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Baby Boomers and the Vietnam War: A life Course Approach to Aging Vietnam Veterans

Miles Steven Marsala
Brigham Young University

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Miles Steven Marsala

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Lance D. Erickson, Chair
Vaughn R.A. Call
Benjamin G. Gibbs

Department of Sociology

Brigham Young University

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ABSTRACT

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Miles Steven Marsala
Department of Sociology, BYU
Master of Science

The sheer size of the baby boomer cohort has prompted a great deal of research on life outcomes and potential social strain or benefit of such a large cohort. A major contingency for the baby boomers was the experience of the Vietnam War. Many young men had their life course trajectories interrupted when they were drafted to military service or enrolled in college in an effort to evade the draft. This study uses the *Life Family Legacies* data to investigate how the Vietnam War may have affected later-life health outcomes of this cohort. Comparing physical health as captured by activities of daily living (ADLs) and instrumental activities of daily living (IADLs), this study found that baby boomer veterans' outcomes are similar to those of their nonveteran peers. When comparing mental health outcomes by prevalence of PTSD, findings show that those veterans who served in combat or combat support units are much more likely to show persistent signs of PTSD. Findings from this study suggest that the effects of combat are a crucial distinction when comparing outcomes between veterans and nonveterans.

Keywords: life course, aging, baby boomers, Vietnam War

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INTRODUCTION

The size of the baby boom cohort has prompted various research efforts to understand how belonging to such a large cohort influences life outcomes. Particular attention focuses on the role of social resources like Social Security and Medicare as they relate to potential retirement well-being, changes in technology, and the structure of the workforce (De Nardi, Imrohoruğlu, and Sargent 1999; Lee and Skinner 1999; Knickman and Snell 2002). However, little work has considered the role of military service among baby boomers. This study examines the later-life outcomes of physical and mental health of baby boomers, with specific attention to veterans.

Within the life course perspective, later-life outcomes are used to investigate how the social and historical contexts could have affected an individual's life course trajectory (Moen 2003). Research on veterans' later-life outcomes have shown that cohorts who served in WWII and the Korean War have better health in late life than their nonveteran peers (Sampson and Laub 1996). While much research has been done on later-life outcomes of World War II (WWII) and Korean War veterans (Elder, Gimbel, and Ivie 1991; Sampson and Laub 1996), little research examines later-life outcomes of baby boomer veterans from the Vietnam War (Brooks 2007). This is perhaps due to the younger age of baby boomers, who are only recently beginning to enter retirement age and later-life. Military service has been shown to have an indirect and positive effect on health through socioeconomic status (SES) and longer marriages—with veterans of WWII having higher SES than nonveterans (Alder et al. 1994; Elder et al. 1991; Sampson and Laub 1996; Smith, Marsh, and Segal 2012). However, despite better health and SES for WWII and Korean veterans in general, the subset of those veterans who saw combat tend to have poorer health in general, and poorer mental health in particular, suggesting that many struggle adapting to home life after being exposed to combat (Elder, Shanahan, and Clip

1997) and that difficulties adjusting to post-war life affect their well-being then and in later-life (Lee, Vaillant, and Elder 1995).

In fact, the war's effects on later-life physical and mental health may even be greater for Vietnam veterans, due to the social context and lack of public support for the Vietnam War and its veterans (Elder et al. 1991). The environment during the Vietnam War era has been shown to more negatively affect veterans at earlier stages of life (i.e., those who fought in their 20s and early 30s) than those of previous conflicts (Teachman and Call 1996). Consequently, this study investigates long-term effects of the Vietnam War on baby boomer veterans as they reach retirement age. Specifically, this study examines physical and mental health outcomes of baby boomers through a life course perspective and compares the outcomes of veterans and nonveterans.

LITERATURE REVIEW

The Life Course

The life course "refers to a sequence of socially defined events and roles that the individual enacts over time" and allows "for many diverse events and roles…that constituted the sum total of a person's actual experience over time" (Giele and Elder 1998, p.22). This perspective integrates "psychological, sociological, historical, and demographic concepts and methods" (O'Rand 1998, p. 53), and provides a useful conceptual framework for investigating changing social environments of individuals and the developmental implications of those changes. Furthermore, the life course brings social relationships (e.g., marriage, child rearing) and historical settings (e.g., America during the Vietnam War) (Alwin 2012; Elder 1997) to the fore of the study of individual lives. The central premise of the life course is that no period of an individual's life can be fully understood when isolated from their prior experiences, future

aspirations, and the social and historical context in which they live (Mortimer and Shanahan 2003). Indeed, through examining the timing in life and the historical time and place of life events, researchers can come to a better understanding of the full effects of a life event on individual outcomes, both immediately and across time as the group ages (Elder, Johnson, and Crosnoe 2003; Mortimer and Shanahan 2003). While each generation tends to complete events in a slightly different order, life course events often follow a common trajectory or temporal ordering of completion: going to school, finding full-time employment, getting married, having children, beginning retirement, and adjusting to old age (Hogan 1978; Mayer 2004). Those who complete life events in this order typically have more positive life course outcomes during the aging experience than those who do not (Rindfuss, Swicegood, and Rosenfeld 1987). While today's generation (i.e. Millennials) is more likely to follow a slightly different ordering of events, baby boomers are old enough to be likely to follow this trajectory (Shanahan 2000).

