

## Social Work in Public Health

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/whsp20>

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Version of record first published: 05 Mar 2013.

To cite this article: Alexa Smith-Osborne (2013): Veterans Administration Health Care Policies as a Protective Mechanism Supporting an Expected Life Trajectory after Military Service, *Social Work in Public Health*, 28:2, 81-96

To link to this article: <http://dx.doi.org/10.1080/19371918.2011.552038>

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## Veterans Administration Health Care Policies as a Protective Mechanism Supporting an Expected Life Trajectory after Military Service

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Changes in the American military since the end of military conscription, as well as the increasing number of service-connected disabilities, suggest the need for increased consideration of the effects of health policies when assessing the impact of military service on young Americans' life course. This study analyzes data from the most recent National Survey of Veterans to investigate the health status, health benefits, and health care utilization of 2,773 Gulf War veterans, in association with resumption of their civilian life trajectory. Findings suggest that this sample of veterans may have poorer health status than previous veteran cohorts and did not fully utilize veterans' health care benefits to which they were entitled. This article examines whether veterans may usefully be considered a group at risk for health disparities, in that they have greater health risks and potentially poorer health status and access than mainstream Americans.

**Keywords:** Health status, health policy, health benefits, Veterans, disabled Veterans, Veterans Health Administration, resiliency, life trajectory

Concerns about equity in American health care policy have long plagued the health care sector (Ehrenreich & Ehrenreich, 1971; McKinlay, 1973; Mushkin, 1974; Skocpol, 1992). Policy analysts have identified that policy inequity in this sector cannot be explained only by income distribution in a free market economy (i.e., poverty), because, among other reasons, the health sector is characterized by involuntary, often unplanned, consumption of goods and services (Aday & Anderson, 1974; Fein, 1973; Fuchs, 1973). In 2002, the federal government announced the Health People 2010 Initiative, the goal of which was to address and eliminate health disparities among all population groups in the United States over the following 8 years (U.S. Department of Health and Human Services, 2002). The Department of Veterans' Affairs (VA) is one of three cabinet-level departments of the federal government involved in direct provision of medical care to the American public (Peters, 2004)—constituting the largest integrated health delivery system in the United States—and, as such, has been integrally involved in this initiative (Fine & Demakis, 2003).

Previous studies have found that, despite the relative accessibility of the VA health care delivery system operated by the Veterans Health Administration (VHA), Veterans who utilize

their Veterans' health benefits have lower income, poorer health status, and fewer sources of health insurance/benefits (Fine & Demakis, 2003; Richardson, Engle, Hunt, McKnight, & McFall, 2002). This prior literature may suggest that Veterans experience barriers to accessing, or prefer not to access, health care in the VA health system, or may simply reflect the VHA income eligibility requirements and the health disparities related to race, ethnicity, or poverty (Cornelius, 2004). VHA copayments could lead income-eligible Veterans to use other cheaper health care systems or benefits if they have access to them. Further, access to VA health care may be more limited in rural areas, where fewer VA facilities are located.

Changes in the composition and role of the American military since the end of military conscription (Harris, 1976), as well as the increasing number of Veterans seeking and securing benefits for service-connected disabilities (Committee on Veterans' Compensation for Posttraumatic Stress Disorder [CVCPTSD], 2007), suggest the need for increased consideration of health access and status when assessing the impact of military service on young Americans' life course (Shakotko et al., 1981; Shakotko & Grossman, 1982; Shanahan, 2000; Thoits, 1983; Wolfe, 1985). Elder's research (1985, 1986, 1998) suggests that military service functions as a protective factor or positive turning point for persons who had experienced adversity earlier in life. This perspective is supported by the experience of military social workers (J.J. Harris, personal communication, July 14, 2006). In contrast, recent research suggests that Veterans may be at a disadvantage in resuming an improved life trajectory compared to civilians of the same background and age (Angrist, 1993, 1998; Angrist & Johnson, 2000; Savoca & Rosenheck, 2000), despite the incentive of Veterans' educational benefits that provide access to higher education (Fernandez, 1980, 1982) and the availability of low cost VHA health care to recently serving, lower income, and service-disabled Veterans.

Thus, it is important to investigate health policies as potential protective mechanisms—that is, as contributors to resilient versus nonresilient outcomes for Veterans, who have experienced adversity/stressful life events concomitant with military service in time of war (Luthar, Cichetti, & Becker, 2000). For this study, because the expectation of improved life chances is a major incentive for joining the military in the All Volunteer Force (AVF) (Fernandez, 1980, 1982), *nonresilient outcomes* were defined as those outcomes which do not reflect improved life chances expected by Veterans after military service.

