Education < 8 Years	.1171	.1196+	.1590
(Reference = 8+ Years)	(.07)	(.07)	(.12)
Father’s Education Missing	.4857**	.4911**	.2867
	(.17)	(.16)	(.23)
Age (in Years)	.1494***	.1501***	.1498***
	(.01)	(.01)	(.01)
Enlisted < 20 Years * Race	-----	.7456	-----
		(.75)	
Enlisted 20-23 Years * Race	-----	.0075	-----
		(.27)	
Enlisted 24+ Years * Race	-----	-.6115	-----
		(.39)	
Enlisted < 20 Years * Father’s	-----	-----	-.0334
Education < 8 Years			(.30)
Enlisted 20-23 Years * Father’s	-----	-----	-.0592
Education < 8 Years			(.22)
Enlisted 24+ Years * Father’s	-----	-----	-.1126
Education < 8			(.22)
Enlisted < 20 Years * Father’s	-----	-----	.5349
Education Missing			(.60)
Enlisted 20-23 Years * Father’s	-----	-----	-0747
Education Missing			(.34)
Enlisted 24+ Years * Father’s	-----	-----	.5472
Education Missing			(.38)
Constant	-11.5622***	-11.6246***	-11.5895***
	(0.91)	(.90)	(.92)
No. of Observations	2899	2899	2899
F	44.07***	33.96***	22.11***

Notes:
[a] Standard errors shown in parenthesis.
[b] Chi-square test: +p<.10, * p<.05, ** p<.01, ***p<.001

Table 4: Survey Logistic Regression Analysis of Whether the Effects of Military Service (Age at Enlistment) on the Likelihood of Death between 1992/3 and 2002 Are Mediated by Socioeconomic and Health Status and Health Behavior Characteristics Measured in 1992/3.

	HRS: Military Service				AHEAD: Military Service			
Variables	**Model 1** [c]	**Model 2** [d]	**Model 3** [e]	**Model 4** [e]	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Military Service	.2282+	.2912*	.2828*	.2483+	.1052	.1771+	.1708+	.1747
(1=yes)	(.12) [a, b]	(.12)	(.12)	(.12)	(.08)	(.10)	(.10)	(.11)
Military	-.4115+	-.3264	-.4161+	-.4416+	-----	-----	-----	-----
Service*Race	(.21)	(.21)	(.22)	(.28)				
Race (1= African	.8616***	.5863***	.6307***	.5676***	.2837*	.1620	.0894	.0860
American)	(.14)	(.14)	(.13)	(.14)	(.12)	(.12)	(.14)	(.13)
Father's Education	.3531***	.1810+	.0681	.0958	.1200	-.0011	-.0047	-.0369
<8 Years	(.09)	(.09)	(.08)	(.09)	(.07)	(.08)	(.08)	(.09)
Constant	-7.3874***	-4.5384***	-6.3628***	-6.0609***	-11.3436***	-10.1533***	-10.5486***	-10.0320***
	(1.04)	(1.09)	(1.22)	(1.23)	(.78)	(.78)	(.89)	(.87)
No. of Observations	5639	5639	5639	5639	2899	2899	2899	2899
F	38.96***	45.10***	27.85***	45.11***	65.13***	44.43***	35.24***	38.37***
	HRS: Age at Enlistment				**AHEAD: Age at Enlistment**			
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Age of enlistment (ref. = didn't serve)								
<20	.3753***	.3924***	.3238**	.2846*	.2117	.2610	.3692*	.3523*
	(.11)	(.11)	(.12)	(.12)	(.17)	(.18)	(.16)	(.17)
20-23	-.2161	-.1015	-.0506	-.0836	.1259	.2203	.2444	.2619+
	(.14)	(.15)	(.15)	(.16)	(.13)	(.13)	(.15)	(.16)
24>	.5084*	.7303*	.72763*	.7113*	.0757	.1371	.0943	.0924
	(.25)	(.25)	(.28)	(.28)	(.12)	(.13)	(.13)	(.13)
Race (1= African	.6806***	.4438***	.4480***	.3728***	.2879*	.1662	.0982	.0949
American)	(.08)	(.10)	(.08)	(.09)	(.12)	(.12)	(.14)	(.13)

Father's Education	.3477***	.1861+	.0766	.1005	.1171	-.0340	-.0113	-.0433
<8 Years	(.09)	(.09)	(.08)	(.09)	(.07)	(.08)	(.08)	(.09)
Constant	-7.7948***	-5.0191***	-6.6712***	-6.3594***	-11.5622***	-10.4421***	-11.0778***	-10.59***
	(1.08)	(1.14)	(1.26)	(1.28)	(.91)	(.91)	(1.00)	(.97)
No. of Observations	5639	5639	5639	5639	2899	2899	2899	2899
F	23.13***	41.95***	24.46***	40.67***	44.07***	34.92***	29.95***	33.85***

Notes:

[a] Standard errors shown in parenthesis.

[b] Chi-square test: +p<.10, * p<.05, ** p<.01, ***p<.001

[c] Model 1 controls for age and father's education missing.

[d] Model 2 controls for age, father's education missing, and socioeconomic characteristics (education, household income, and employment status) measured in 1992.

[e] Model 3 controls for age, father's education missing and health status and health behavior characteristics (self-rated health, health conditions, BMI, smoking, and drinking) measured in 1992.

[f] Model 4 controls for age, father's education missing and socioeconomic, health status, and health behavior characteristics measured in 1992.