The Vietnam War as a Life Course Contingency

An event that could potentially disrupt a life course trajectory is military service (Parker, Call, and Barko 1999). For members of the baby boom cohort, the Vietnam War operates as a contingency with the potential to have long-lasting effects on individuals. Within the life course perspective, a *contingency* is an unexpected or uncontrollable event in individuals' lives that potentially alters their trajectory and affects later outcomes (O'Rand, Henretta, and Krecker 1992; Pearlin 1982). Contingencies include any number of things from early job termination to divorce (Parker, Call, and Barko 1999; Pearlin 1982). To better understand why Vietnam veterans' outcomes could be different than nonveterans, it is important to recognize the war and military service as a contingency for baby boomers as it was for veterans of previous conflicts. In the current study, baby boomers' military service represents a contingency that disrupted

veterans' life course trajectories by affecting if or when they attended college or married (Lyons et al. 2006; Teacman 2005), which in turn impacts their later-life well-being (Adams and Blieszner 1995; Seeman 2002).

Examining the unique social context of the Vietnam War is essential to understanding why late-life outcomes for baby boomers—especially veterans—could differ from outcomes of those involved in previous conflicts. In contrast to the large amount of WWII veterans who returned to a supportive environment experience great economic growth, Vietnam veterans represented a much smaller portion of the population and returned home to an economy in recession with limited veterans benefits, and received much less public support than WWII veterans due to public indifference to and disapproval of the war (Brooks 2007; Elder et al. 1991; Schwartz 1986). In addition, Vietnam veterans were more likely to come from low-income backgrounds, due in large part to the wealthier young men having more resources to enroll in college and to defer conscription eligibility or being able to "dodge" the draft by relocating to Canada (Angrist 1990; Badillo and Curry 1976; Barringer 2011; Card and Lemieux 2001; Shields 1980). Finally, Vietnam veterans' unique emotional and mental scars made it difficult to adapt back to civilian life, especially amid the lack of public support (Elder et al. 1997; Lunch and Sperlich 1979). Therefore, given the strongly negative circumstances they faced, more negative outcomes are expected for baby boomer veterans from the Vietnam War when compared with their nonveteran peers (Elder et al. 1991). Coupled with these negative circumstances are the traumatic experiences at an earlier life stage during the contingency of the War, which could create stressors on health that have built overtime (Pearlin et al. 2005).

Physical Functioning and Mental Health Outcomes in Later-Life

One way that veterans' later-life outcomes could be impacted is their health. Physical and mental health are frequently used to measure and compare later-life outcomes in the life course (Depp and Jeste 2006; Rowe and Kahn 1987; Rowe and Kahn 1997). In order to compare physical functioning and mental health outcomes between baby boomer veterans and nonveterans, this study will use activities of daily living (ADLs) and instrumental activities of daily living (IADLs), which assess perceived functional status and relative independence (Depp and Jeste 2006; Ford et al. 2000; Katz et al. 1963; Lawton and Brody 1969; Menec 2003). ADLs are typically described as activities that include basic self-care tasks such as feeding, dressing, grooming, bathing, and walking around the house (Katz et al. 1963; Menec 2003). IADLs are slightly more complex, meaning they require more cognitive skills than ADLs and evaluate one's ability to successfully live independently. These activities include managing finances, handling transportation, shopping, preparing food, use of telephone and communication devices, managing one's medications, and house and basic home maintenance (Lawton and Brody 1969; Menec 2003). While ADLs and IADLs encompass tasks that require cognitive and physical functioning, declines in physical health are primarily responsible for disability in these areas (Beach et al. 2000, Lawton and Brody 1969; Menec 2003). Trends indicate a decline in age-specific disability rates for the general population over the past three decades (Gill et al. 2010; Freedman, Martin, and Schoeni 2002; Manton, Gu, and Lamb 2006), and it is projected that veteran IADL performance will decrease at greater levels than the general population (Kinosain et al. 2007).

Hypothesis 1a: Baby boomer veterans will have poorer ADL and IADL functions than nonveteran baby boomers.

In addition to poorer performance of ADLs and IADLs, veterans' in later-life may be particularly at risk for mental health problems. Post-traumatic stress disorder (PTSD) is an anxiety disorder that develops after being exposed to traumatic and/or violent events. Combat, violent accidents, and terrorist attacks, are common triggers for PTSD (National Institute of Mental Health 2014; U.S. Department of Veteran Affairs 2014a; Yehuda 2002). People who suffer from PTSD continue to feel stress or fear even though they are no longer in danger; such reactions can disrupt sleep patterns, increase stress levels, and lead to other serious mental health problems, such as depression (Douglas et al. 1997; National Institute of Mental Health 2014). Furthermore, studies show that PTSD has an impact on subjective well-being, physical functioning, employment, and relationships, which may inhibit the ability to maintain independence and health throughout old age (Milliken, Auchterlonie, and Hoge 2007).

Because veterans are disproportionately exposed to trauma compared to the general population, PTSD is a particular concern for veterans' mental health (Douglas et al. 1997). Estimates indicate that about 7 to 8% of the general U.S. population will suffer from PTSD during their lifetime and approximately 30% of Vietnam veterans could experience PTSD in their lifetime (U.S. Department of Veteran Affairs 2014b). Data from the National Vietnam Veterans Readjustment Study found that veterans with PTSD scored worse than other veterans on measures of quality of life (Douglas et al. 1997). Because veterans are at an increased risk for lower health outcomes that come with PTSD, this study will examine the rates of PTSD among veterans and nonveterans in order to compare how that affects their later-life health outcomes.

Hypothesis 2a: Baby boomer veterans who served in the Vietnam War will be more likely to experience PTSD than nonveteran baby boomers.