Contributors to nonresilient outcomes that have been suggested in the literature include five major factors. Deleterious service effects on health (Boscarino, 1997; David et al., 2002; Iowa Persian Gulf Study Group, 1997; Southwick et al., 1995) and health disparities limiting access to health care (Druss & Rosenheck, 1998; Rosenheck, Bassuk, & Salomon, 1999; Rosenheck et al., 1998) are direct health factors. Loss of time in the civilian workforce (Angrist, 1993, 1998; Savoca & Rosenheck, 2000) and inability to complete higher education due to service-connected conditions (Fernandez, 1980; Kessler, Foster, Sanders, & Stang, 1995; Morrison et al., 2002; Perri, 1984; Savoca & Rosenheck, 2000; Smith-Osborne, 2005, 2006, 2009b) are health-related labor factors. Social network factors include service-connected disruption of family income (Angrist & Johnson, 2000), family relationships, and other sources of social support (Benotsch et al., 2000; McCubbin & Dahl, 1976; McCubbin, Dahl, Lester, Benson, & Robinson, 1976; McCubbin, Hunter, & Dahl, 1975; Sutker, Davis, Uddo, & Ditta, 1995; Taft, Stern, King, & King, 1999).

## RESEARCH AIMS

### Research Question

This article examines whether VA health care services to first Gulf War Veterans are associated with increased educational attainment (years of formal schooling), the major expected resilient outcome

identified by Veterans of the AVF era. The research considers whether the health disparities' variables of minority status and income may be usefully considered in this context of Veterans' access to and utilization of health services as a protective mechanism supporting the desired life trajectory of college attendance after the turning point of military service.

### Conceptual Model

Although health status and education level can influence each other in either direction, this study examines the hypothesized association of increased health care access, controlling for health status, with increased educational attainment for Veterans at a point in time 10 years after their military service in a combat era. The rationale for selection of the included variables and their connections is as follows.

Young adults volunteering for military service are required to be in good health, and military service does offer health care that is high quality, easy access, and free, including dental care, to which disadvantaged young adults may not otherwise have had access (All the Benefits of Service, 2005). However, many leave the service in poorer health status than at entry due to service-connected disabilities and conditions (Iowa Persian Gulf Study Group, 1997; Ouimette et al., 2004; Rosenheck et al., 1999) and then rely on the VHA health care system to obtain access to care if they can qualify due to recent military service, a service-connected disability, or low income (Rosen et al., 2004; Veterans Administration [VA], 2005).

In addition, Veterans reporting posttraumatic stress disorder (PTSD) symptoms have been found to have poorer health status overall than other Veterans (Kimerling, Clum, & Wolfe, 2000; Ouimette et al., 2004; Sutker et al., 1995; Taft et al., 1999; Wolfe et al., 1999), and female Veterans who have been raped or assaulted while in military service report poorer health status than other female Veterans (Kimerling et al., 2000; Sadler, Booth, Mengeling, & Doebbeling, 2004). PTSD as a risk factor for medical morbidity in Veterans has been found even after controlling for such confounders as prior medical history, hypochondriasis, poor health habits, and socioeconomic status (Boscarino, 1997).

This health status disparity is becoming more pronounced. The number of Veterans receiving disability compensation for PTSD increased by 79.5% between Fiscal Years 1999 to 2004 and accounted for 20.5% of all compensation benefits (CVCPTSD, 2007, p. 2). Further, a recent review of VA PTSD compensation policies suggests that limited coordination between the Veteran Benefits Administration (VBA) and the VHA and inappropriate rating procedures for this chronic condition may limit health care access for this group of Veterans (CVCPTSD, 2007, p. 14).

Thus, access to more sources of health coverage and health services may be associated with more resilient outcomes after military service. The hypothesized relationships and directions of association of variables being tested in the study are shown in Figure 1.

## METHOD

### Data Source

This study is a secondary data analysis of the 2001 National Survey of Veterans (NSV). The 2001 NSV was the fifth and most recent in a series of nationwide surveys of U.S. Veterans, and the first to include full data on AVF-era Veterans (U.S. Department of Veterans Affairs [USDVA], 2001). The reference period for the NSV 2001 was the year 2000. The NSV used a single cross-sectional research design to collect self-report data via a computer-assisted telephone interview (CATI) from 20,048 U.S. Veterans.