Educational Attainment

Although the Vietnam War was a contingency for baby boomers, its effects on later-life outcomes is likely associated with several factors and experiences close to the time of the War itself. One of these experiences was college. The Vietnam War created differences in college attendance, both for veterans and nonveterans alike. Many baby boomers who had not planned to pursue higher education enrolled in college in an effort to avoid conscription and military service, leading to a college enrollment rate that was up to 7% higher than normal (Angrist 1990; Baskir and Strauss 1978; Card and Lemieux 2001). For those baby boomers that served, the educational benefit offered by the GI Bill, officially known as the Servicemen's Readjustment Act of 1944, was less than for those of previous conflicts (Schwartz 1986). One of this bill's most important provisions was the educational benefits that permitted millions of veterans the opportunity to seek a college education (U.S. Department of Veterans Affairs 2013). Following WWII, about 70% of males enrolled in college were WWII veterans (Bound and Turner 2002). For veterans of WWII, military service was able to provide them with educational experience that likely benefited their life course trajectories.

While the benefits of the GI Bill were also available to veterans of the Vietnam War, the benefits were less significant than they were for veterans of previous conflicts (Schwartz 1986). Between 1964 and 1972, college tuition rose by more than 75% for resident students and 115% for nonresident students (U.S. Congress 1974). During that same time period, total educational charges—textbooks, housing, supplies, tuition—rose nearly 50% for resident and 80% for

nonresident students (U.S. Congress 1974). Veterans receiving GI Bill benefits in the 1973–74 school year were receiving up to $233 less a month in benefits to help cover school costs relative to benefits received by WWII veterans in the late 1940s, and this figure does not account for the increased cost of living and inflation during that period (U.S. Congress 1974; Schwartz 1986). Though the nominal amount of money given to Vietnam veterans was greater than that given to WWII veterans, due to the lower benefits for Vietnam veterans than for WWII veterans, the GI Bill did not assist Vietnam veterans in obtaining as much education as they could have in previous years (Schwartz 1986). These differences in circumstances surrounding their military service, college attendance rates, and actual GI benefits show how the social context of the Vietnam War could explain some of the potential negative outcomes for baby boomer veterans.

Hypothesis 1b: Baby boomer veterans, although having access to the GI Bill, will have lower educational attainment than nonveteran baby boomers, which will lead to worse funtional outcomes as measured by ADLs and IADLs.

Marriage and Later Health Outcomes

Another experience for baby boomer veterans that was likely disrupted by the contingency of the Vietnam War that could have implications for later-life outcomes is marriage. For veterans, military service could have disrupted marriages or even have denied the opportunity for marriage, thus potentially altering trajectories and affecting outcomes. Supportive relationships and social ties are linked to better physical and mental health outcomes (Seeman 2002); in other words, people need relationships that will provide physical, emotional,

and even financial support, and such relationships can increase longevity and overall well-being (Adams and Blieszner 1995).

More than any other type of social tie, marriage has a positive correlation with psychological health and overall well-being (Diener et al. 1999; Gove and Shin 1989; Wilson 1967). The quality of marital relationships and the support they provide impact health and overall well-being (Adams and Blieszner 1995; Ross, Mirowsky, and Goldsteen 1990; Schone and Weinick 1998; Umberson et al. 2006; Waite and Gallagher 2002). Ross and associates (1990) found living with a spouse provides security, support, and emotional strength. Marital relationships can provide social regulation and support by providing a consistent emotional support system (Ross et al. 1990; Wright and Aquilino 1998) that can impact socialization and bolster health outcomes as people get older (Elder 1985; Elder 1994). The sociality that exists between spouses often helps to keep a person physically and mentally engaged as they age (Waite and Gallagher 2002). In contrast, marital disruptions and divorce tend to decrease well-being, and the effects of divorce can worsen as people age (Doherty, Su, and Needle 1989). Being married, and being married longer, tends to provide support that enables better physical and mental health outcomes as people age (Adams and Blieszner 1995). Baby boomer veterans, however, are at an increased risk of instability in marital relationships, due to combat experience and trauma (Sampson and Laub 1996), and veterans suffering from mental health difficulties such as PTSD experience additional difficulties adjusting to loss or changes in relationships include the loss of a spouse, retirement, and physical illness (Davison et al. 2006).

Marital stability is of particular concern for veterans. Military service has an impact on marital relationships, which can be long-lasting and can affect later-life outcomes (Call and Teachman 1996; Gimbel and Booth and 1994). While baby boomer veterans of the Vietnam War

are more likely to marry than nonveteran peers (Call and Teachman 1996; Laufer and Gallops 1985)—perhaps in an effort to "catch up" in the life course to their nonveteran peers (Call and Teachman 1996)—those veterans who saw combat are at greater risk for marital instability (Call and Teachman 1996), have higher levels of divorce, and experience greater marital dissatisfaction, which often leads to long-term negative effects on outcomes such as health (Laufer and Gallops 1985). In addition, military service causes individuals to be away from their families for lengthy periods of times, which causes weaker ties with their wives and children (Elder et al. 1991).

While veterans are at an increased risk for marital instability, those who were able to marry could see some potential health benefits. Researchers have found that personal relationships can mitigate the effects of PTSD by providing a trusted ally to help victims on the path to recovery (Cohen and Wills 1985; U.S. Department of Veterans Affairs 2014c). Having close, personal relationships, such as marriage, could help veterans experience fewer symptoms of PTSD as they age, thus improving their trajectories and outcomes. It is possible that for those veterans who served in Vietnam to have greater marital instability and thus benefit less from the potential mental health benefits of marriages. The differences in marriage rates and marital stability could explain some of the potential negative outcomes for baby boomer veterans.