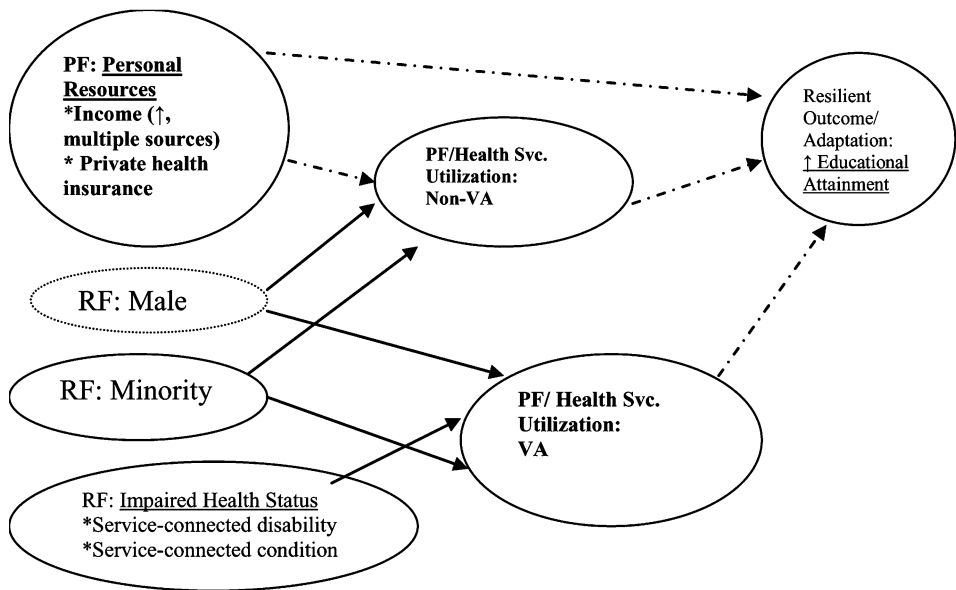


FIGURE 1 Hypothetical conceptual model. PF = protective factor; RF = risk factor. Dashed lines indicate the protective and solid risk factors. Bold means associated protective mechanism for increased educational attainment.

Sample

This study drew a sample from the NSV data set consisting of Veterans who would have been approximately age 18 or older at the beginning of the Gulf War 10 years earlier. Seventy-five percent of the sample drawn was between ages 18 and 36 at the start of the war, the typical age range for young adulthood used by life course theorists. The mean age of the sample at the time of interview was 38.13 (*SD* = 10.45).

The study sample included men and women older than age 18 at the beginning of the war with 1 to 11 years of active duty service in the Gulf War period. Veterans with less than 1 year of service are typically ineligible for Veterans' benefits (All the Benefits of Service, 2005; VA, 2005). In contrast to previous secondary analyses of Surveys of Veterans (e.g., Angrist, 1993; Fontana, Schwartz, & Rosenheck, 1997), this study included women, since the NSV (USDVA, 2001, pp. 4–7) indicates that, compared to male Veterans, proportionately more women served during the two most recent service periods; thus, as intended, this study sample is similar to the demographics of AVF troops currently serving in Iraq and Afghanistan. The total sample size initially extracted for inclusion in this study was 2,787. The final sample size for this study was 2,773, after cleaning and age restrictions. A priori power analyses using Power and Precision 2 software (Borenstein, Rothstein, & Cohen, 2001) found sufficient power for each of the planned statistical analyses described in the Data Analysis section.

Measures

Variables utilized in descriptive analyses were unmodified items from the NSV interview questionnaire. Most independent variables utilized in multivariate analyses were unmodified items from the NSV interview questionnaire. The resilient outcome indicator selected as the dependent variable in multivariate analyses was highest grade completed at the time of interview (approximately 10 years

their service in the Gulf War). This item was recoded into a 7-level item, treated as continuous in the analyses, as recommended by DeVaus (2002, p. 45) when using robust statistical analyses. The seven levels were 0 to 11 years (less than a General Equivalency Diploma [GED]/diploma), 12 years (GED/diploma), 13 years (vocational-technical/some college), 14 years (associate's degree), 16 years (bachelor's degree), 17 to 18 years (master's degree), and 19 to 20 years (doctoral degree). Minority status was used as a dichotomous control variable (minority = 1 and White = 0). The covariate of GI Bill utilization was dummy coded to 1 = "Yes, use for bachelor/graduate degree" and 0 = ("No, use for other." Nonlabor income was a continuous variable of number of sources of income (ranging from 0–9), and included such sources as Social Security, VA disability compensation, public assistance, and unemployment insurance benefits; in some analyses where noted, the dummy coded disaggregated sources of income were used. Health status variables used in follow-up analyses were the continuous variable of percentage of service-connected disability (from 0%–100%) and the dummy coded variables of self-reported, current general state of health (1 = good, 2 = fair to poor), presence of a service-related condition, and PTSD treatment in past year.

### Data Analysis

Statistical analyses were conducted using SPSS 14.0 software within a Windows environment. Descriptive analyses examined how these Veterans were insured, their patterns of VA health service utilization, and the reasons they gave for not utilizing VA health benefits and services. Hierarchical multiple regression analyses following the method of Cohen, Cohen, West, and Aiken (2003) were performed to test the association of VA health service and benefit use and possession of private health insurance with resumption of expected postservice life trajectory (operationalized as level of educational attainment). Although it would have been desirable to control for educational level prior to service entry in the model, this variable was not captured by the NSV. In one regression model, demographic variables were entered on Step 1, number of times VA outpatient services were used in the past year, use in the last year of VA prescriptions, prosthetics, environmental hazard treatment, and mental health/substance abuse treatment was entered on Step 2, being insured with private health insurance was entered on Step 3, and use of non-VA behavioral health services was entered on Step 4. In another regression model, the same variables were entered in the first four steps, and use of the GI Bill since leaving the military was entered on Step 5. Follow-up regression analyses are described below.

## RESULTS

### Sample Characteristics

The sample included 2,773 Veterans: 19% females and 81% males, 71% White and 29% minority, 75% between ages 18 and 36 at the start of the war. More than 75% of the sample had served outside the continental United States, 43% in a combat zone.