Hypothesis 2b: Veterans' PTSD outcomes will be moderated by marriage. The risk of having PTSD for veterans is moderated by personal relationships, measured by time spent married since the end of the war.

METHODS

Data

The original data used for this survey comes from the *Educational and Occupational Aspiration Study*, funded by the U.S. Department of Education and collected by researchers at Washington State University in 1966. The original study consisted of 6,729 juniors and seniors from 25 randomly selected public high schools in the State of Washington. In an attempt to satisfy multiple research objectives, the selected high schools were matched in size, split into two groups, with each group administered a different survey. Both surveys had a common set of core questions dealing with aspirations and demographics; one survey (Form A) had additional questions focusing on social-structural issues, while the other survey (Form B) had additional questions about social-psychological issues. After completing the questionnaires, students were randomly selected for follow-up interviews that asked about their school experience.

In 1980, a follow-up survey—called *Career Development Study*—was conducted, which emphasized the early life-course attainments of the participants in areas of family, education, military, and career (Otto, Call, and Spencer 1981; Call, Otto, and Spencer 1982). Just over 90 percent of the original participants participated in the 1980 follow-up study. This study is the one of the few large-scale studies of its kind with pre- and post-Vietnam data. Of the men in this sample, half of them went into the military after high school and half of those who joined the military served in Vietnam.

A second follow-up study of the original study participants was conducted in 2010 using funding from the VA Office of Rural Health and Brigham Young University. At this point the original respondents from 1966 were between 60 and 64 years of age. The 2010 questionnaire, *Life and Family Legacies*, focused on the respondents' life-course event outcomes, physical and

mental health status, use of local health care services, and Vietnam veterans' use of VA Health Care services. This study was conducted using a mail survey. Those who did not respond to the mail survey were contacted to do a phone follow-up. For the 2010 survey, the research team used PeopleChasers® to locate respondents and identify respondents who had passed away since the 1980 survey. The adjusted response rates for the 2010 survey are 56 percent of the original 1966 sample and over 62 percent of the 1980 respondents.

For this present study, comparisons will be drawn between male veterans and male nonveterans from the 2010 survey as most of the veterans in this data are male.

Measures

Dependent Variables

ADLs are measured by the participants' responses to the question, "The following items are activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?" Participants were specifically asked about measures of ADLs: vigorous activities, such as running or lifting heavy objects; moderate activities, such as vacuuming or golfing, lifting or carrying groceries, climbing stairs, and bending, kneeling, or stooping; and mild activities such as walking, bathing, and grooming oneself (Lawton and Brody 1969). The response choices were (1) "Yes, limited a lot," (2) "Yes, limited a little," and (3) "No, not limited at all." The results of these responses were highly skewed, with many of the respondents indicating that they were not limited at all and a few stating they were only limited a little. Because of the skewness, I created a dichotomous variable, with respondents that indicated

that they were either limited a little or a lot coded as 1 and respondents that said they are not limited at all coded as 0 (Menec 2003).[1]

IADLs are measured by the participants' responses to the question, "The following items are activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?" Participants were specifically asked about measures of IADLs: managing money, paying bills, and banking; taking medications at the correct time; shopping for food and household needs; preparing meals; driving a car; and doing household chores like dishwashing, bed making, or laundry (Lawton and Brody 1969). The response choices were (1) "Yes, limited a lot," (2) "Yes, limited a little," and (3) "No, not limited at all." As with ADL results, the results of IADL responses were highly skewed, with most of the respondents indicating that they were not limited at all. Because of the skewness, I created a dichotomous variable, with respondents that indicated that they were either limited a little or a lot coded as 1 and respondents that said they were not limited at all coded as 0 (Menec 2003).

Prevalence and factors associated with PTSD were determined using the PCL-17, which is a self-report measure used to assess the 17 symptoms of PTSD as outlined in the DSM-IV (Keen et al. 2008). Respondents were asked to respond to a set of 17 questions using a five-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*); participants were asked to respond to the amount they had been bothered within the last 30 days. Respondents who scored a 50 or greater on the PCL-17 are identified as having PTSD and coded as 1 and the remaining respondents are coded as 0 (Blanchard et al. 1996; Erickson et al. 2013; Keen et al. 2008).

[1] In an effort to find the best fit between the data and the analysis model, several different statistical methods were used to investigate the ADL and IADL outcomes. These models included Poisson regression, negative binomial regression, zero-inflated Poisson regression, and zero-inflated negative binomial regression. Furthermore, several coding strategies for the outcome variables were considered, typically grouping different totals of ADLs and IADLs together. None of these efforts changed the general trends of the results.

Independent Variable

The main independent variable for this study is veteran status. Veteran status is determined by whether or not the respondents self-reported as serving in the Vietnam War and whether or not they reported as being in a combat or combat support unit. Respondents who stated that they are not veterans are coded as 0, those who are veterans but did not serve in a combat unit are coded as 1, those who served in combat units are coded as 2, and those who served in combat support units are coded as 3.

Mediator Variable

Educational attainment is measured by the highest grade level, year in college, or degree(s) completed as reported by the respondents. Respondents who either did not complete or only completed high school are coded as 1; some college coded as 2; completed bachelor's degree coded as 3; some graduate school coded as 4; and a completed graduate degree coded as 5.

Moderator Variable

Total time married since the Vietnam War is used as a moderator of the relationship between veteran status and PTSD. Time married was calculated starting in May 1975, immediately after American troops withdrew from Vietnam, and includes any length of time married since that date. These intervals are summed together for a total length of time married. Data are used from both the 1980 and the 2010 waves to collect all available marriages reported.