Sixty-five percent were married and living with their spouse, and 61.7% owned their residence, or it was being purchased by them or someone in their household. The average number of children was 1.24 ( $SD = 1.32$ ), with 37% of the sample reporting having no children. On average, these Veterans indicated their highest educational attainment was high school graduation and some college credits, whereas 44% had a college degree. They worked an average of 39.7 hours weekly and had a mean annual family income of \$47,322.82 ( $SD = \$43,121.18$ ). These Veterans reported an average of 2.28 ( $SD = 1.21$ ) sources of nonlabor income.

Gulf War Veterans' Health Status

The majority of Veterans in this sample (58.8%) reported that their general health status was good or very good, whereas 22.8% stated their health status to be fair or poor. However, 34% reported they had been exposed to environmental hazards during their military service, whereas 54% of the Veterans reported experiencing depressive symptoms in the past month. Among minority Veterans, 29.1% reported their health status was fair or poor, as compared with 19.8% of Whites.

Another Veteran health indicator, as determined by the Veterans' Health Care Eligibility Reform Act of 1996, is the health care enrollment priority group (USDVA, 2001). Thirty-three percent of these Gulf War Veterans, compared to 56.1% for all Veterans, were calculated by the VHA to fall in Health Care Priority Group 7, the lowest need group, whereas the next largest group, 17.7%, fell in Priority Group 3, indicating the presence of disabling conditions, including service-connected disabilities rated at 10% to 20%. The next largest group for all Veterans was the low-income, nondisabled Priority Group 5. Additionally, 49.2% stated they had a service-connected disability rating; of those, 23.4% had a rating of 50% to 100% disabled. Of the 11% of Veterans who were unemployed and not looking for work, 41% stated their main reason was being disabled. Further, 27.6% of the sample reported that they were limited in the kind of work or regular daily activities they could perform due to health problems, whereas 34% reported that pain specifically interfered with their work moderately to extremely. Of 20 health conditions queried in the NSV, the condition most frequently endorsed (other than the need for eyeglasses) was chronic severe pain (by 661 Veterans or 24% of those responding to the item).

Health Care Benefits and Utilization

Gulf War Veterans reported coverage by a variety of types of health insurance other than VHA benefits (see Table 1), primarily private health insurance coverage, managed care type plan.

The majority of Veterans in this sample who reported receiving specific health services in the previous year did not receive them from VA facilities, with the exception of those receiving treatment for environmental hazard exposure (see Table 2). Almost one half who received behavioral health treatment did so in VA facilities, however, and one third of those who had received outpatient treatment used a VA facility. Seventy-four percent of Veterans, or 1,407, responding to the item on lifetime benefit use ( $n = 1,907$ ) stated they had never used the VA health benefits to which they were entitled.

The two most frequent reasons cited by Veterans who had never used VA health care (see Table 3) were that they did not need care in the past year and that they had other sources of health

TABLE 1  
Gulf War Veterans' Coverage by Non-Veterans Affairs Health Insurance

<i>Type of Health Insurance</i>	<i>Frequency</i>	<i>%</i>	<i>Total Responding</i>
CHAMPUS	838	30.2	2,748
Private/non-HMO	1,746/935	63.0/33.7	2,756/2,773
Medicare	94	3.4	2,756
Medicaid	28	1.0	2,760
Indian health/other government	178	6.4	2,754

CHAMPUS = Civilian Health and Medical Program for the Uniformed Service;  
HMO = health maintenance organization.

TABLE 2  
Utilization of Veterans Affairs (VA) Health Benefits in Previous Year (2000)

<i>Type of Service</i>	<i>Number Using VA</i>	<i>%</i>	<i>Total Who Used Type of Service</i>
Emergency room	220	27	805
Inpatient	71	25	285
Outpatient	693	33	2,091
Prescriptions	707	30	2,323 est.
Behavioral health	171	44	390 est.
Home health	12	26	47 est.
Prosthetics	201	30	671 est.
Environment Hazard Treatment	71	57	124 est.
Have ever used VA health benefits	500	18	2,773

care. For Veterans who had used VA health care in the past, the two most frequent responses were that VA health care was inconvenient and that they had other sources of health care.

### Use of Health Services/Benefits

In the first regression model associating VA health services and non-VA health benefits with level of educational attainment ten years after the Gulf War, the overall model was significant ( $F = 48.16$ ,  $p < .0005$ ) and accounted for 15.4% of the variance in educational attainment (Adjusted  $R^2 = 15\%$ ; see Table 4). However, none of the VA health services was significantly associated with educational attainment. The only such health benefit was private health insurance, which was associated with an added one-fifth year in educational attainment. Further, being female, older, and having higher income were significantly associated with higher educational attainment, whereas being a minority was significantly associated with lower educational attainment. When the

TABLE 3  
Why Veterans Have Not Used Veterans Affairs Health Benefits in  
Previous Year (2000) or Ever

<i>Reason</i>	<i>Frequency Past Year</i>	<i>% (n = 2,773)</i>	<i>Frequency for Those Never Using</i>	<i>% (n = 1,907)</i>
Did not need care	450	16.2	380	19.9
Not aware	270	9.7	314	16.4
Not entitled	271	9.1	238	12.4
Treated rudely	30	9.1	NA	NA
Not know how to apply	50	1.8	38	1.9
Not want VA				
Assistance	114	4.1	80	4.1
Red tape	91	3.3	60	3.1
Never considered	53	1.9	27	1.4
Poor quality	105	3.8	59	3.1
Other sources	631	22.8	346	18.1
Inconvenient	536	19.3	254	13.3
Other	310	11.2	180	9.4



TABLE 4  
Multiple Regression Model of Association of Veterans Affairs (VA) Health Care Benefit Use with a Resilient Life Trajectory Outcome: Educational Attainment ( $n = 2,017$ )

Variable	<i>b</i>	<i>SE b</i>	$\beta$	<i>t</i>	<i>p</i>	$\Delta R^2$	$R^2$	Model <i>F p</i>
Education						.001	.15	28.34 <.0005
Family income	.31	.03	.22	9.36	<.0005			
Nonlabor income	.17	.05	.10	3.85	<.0005			
Gender	.82	.12	.14	6.75	<.0005			
Age	.04	.006	.18	7.16	<.0005			
Minority status	-.20	.09	-.05	-2.21	.03			
VA outpatient	.01	.01	.04	1.68	.09			
VA prescriptions	.26	.13	-.05	-2.05	.04			
VA environmental	-.29	.27	.02	1.06	.29			
VA prosthetics	-.03	.19	-.004	-.18	.86			
VA behavioral	-.02	.22	-.002	-.10	.92			
Private insurance	.11	.10	.03	1.11	.27			
Non-VA behavioral	.25	.18	.03	1.44	.15			

model was analyzed with private health insurance entered before the VA health service variables, to examine whether presence of health insurance may be associated with lower use of the VA health care system as suggested by the descriptive statistics, private health insurance became nonsignificant ( $b = .13$ ,  $p = .20$ ), and use of VA health services remained nonsignificant.

Use of Veterans' educational benefits for college since leaving military service was then added in the last step in a second regression model (see Table 5). This model was also significant ( $F = 15.42$ ,  $p < .0005$ ), and accounted for 17.4% of the variance in educational attainment (Adjusted  $R^2 = 16.3\%$ ). The use of GI Bill benefits was significantly associated with more than one year additional educational attainment. However, in this model, private health insurance

TABLE 5  
Multiple Regression Model of Association of VA Health Care Benefit and GI Bill Use with a Resilient Life Trajectory Outcome: Educational Attainment ( $n = 612$ )

Variable	<i>b</i>	<i>SE b</i>	$\beta$	<i>t</i>	<i>p</i>	$\Delta R^2$	$R^2$	Model <i>F p</i>
Educational attainment						.11	.21	11.84 <.0005
Family income	.17	.06	.13	3.15	.002			
Nonlabor income	.08	.07	.05	1.10	.27			
Gender	.60	.19	.12	3.10	.002			
Age	.04	.01	.19	3.97	<.0005			
Minority status	-.14	.14	-.04	-.98	.33			
# times used VA outpatient	.01	.01	.02	.45	.65			
Used VA for prescriptions	-.04	.21	-.01	-.19	.85			
Used VA for environmental hazard exposure	.21	.40	.02	.51	.61			
Used VA for prosthetics	-.32	.29	-.05	-.20	1.09			
Used VA behavioral health	.37	.41	.04	.92	.36			
Have private health insurance	.08	.18	.02	.43	.67			
Used non-VA behavioral health	.13	.27	.02	.47	.64			
Used GI Bill for college	1.52	.17	.33	8.89	<.0005			

TABLE 6  
Significant Variables in a Multiple Regression Model of Association of Veterans Affairs (VA) Health Care Benefit Use and Sources of Nonlabor Income with a Resilient Life Trajectory Outcome: Educational Attainment ( $n = 2,021$ )

Variable	<i>b</i>	<i>SE b</i>	$\beta$	<i>t</i>	<i>p</i>	$\Delta R^2$	$R^2$	Model <i>F p</i>
Educational attainment						.002	.208	29.16 <.0005
Family income	.24	.03	.16	7.12	<.0005			
Gender	.78	.12	.14	6.66	<.0005			
Age	.04	.01	.18	6.56	<.0005			
Social Security	-.47	.20	-.05	-2.39	.02			
Interest and dividends	1.22	.10	.27	12.37	<.0005			
Income-other	.33	.15	.04	2.19	.03			
Used non-VA behavioral health	.33	.17	.04	1.95	.05			

was not significantly associated with educational attainment. One VA health benefit, treatment for exposure to environmental health hazards, acted as a significant suppressor or risk factor for educational attainment, being associated with close to one year less in education, when use of the GI Bill was included in the regression model.