Control Variables

Demographic measures used are age, race, white coded as 1 and else coded as 0; income measured in $1,000s ranging from $5,000 to $125,000 or more; employment status, employed

coded as 1, unemployed coded as 2, and retired coded as 3; and marital status, married coded as 1, separated coded as 2, divorced coded as 3, widowed coded as 4, and never married coded as 5.

Analysis

All models used to evaluate my hypotheses are logistic regression models. Logistic regression was used because the outcome variables of ADLs, IADLs, and PTSD are dichotomous. To evaluate Hypotheses 1a—that baby boomer veterans' ADL and IADL functions will be compromised more than nonveterans—I regressed ADL and IADL functions on veteran status controlling for age, race, income, employment status, and marital status.

In order to evaluate Hypothesis 1b—that baby boomer veterans will have lower educational attainment than nonveterans leading to worse physical outcomes as measured by ADLs and IADLs—I estimated another model to determine if there is mediation by comparing outcomes when controlling for educational attainment to those outcomes that did not control for educational attainment. In the models I regressed on veteran status controlling for age, race, income, and marital status.

To evaluate Hypothesis 2a—that baby boomer veterans will be more likely to have PTSD than nonveterans—I regressed PTSD on veteran status controlling for age, race, income, employment status, and marital status.

For Hypothesis 2b—that baby boomer veterans' risk of having PTSD is moderated by marriage—moderation was tested by regressing PTSD on the interaction between veteran status and time married, controlling for age, race, and socioeconomic status.

RESULTS

Descriptive Statistics

Descriptive statistics are presented in Table 1, separated by veteran status—nonveterans, noncombat veterans, combat veterans, and combat support veterans. Of note is that ADL and IADL limitations along with PTSD are most common among combat veterans. Furthermore, combat veterans and combat support veterans, on average, obtained less education, earned less money, and were less likely to be married compared to nonveterans and noncombat veterans.

[Table 1 about here]

Activities of Daily Living and Instrumental Activities of Daily Living

Hypothesis 1a states that ADL and IADL functions would be lower among veterans than nonveterans. Logistic regressions were estimated to test Hypotheses 1a; results are shown in Table 2 as odds ratios. The odds ratios show the relative odds of veterans having ADL and IADL limitations compared to nonveterans. Veteran status—whether noncombat, combat, or combat support—is not significantly associated with a decrease in physical health as measured using ADLs and IADLs. Noncombat veterans were approximately 3% less likely to have ADL limitations than nonveterans (OR=0.971) and 1% less likely to have IADL limitations (OR=0.992). Combat veterans were approximately 23% more likely to have ADL limitations than nonveterans (OR=1.234) and approximately 42% more likely to have IADL limitations (OR=1.416), but these results are not significant. Combat support veterans were 1% less likely than nonveterans to have IADL limitations (OR=0.991), and 5% more likely to have IADL limitations (OR=1.048) and like noncombat veterans these findings were not significant and therefore do not support the hypothesis.

Hypothesis 1b states that veterans would have lower educational attainment leading to worse physical functioning as measured by ADLs and IADLs. Logistic regression results are shown in Tables 2 and 3. When including education as a mediator, shown in Model 7 in Tables 2 and 3, none of the veteran statuses were significantly associated with ADL outcomes. Those with some college are approximately 42% less likely to have ADL limitations (OR=0.575), and those with a four-year degree are approximately 54% less likely to have such limitations (OR=0.456). While those with some graduate training are also approximately 54% less likely (OR=0.461) and those who completed a graduate degree are 63% less likely to have these limitations (OR=0.370).

When including education as a mediator, the IADL limitations were also not significant for any veteran status. None of the levels of education were statistically significant. Those with some college are approximately 28% less likely to have IADL limitations (OR=0.720), those with a four-year degree are approximately 24% less likely to have IADL limitations (OR=0.759). While those with some graduate training are approximately 18% less likely to have such limitations (OR=0.818), and those who completed a graduate degree are approximately 33% less likely to have these limitations (OR=0.671).

[Table 2 about here]

[Table 3 about here]

Post-Traumatic Stress Disorder

Regression results for PTSD outcomes are, presented in Model 2 in Table 4. Hypothesis 2a predicted that veteran status is associated with an increased risk for PTSD. As expected, veteran status is significantly associated with an increased risk of PTSD, however, the increased risk of PTSD is only significant for combat and combat support veterans. The odds for noncombat veterans having PTSD is 1.753 greater than for nonveterans, but is not significant.

The odds for combat veterans having PTSD is 7.968 times greater than the odds for nonveterans, this finding was significant. The odds for combat support veterans having PTSD is 3.044 times greater than for nonveterans and this finding was significant. These results support Hypothesis 2a.

Results for Hypothesis 2b are shown in Model 3 in Table 4. Hypothesis 2b stated that total duration married since the end of the Vietnam War would moderate the effects of PTSD for veterans, yet logistic regression results for this hypothesis were not statistically significant. The odds for noncombat veterans having PTSD when moderated by duration married is 0.314 than for nonveterans. The odds for combat veterans having PTSD when moderated by duration married is 3.020 times greater than for nonveterans. The odds for combat support veterans having PTSD when moderated by duration married is 3.669 times greater than for nonveterans.