### Income Source

To examine the impact of individual types of nonlabor sources of income, these two models were reanalyzed using the disaggregated variable, with the same order of variables in the hierarchical entry (see Tables 6 and 7). The first model, without inclusion of GI Bill use, was significant ( $F = 29.16$ ,  $p < .0005$ ) and accounted for 20.8% of the variance in educational attainment (Adjusted  $R^2 = 20.1\%$ ). Neither VA health services nor private health insurance were significantly associated with educational attainment, whereas being female, older, having higher family income, having interest and dividends income, "other" nonlabor sources of income, and having received non-VA behavioral treatment in the past year were significantly associated with higher educational attainment. Social security as an income source was significantly negatively associated with

TABLE 7  
Significant Variables in a Multiple Regression Model of Association of Veterans Affairs (VA) Health Care Benefit Use, Sources of Nonlabor Income, and GI Bill Use with a Resilient Life Trajectory Outcome: Educational Attainment ( $n = 613$ )

Variable	<i>b</i>	<i>SE b</i>	$\beta$	<i>t</i>	<i>p</i>	$\Delta R^2$	$R^2$	Model <i>F p</i>
Educational attainment						.10	.23	9.54 <.0005
Family income	.14	.05	.12	.11	.01			
Gender	.54	.19	.11	2.80	.01			
Age	.05	.01	.21	4.01	<.0005			
Social Security	-.87	.37	-.09	-2.34	.02			
Disability pension	1.47	.56	.10	2.65	.01			
Interest and dividends	.48	.17	.11	2.89	.004			
Used GI Bill for college	1.45	.17	.32	.56	<.0005			

educational attainment. This may suggest that the sample cohort that was old enough to collect social security at the time of interview had lower educational levels.

When use of the GI Bill was included in the model ( $F = 9.54$ ,  $p < .0005$ , accounting for 23.6% of the variance (Adjusted  $R^2 = 20.9\%$ ), “other” sources of income and non-VA behavioral treatment became nonsignificant, VA health services and private health insurance remained nonsignificant, whereas disability pension income and use of the GI Bill were added to the other significant variables in the previous model.

### Post Hoc Analyses Controlling for Health Status

Further, these analyses were redone with health status variables entered in the first step: the variables of percentage of service connected disability ( $b = -.02$ ,  $p = .71$ ), PTSD treatment in the past year ( $b = .19$ ,  $p = .38$ ), current general state of health ( $b = -.66$ ,  $p < .0005$ ), and presence of a service-related condition ( $b = -.59$ ,  $p = .055$ ) were entered in alternate models. Findings of models with the health status variables that were significantly associated with educational attainment or approaching significance are discussed.

In the analysis including general health status ( $F = 28.1$ ,  $p < .0005$ ,  $R^2 = 22.8\%$ , Adjusted  $R^2 = 22\%$ ), use of VA services for environmental hazard exposure ( $b = .52$ ,  $p = .05$ ) was significantly associated with educational attainment, whereas the significance of the remaining variables’ associations with the dependent variable was unchanged. When use of the GI Bill was added to this model ( $F = 8.77$ ,  $p < .0005$ ,  $R^2 = 24.7\%$ , Adjusted  $R^2 = 21.9\%$ ), the VA and non-VA service utilization and “other” income source became nonsignificant, although health status remained significantly associated with educational attainment ( $b = -.47$ ,  $p = .004$ ). In the analysis using presence of service-related condition ( $F = 15.07$ ,  $p < .0005$ ,  $R^2 = 25.1\%$ , Adjusted  $R^2 = 23.4$ ), use of non-VA behavioral health services became nonsignificant, and the only significant nonlabor income source was interest and dividends ( $b = 1.09$ ,  $p < .0005$ ), whereas use of VA outpatient services ( $b = .01$ ,  $p = .05$ ) and prescriptions became significant ( $b = -.35$ ,  $p = .02$ ), with the remaining variables’ significant associations were unchanged. When use of the GI Bill was added to this model ( $F = 4.55$ ,  $p < .0005$ ,  $R^2 = 28.1\%$ , Adjusted  $R^2 = 21.9$ ), sample size ( $n = 279$ ) dropped to less than 15 per independent variable, so results should be viewed with caution. Sample shrinkage in this model when GI Bill use was added precludes reliable interpretation of the effect of this variable on these relationships. A sample of 330 would have been optimal, although all assumptions were tested and met for this analysis. In this model, presence of service-related condition ( $b = -.99$ ,  $p = .06$ ) approached significance, while gender, family income, and all nonlabor income sources except disability pension ( $b = 2.19$ ,  $p = .01$ ) became nonsignificant. VA and non-VA services, except use of VA prosthetics ( $b = -.76$ ,  $p = .02$ ), became nonsignificant.