[Table 4 about here]

DISCUSSION

This study used a life-course approach to investigate how the contingency of the Vietnam War could have affected later-life physical functioning and mental health outcomes of baby boomers. To determine the effects of the War, ADL and IADL outcomes were compared between veteran and nonveteran baby boomers. ADLs and IADLs are often used to determine how well a person is aging by assessing common daily activities, which measure an individual's physical and cognitive functioning as one ages. In addition to ADL and IADL outcomes, mental health outcomes were compared between veterans and nonveterans by comparing prevalence of PTSD—which is a mental health condition known to compromise a person's health—among the groups.

Although literature suggests that military service is associated with better long-term physical outcomes later in life when compared to nonveteran peers from previous conflicts such as WWII (e.g., Elder et al. 1991), this study hypothesized that Vietnam veterans would have worse outcomes than their nonveteran peers. This is because the experience of returning from war was much different during the Vietnam era than during previous wars. The social context—particularly the lack of public support for America's involvement in Vietnam and for the soldiers who served there—was diametrically opposed to the social context surrounding previous wars. Soldiers returning from Vietnam received very little public support and faced a struggling economy in recession, while those returning from WWII, for example, returned home to great public support and a growing economy (Brooks 2007; Schwartz 1986). These social differences made adapting to home and civilian life more difficult for Vietnam veterans and could have negatively affected the physical and mental health outcomes of these veterans (Brenner 2002; Elder et al 1991; Elder et al. 1997; Lee et al. 1995).

Physical Functioning

While baby boomer veterans who served in the Vietnam War did not exhibit better physical functioning than their nonveteran peers as measured by ADL and IADL functions (as was the case in previous conflicts; Elder et al. 1991), simply being a Vietnam veteran did not show significant signs of worse physical health either. These findings could suggest that the baby boomer veterans in this sample are possibly experiencing the "healthy soldier effect," which suggest that veterans could be healthier than nonveteran peers because they are screened for health and meet a health standard before beginning military service (McLaughlin, Nielsen, and Waller 2008). However, this study did show that being combat veteran does has a negative effect on physical functioning as these baby boomers age. While the statistical significance in these

measures decreases with increased controls, the likelihood compromised physical functioning for these combat veterans remains substantially greater than for nonveterans and noncombat veterans.

One possible explanation for the lack of differences between veterans and nonveterans is technology. With far more advanced health care available to baby boomers than was available to past generations, such as improved health screenings and a greater general knowledge of healthy behaviors and practices (Cutler and Kadilyala 1999; Cutler and Meara 2001; Luce et al. 2006), general health has been increasing in recent decades (Cutler and Meara 2001). Technology advancements could also play a role in assisting with ADLs and IADLs enabling these aging baby boomers to function as normal. Some of these technologies include adapted housewares (e.g., utensils with larger handles or easy-to-use stoves and ovens) and mobile technologies (e.g. smart phones, tablets, and the internet) aid individuals in completing daily activities on their own. While the benefits of technology are available to all, including the combat veterans, those who served in Vietnam and were exposed to combat do not appear to be receiving as much benefit from these resources as their noncombat veteran and nonveteran peers.

Another possible explanation for these findings is the education that veterans were able to obtain, thus having a positive effect on later-life health outcomes. Because GI Bill benefits were not as significant for baby boomer veterans of the Vietnam War (Schwartz 1986), this study hypothesized that Vietnam veterans could also have lower health outcomes associated with lower education, when comparing nonveterans with veterans this was not supported, however there were sizably lower educational attainment levels for veterans exposed to combat, both combat and combat support units. With the results indicating that regular veterans in the study did not have lower educational attainment than nonveterans and that their education did not affect their

physical health outcomes, it is possible that these baby boomers found other ways to finance their educations outside of GI Bill benefits, either by simply working through school or through student loans and federal grants, which began when the Higher Education Act of 1965 was passed and which included the frontrunner for Pell grants (Mundel 2008). But there appears to be a connection between veterans who were exposed to combat and lower educational attainment when compared to non-combat veterans and nonveterans. For some reason, those baby boomer veterans exposed to combat were not able to match educational outcomes of nonveterans the same way that noncombat veterans were able to.

Future research should examine whether these baby boomer noncombat veterans might have outcomes that compare as well as their nonveteran peers as they continue to age; for instance, it could be particularly useful to compare mortality rates to determine how military service in Vietnam affects late-life outcomes. The findings from this study suggest that, although the social context surrounding the Vietnam War was dramatically different than those of previous conflicts, noncombat veterans from that era have still been able to have similar physical functioning outcomes as nonveterans from that era, while combat veterans have had worse physical outcomes.

Mental Health

While findings in this study suggest that noncombat veterans are maintaining similar levels of physical functioning as nonveterans, veterans are not remaining as healthy when comparing mental health. Consistent with other studies that investigate the likelihood of veterans' having PTSD (Douglas et al. 1997; Erickson et al. 2013; National Institute of Mental Health 2014), this study found that veteran status is significantly associated with an increased likelihood of having PTSD. However, simply being a veteran was not associated with having

PTSD, at least not with long-term or chronic PTSD as captured in this study. The veterans in this sample who experienced combat are the ones who are most likely to experience PTSD, which is also consistent with the literature (Erickson et al. 2013; Department of Veterans Affairs 2014; National Institute of Mental Health 2014; Yehuda 2002). The increased risk of PTSD for combat veterans is likely due to the violent and uncontrollable nature of combat. Research has shown that the risk and severity of PTSD increases when a person is exposed to events that elicit terror and/or shock (North et al. 1999) or when a person witnesses death, especially violent death (Green 1990); furthermore, the likelihood of PTSD increases in proportion to the degree to which a person does not have control during a violent or traumatic situation (Foa, Zinbarg, and Rothbaum 1992). With the increased risk for PTSD, baby boomer veterans who served either in a combat unit or combat support unit are more likely to suffer from mental health problems as they age compared to their non-combat and nonveteran peers.

This study also aimed to test whether linked lives could help mitigate the effects of PTSD for those groups that are most vulnerable (Adams and Blieszner 1995; Cohen and Wills 1985; Ross et al. 1990; Seeman 2002). In order to determine how the concept of linked lives interacts with PTSD, this study used a measure of total duration married since the end of the Vietnam War to investigate whether or not time spent married mitigated the relationship between military service and PTSD. Much has been done to study the effects of PTSD on personal and marital relationships, but little has been done to investigate how time spent married could mitigate the effects of PTSD. Although there is a substantial amount of research on the positive effects of marriage on mental health (e.g., Diener et al. 1999; Gove and Shin 1989; Ross et al. 1990; Seeman 2002; Wright and Aquilino 1998) as well as the positive effects on overall health (e.g. Adams and Blieszner 1995; Ross et al. 1990; Schone and Weinick 1998; Umberson et al. 2008;

Waite and Gallagher 2002). This study specifically sought to determine whether the longer a person with PTSD was married, the better that person's outcomes could be due to the emotional support provided by a loving partner during difficult times. The amount of time spent married does not appear to significantly change or moderate the relationship between military service during the Vietnam War and long-term PTSD. While these findings do not support previous research on the possible positive effects of marriage on mental health and the idea that marriage can help mitigate the effects of PTSD (Cohen and Wills 1985), they are not definitive. These findings suggest that although there could be positive effects on mental health from marriage, the impact of war might be even more far reaching than expected. This study indicates that even when an individual is married for long periods of time, the negative effects of war as measured by PTSD can endure possibly posing a threat to later-life outcomes and overall well-being. Future research could examine whether the effects of a partner having PTSD affects/lowers the quality of marriage for Vietnam veterans, thereby erasing any potential moderating effects of marriage on an individual's PTSD.

Limitations

One of the main limitations of this study is that the respondents are still relatively young—between 60 and 64 when the most recent data was collected—and the ADL and IADL measures are not likely to predict or show any significant declines or relative differences between the two groups at these younger ages. Future waves of the *Life and Family Legacies* could provide more insight into the differences in physical health during the aging process as we are able to get more data on the respondents as they age and become more likely to experience physical decline. It is quite possible that as these baby boomers age, the impact of military service—especially for those who saw combat—would begin to separate them from their

nonveteran peers by exhibiting worse physical health outcomes (Kinosain et al. 2007). Another possible explanation is that there simply are not any major physical health differences between these two groups. While previous findings suggest that military service had a positive effect on physical health outcomes, it is possible that the baby boomer generation had different health practices than previous generations, which could have a leveling effect on health. Also, individuals from lower SES backgrounds were more likely to be drafted during the Vietnam War, which could possibly indicate that those individuals did receive health benefits from military service that helped them to age as successfully as their nonveteran peers from higher SES backgrounds.

While the *Life and Family Legacies* data provides data from the Vietnam War in 1966, from shortly after the war ended in 1980, and three decades later in 2010, it does not allow researchers to generalize effects to the whole population. The biggest reason for this is a lack of racial/ethnic diversity in the sample—approximately 98% of the respondents are white. The results of this study could have been different had there been greater ethnic/racial diversity in the sample. Minorities have been shown to have lower health outcomes than whites (Jha et al. 2001), and black veterans in particular have had lower health outcomes than their white veteran peers (Trivedi et al. 2011).

Regarding PTSD and mental health, PTSD is a clinical diagnosis and this data does not ask whether or not a person has ever been diagnosed with PTSD by a clinical professional; data for this study were obtained via survey questionnaire, and responses could indicate general distress rather than actual PTSD (Breslau 2009). However, this study relied on survey questions from the PCL-17, which has been shown to accurately predict PTSD in survey respondents (Keen et al. 2008).

CONCLUSION

This study compared the later-life outcomes of physical functioning and mental health between baby boomer veterans and nonveterans. Physical functioning was measured by (ADLs and IADLs) and mental health by PTSD. While no differing levels of physical functioning were found between noncombat veterans and their nonveteran peers, there were differences between combat veterans and their noncombat veteran and nonveteran peers. These findings suggest that the difference baby boomer veterans' health outcomes and nonveterans is exposure to combat. Results confirmed that baby boomers who served in Vietnam, especially those who saw combat, were more likely to experience PTSD and thus show relatively lower health. When comparing mental health outcomes, noncombat baby boomer veterans' outcomes are comparable to nonveterans, but combat veterans' outcomes are worse.

From a life course perspective, it appears that the contingency of the Vietnam War did not significantly affect the outcomes of those who simply served in the War, but it does appear to have an impact on those who saw combat during their service. While the homecoming experience was different for Vietnam veterans than for previous generations (Elder et al. 1991), this particular group of baby boomers did not seem to be as negatively affected by this environment as was expected, suggesting that perhaps the social context surrounding the War either was not as significant as expected or that the greater effects may have yet to appear as this cohort ages. One possible explanation why this group of veterans were not as negatively affected by the social context surrounding the Vietnam War as was expected are the medical and technological advances in the past few decades. Another possibility is that the baby boomers were more resilient to the potentially negative effects of the social environment than expected. Regarding marriage, the results of this study indicate that baby boomers who served in Vietnam

and have since experienced PTSD do not appear to have had this particular health outcome affected by their time spent married. In sum, baby boomer veterans' physical functioning has not been as negatively affected by their war experience as expected, if they were able to avoid combat, and while they are at significantly greater risk for having PTSD, their symptoms are not significantly mitigated by marriage as was expected.