## DISCUSSION

### Effects of VA Health Policy on Veterans’ Health Status and Access

In this study, health status was found to be associated with educational attainment. Although a growing proportion of the U.S. population is uninsured or underinsured (Palley, 2000), the majority of this sample of Veterans held private health insurance, with the assurance of VHA health benefits in addition if their income was low enough or their service disability rating high enough to meet eligibility requirements for comprehensive health services as defined by the legislated priority groups. VA health policies can be viewed, then, as a health safety net for Veterans who leave military service with poorer health status or lower income. This Gulf War sample would appear

to be in particular need of such a safety net, as compared with earlier Veteran cohorts, because higher proportions of them met the criteria for classification in the health-compromised VA health priority groups. It is noteworthy that the majority of the Veterans did not use VA health services in the previous year, and those who had ever used VA services cited inconvenience as a contributing factor. Further, minority Veterans reported lower health status than White Veterans. The literature suggests that health disparities in access to health care may still be pertinent even when there is possession of benefits and access to general medical providers for some populations, such as residually unstable and minority Veterans (Rosenheck et al., 1999) and those reporting mental disorders (Druss & Rosenheck, 1998). It may be useful, then, to consider health disparities as one factor that could be related to study findings, and as a worthwhile construct to apply to the general Veteran population in future investigations of resiliency in reintegrating with civilian life and community.

### Effects of VA Health Policy and Health Status on One Exemplar Life Trajectory

A higher proportion of these Veterans had college degrees compared to the general American public in the same age groups during this period (44% vs. 29%; U.S. Bureau of the Census, 2001). Nevertheless, these Gulf War Veterans' average of 14 years education was no higher than the level reported for Vietnam War Veterans during the conscription period (Angrist, 1993), despite the fact that 98% of these AVF Veterans had a high school diploma or equivalent when they entered the service (U.S. Department of Defense, n.d., Chapter 2, Figure 2.5). In contrast, 82% of the general population age 18 to 24 at the time of the Gulf War (U.S. Census Bureau, 1992). This level represented a peak of educational quality in military accessions at the point of the first Gulf War, which has declined since then to a level of 92% in 2006 (Congressional Budget Office [CBO], 2007) with a trend of continuing decline (Kennedy, 2006; Lukey & Tepe, 2008, p. 6). This pattern suggests the need for continuing examination of the association between postmilitary health status, health disparities, Veteran health policy, and military service as a turning point in life trajectory, with postservice educational attainment as one important trajectory indicator.

All analyses suggested that being older, being female, and having higher annual family income are associated with increased educational attainment for Veterans. Models that did not control for health status found a significant association between private health insurance and educational attainment, but no significant association with VA health services. The exception was a suppression effect for VA environmental hazard treatment when use of the GI Bill was included in the model. Relative nonwage wealth indicators (i.e., interest and dividends and "other" sources of income) were associated with higher educational attainment, as was non-VA behavioral health treatment when not outweighed by the financial contributor of GI Bill use.

Thus, younger male Veterans and lower income Veterans across health status levels may be at a disadvantage in pursuing postservice education. Private health insurance and non-VA health services (behavioral) appear to have some importance in the postservice education trajectory. Further, the analysis of specific nonlabor income sources combined with the GI Bill found a significant association between receiving a disability pension and increased educational attainment, perhaps suggesting a protective effect of these combined benefits for fully disabled Veterans in pursuing higher education (Smith-Osborne, 2009a).

In contrast, analyses which controlled for health status and nonlabor income found the same potential protective effect for non-VA behavioral health treatment and combined access to disability pension income and the GI Bill, but a protective effect for VA treatment for environmental hazards (dissipated when the GI Bill was added to the model). Analyses that controlled for the presence of a service-related condition found a protective effect for use of VA outpatient services and income from interest and dividends, but a suppressor effect for use of VA prescriptions. Thus, although the impact of VA health benefits, access, and service utilization varied by Veteran subgroup,