Future research from upcoming waves of this data and/or other samples of baby boomer veterans could still prove profitable. While it was incorrectly assumed that simply serving during the Vietnam War could have negative effects on later-life outcomes—due in part to the social context of the era—this study suggests that serving in combat while in the military could have a meaningful impact on outcomes as veterans age. The aim of this study was not to determine the effects of combat on veterans, but the results suggest that controlling for combat and further investigating how and why combat can negatively affect veterans physical functioning is important for veteran research. In conclusion, it is not the contingency of military service that has a meaningful impact on veterans, but the type of service given while in the military.

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TABLES

Table 1: Descriptive Statistics

	Nonveteran[1]	Noncombat Veteran[2]	Combat Veteran[3]	Combat Support[4]		
	Mean	Mean	Mean	Mean	Min	Max
Dependent Variables						
ADLs	.699	.714	.769	.725	0	1
IADLs	.124	.131	.208	.157	0	1
PTSD	.014	.027	.138	.051	0	1
Predictor Variables						
White	.977	.981	.960	.990	0	1
Educate						
High School	.130	.145	.245	.232	0	1
Some College	.222	.358	.465	.455	0	1
4-Year Degree	.283	.248	.119	.152	0	1
Some Graduate	.120	.088	.038	.061	0	1
Graduate Degree	.244	.161	.132	.101	0	1
Income ($1,000s)	9.713	8.857	7.905	7.797	0.5	1.75
Employment Status						
Unemployed	.047	.057	.043	.040	0	1
Employed	.597	.536	.447	.450	0	1
Retired	.355	.407	.509	.510	0	1
Marital Status						
Married	.809	.824	.739	.775	0	1
Separated	.010	.006	.012	.015	0	1
Divorced	.104	.118	.155	.175	0	1
Widowed	.020	.015	.019	.010	0	1
Never Married	.056	.036	.075	.025	0	1
Duration Married (Years)	27.333	28.749	26.795	28.149	0	35.502

Note: [1]N = 785; [2]N = 332; [3]N = 161; [4]N = 201

Table 2: Odds Ratios for Logistic Regression Results for ADLs on Veteran Status

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Veteran Status							
Nonveteran (Ref.)							
Veteran Noncombat	1.051	1.049	1.049	.985	.974	.971	.937
Combat Veteran	1.426	1.418	1.418	1.247	1.240	1.234	1.092
Combat Support Vet	1.202	1.190	1.190	1.028	1.002	.991	.898
Age (in years)		1.058	1.058	1.019	1.015	1.012	.999
White			1.001	1.098	1.118	1.127	1.123
Income ($1,000s)				.928	.926***	.930***	.947***
Marital status							
Married (Ref.)							
Separated					.905	.878	.917
Divorced					1.114	1.125	1.121
Widowed					.705	.721	.739
Never Married					.664	.636	.709
Employment Status							
Employed (Ref.)							
Unemployed						1.379	1.301
Retired						1.137	1.077
Education Level							
High School (Ref.)							
Some College							.575*
4-Year Degree							.456*
Some Graduate							.461*
Graduate Degree							.370***

Note: N = 1301. *p<.05 **p<.01 ***p<.001

Table 3: Odds Ratios for Logistic Regression Results for IADLs on Veteran Status

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Veteran Status							
Nonveteran (Ref.)							
Veteran Noncombat	1.127	1.118	1.116	.997	1.007	.992	.989
Combat Veteran	1.837*	1.795*	1.802*	1.488	1.473	1.416	1.401
Combat Support Vet	1.409	1.357	1.353	1.088	1.076	1.048	1.040
Age (in years)		1.263*	1.263*	1.199	1.222	1.186	1.181
White			1.212	1.304	1.278	1.326	1.352
Income ($1,000s)				.872***	.879***	.891***	.896***
Marital status							
Married (Ref.)							
Separated					3.681*	3.368	3.374
Divorced					1.224	1.236	1.231
Widowed					.786	.828	.803
Never Married					1.336	1.258	1.317
Employment Status							
Employed (Ref.)							
Unemployed						1.728	1.728
Retired						1.554*	1.536*
Education Level							
High School (Ref.)							
Some College							.720
4-Year Degree							.759
Some Graduate							.818
Graduate Degree							.671

Note: N = 1291. *p<.05 **p<.01 ***p<.001

Table 4: Odds Ratios for Logistic Regression Results for PTSD on Veteran Status

	Model 1	Model 2	Model 3
Veteran Status			
Nonveteran (Ref.)			
Veteran Noncombat	2.004	1.753	.314
Combat Veteran	11.083***	7.968***	3.020
Combat Support Vet	4.226*	3.044*	3.669
Total Duration Married			0.951
Interaction			
Nonveteran X Duration Married (Ref.)			
Noncombat Veteran X Duration Married			1.075
Combat Veteran X Duration Married			1.048
Combat Support X Duration Married			.995
Age (in years)		1.310	1.348
White		.393	.351
Income ($10,000s)		0.885*	.891*
Marital status			
Married (Ref.)			
Separated		2.041	2.122
Divorced		1.675	1.161
Widowed		1.062	1.031
Never Married		1.273	.702
Employment Status			
Employed (Ref.)			
Unemployed		2.324	2.434
Retired		3.677*	3.514*

Note: N = 1302; *p<.05 **p<.01 ***p<.001