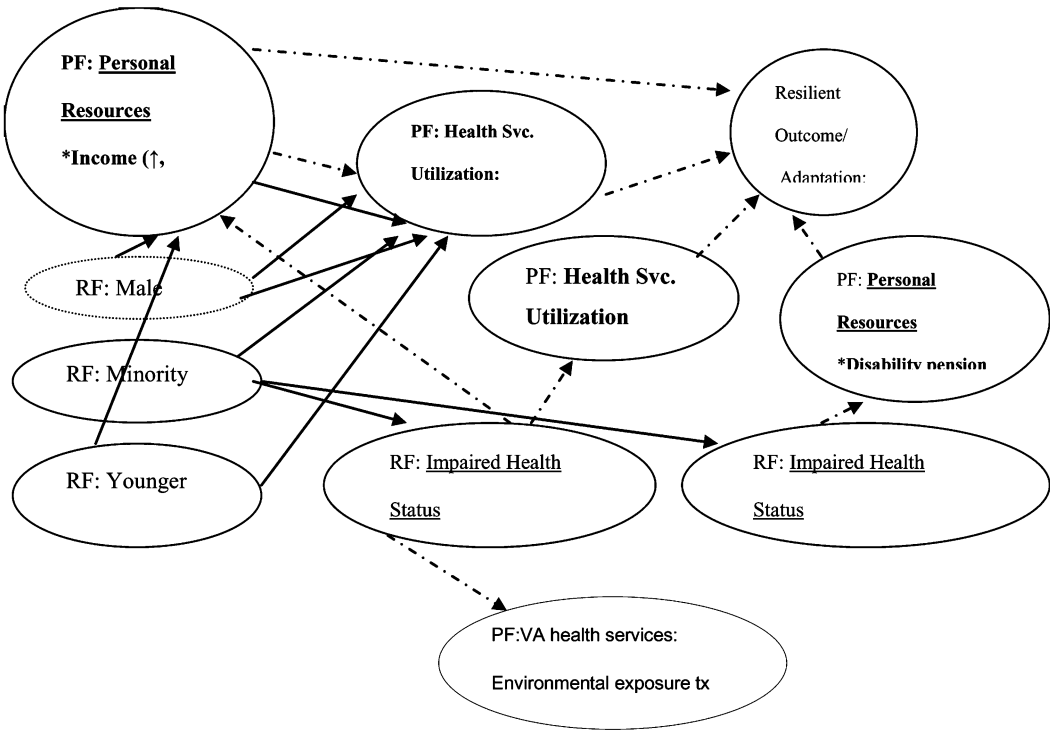


FIGURE 2 Revised conceptual model based on study findings. PF = protective factor; RF = risk factor; tx = treatment. Dashed lines indicate the protective and solid risk factors. Bold means associated protective mechanism for increased educational attainment.

this study found limited protective effect of VA health services and benefits on one expected life trajectory for Veterans, as conceptualized in furthering educational attainment (see Figure 2). To the contrary, this study provides some additional support to prior literature that suggests that decreased health status resulting from military service may compromise future life trajectory, in that poorer health status was a risk factor for lowered educational attainment, even when use of VA educational benefits is added into the equation. For the group of Veterans qualifying for a VA disability pension, the combination of income and educational benefits, rather than health benefits, is related to increased educational attainment. The combination of VA health and educational benefits may not be compensatory for Veterans who have experienced service-related compromises to health status, in terms of resuming one improved and life stage-appropriate life trajectory following military service.

Implications for Future Research and Policy Development: Veterans' Health and Resumption of Civilian Life

Studies of military recruitment trends suggest that geographical areas with more unemployment and poverty may be disproportionately represented (National Priorities Project, 2006; USDoD, n.d.), although a recent study by the CBO (2007) found that the lowest- and the highest-income families were less likely to be represented among the enlisted force than their civilian peers. That same CBO study stated that their findings were consistent with the National Priorities Project findings at the neighborhood level, in that low- and middle-income neighborhoods were

overrepresented among recruits, as was the South as place of origin. Additionally, fewer recruits had fathers who were employed in the professions and executive occupations compared with the recruit-age civilian population. Future research on health disparities among the Veteran population should therefore investigate the possible confounding variable of childhood poverty at the neighborhood/contextual level as well as the individual/family level, because prior research suggests association of this variable with poor health status in adulthood, regardless of later income (Berger & Leigh, 1989; Boyle et al., 2007; Edwards & Grossman, 1979; George, 1993; Grossman, 1975; Hunt-McCool & Bishop, 1998; Houre et al., 2006; Poulton et al., 2002). Recent research continues to find race-associated disparities among Veterans using VHA services (e.g., McGinnis et al., 2003). These disparities clearly require continued investigation within the Veteran population, concomitant with further investigation of disparities among sub-groups of Veterans, such as those with PTSD (even if not in treatment recently), female Veterans, and rural Veterans.

Study findings suggest that targeted coordination of VA health and educational benefit policies, as well as increased referral to and coordination with non-VA behavioral health services, could be directed to enhancing the educational attainment of the less healthy group of recent Veterans, beyond the current level of vocational rehabilitation efforts. These study implications, drawn from this investigation of Gulf War Veterans, are consistent with the recent recommendations of the President's Commission on Care for America's Returning Wounded Warriors concerning changes in VA and DoD policies and benefits to meet the needs of current Afghanistan and Iraq Veterans (Dole et al., 2007). The VA could examine whether linking VA educational benefit counseling and applications with the most utilized VA health services would be cost-effective. For Veterans at varying levels of disability, further analysis of interaction effects of the GI Bill with disability benefits, and of disability benefits with specific health services, is warranted.

Current VA policies and policy recommendations rely on existing services available within higher education institutions to provide accommodations and special education services for Veterans with conditions and disabilities which affect cognition. However, experience with other populations with such conditions suggests that existing routine services may provide insufficient support (Megivern, Pellerito, & Mowbray, 2003; Ofiesh, Rice, Long, Merchant, & Gajar, 2002; Smith-Osborne, 2005; Unger, 1994). Supported education program models that have been successful in supporting increased educational attainment for persons with severe and persistent mental illness could be adapted, tested, and enacted in VA policy for health-compromised Veterans, parallel to VA vocational rehabilitation programs. Veterans' feedback that they do not utilize VA health services because they find them inconvenient, and because they have other sources of health care, seems to cast VA health as their provider of last resort. Further, national commissions and task forces have identified a shortage of trained health specialists and case managers in military and VA medical facilities, particularly mental health professionals, such as social workers, who will be most needed to address the increased rates of PTSD and traumatic brain injury (TBI) among newer cohorts of Veterans (Dole et al., 2007, p. 28 and appendix; West et al., 1993). If so, VA policies may need to address provision of supported education services and coordinated health/education benefits in non-VHA settings as well as VHA facilities.

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