

Original Research Article

The Role of Maternal Relationship in the Persisting Effect of Combat Exposure

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Abstract

Background and Objectives: The veteran population is aging. Combat exposure is associated with negative health and psychological outcomes in some, but not all veterans; others even appear to experience gains. One mechanism driving these varied responses might be early life relationships. This study investigated the extent to which the quality of early maternal relationships influences the association between combat exposures and life satisfaction (LS) among older male veterans.

Research Design and Methods: Data were drawn from a pooled sample of male veterans in the Health and Retirement Study who completed the 2013 Veteran Mail Survey ($N = 1,160$). We used ordinary least squares regression to examine the association between combat exposures (with and without exposure to death) and LS, and the moderating effect of maternal relationship quality on this association.

Results: We found a significant positive association between maternal relationship quality and LS, and a significant association of combat that was dependent on maternal relationship quality. Specifically, combat-exposed veterans with poor maternal relationship quality reported lower LS, whereas combat-exposed veterans with high relationship quality reported higher LS—relative to their noncombat-exposed counterparts. The effects of exposure to death of hazardous toxins did not mediate or moderate this relationship.

Discussion and Implications: Findings indicate that maternal relationships had a lasting influence on whether combat contributed to a positive, negative, or neutral long-term effect on wellbeing. Findings support previous studies that suggest early life factors may play an important role in the fostering of resilient health outcomes over the life course. Implications for preventative strategies in soldiers are discussed.

Translational Significance: Not all soldiers who go into combat experience long-term negative outcomes. Results from this study suggest that early life relationships provide important skills that influence how traumatic experiences shape quality of life over the life course for men in the military. This study suggests that clinicians not only need to identify men whose early life experiences promote lasting vulnerabilities, these combat-exposed men should be targeted so that they receive resources to build psychological resources in ways that help them recover from subsequent difficult life experiences.

Keywords: Life satisfaction, Post-traumatic growth, Veterans

There are over 20 million veterans in the United States, and their median age is currently 64 (United States Census Bureau, 2014). The connection of military service and long-term wellbeing is complex. The military can provide valuable resources in early adulthood, but it also potentially exposes individuals to life course disruptions and traumas (Settersten, 2006; Wilmoth & London, 2013). Further, research findings are mixed, suggesting older veterans may fare better, similar, or worse as they age compared with civilians (Spiro, Settersten, & Aldwin, 2016; Wilmoth, London, & Parker, 2010). With roughly half of older men reporting a history of military service (U.S. Dept. of Veteran Affairs, 2014), it is important to examine which service-related factors may or may not associate with long-term health outcomes.

A crucial but often unmeasured variable in understanding older veteran and civilian health is combat exposure (Settersten, 2006). A substantial proportion of today's older veterans served during conscription wartime eras such as World War II and Vietnam (United States Census Bureau, 2014). Wartime service encompasses many possible exposures that may disrupt or negatively impact the life course, including deployment, combat, trauma, and injury (Wilmoth et al., 2010). All of these, and especially in combination, can have lasting life course consequences. Combat exposure is associated with higher psychiatric and health-related problems, and treatment-related costs (Dohrenwend et al., 2006; Gade & Wenger, 2011; Price, Risk, Haden, Lewis, & Spitznagel, 2004; Richardson, Frueh, & Acierno, 2010; Toblin et al., 2012). These negative effects are thought to be driven substantially by specific traumas such as exposure to death or hazardous toxins that are often experienced during wartime combat (Taylor, Ureña, Carr, & Min, 2018). Studies now find that measuring these specific exposures is important in understanding the lasting burden of service for today's older veterans, but often research includes only a marker of likely wartime service as a general proxy (Ureña, Taylor, & Kail, 2017).

Although combat exposure appears to have a negative influence on some veterans, not all veterans are negatively affected. Indeed, some combat-exposed veterans experience no long-term negative outcomes, indicating that they appear to have cultivated or mobilized "resilience" in the face of life course disruption or traumatic events (Elder & Clipp, 1989). Others even appear to *benefit* from such exposures, whereby they experience better outcomes than those veterans not exposed to combat. Previous research suggests a "developmental legacy" of wartime service follows some veterans throughout life, with WWII combat veterans listing the ability to cope with adversity, self-discipline, and gaining a broader perspective among the positive influences of military service (Elder & Clipp, 1989). These benefits have been found to emerge for some in later life (Spiro et al., 2016). This phenomenon is now often described as post-traumatic growth (PTG) (Updegraff, 2000) and relates, in part, to individual's beliefs that they

are strong and able to cope with life after successfully navigating challenging situations (Tedeschi & Calhoun, 2004).

The extent to which difficult life events translate into good, bad, or neutral outcomes is not well understood, particularly in the context of military experiences. However, one area that may be particularly relevant is an individual's early life environment. A growing body of research suggests that our ability to process complex life events during adulthood is shaped heavily by our early life environment, and in particular, our relationship with important adults during childhood. Bronfenbrenner (1991) is famously credited with saying "every child needs at least one adult who is irrationally crazy about him or her." This statement is based on a foundation of research showing that during early life, development of meaningful relationships, particularly key parental role models, plays a critical role in providing children with the emotional skills to handle the challenges of adulthood (Medina & Magnuson, 2009). During childhood, we develop internal resources that prepare us to process events in our lives and strategies to recover from difficult circumstances (Graziano, Keane, & Calkins, 2010; Maselko, Kubzansky, Lipsitt, & Buka, 2011; Shaw, Krause, Chatters, Connell, & Ingersoll-Dayton, 2003). Though parental roles have been changing, for older adults today, fathers were more likely to be breadwinners and mothers more likely the primary caregivers for children (Hoffman, 1977). Importantly, positive maternal relationships have been shown to contribute to the development of good interpersonal skills, self-esteem, and problem-solving skills (Armstrong, Birnie-Lefcovitch, & Ungar, 2005), and internal psychological resources that have been specifically linked with resiliency (Campbell-Sills, Cohan, & Stein, 2006).

In contrast, childhood maltreatment and poor quality family relationships predict psychopathology well into later life (Weich, Patterson, Shaw, & Stewart-Brown, 2009). These kinds of difficult relationships are associated with low self-esteem, poor coping strategies, emotional-dysregulation, and interpersonal relationship difficulties, along with lower levels of resiliency (Campbell-Sills et al., 2006; Filipas & Ullman, 2006; Finzi-Dottan & Karu, 2006; Jude, 1994; Shaw et al., 2003). Such experiences can undermine one's ability to recover from stressors, and therefore, contribute to poorer overall wellbeing during later life. Problematic early life family relationships could also be accentuated by exposure to a diverse set of adverse childhood experiences (ACE), which have also been shown to contribute to negative late life outcomes (Dube, Felitti, Dong, Giles, & Anda, 2003; Sachs-Ericsson et al., 2016). ACEs are important to consider alongside maternal relationship quality since poor maternal relationships may shape or be shaped by other disadvantages in early life, and are associated with a broad range of outcomes including quality of life, health, psychological functioning, and mortality (Sachs-Ericsson, Corsentino, Rushing, & Sheffler, 2013; Sachs-Ericsson, Blazer, Plant, & Arnow, 2005; Sachs-Ericsson, Sheffler, Stanley, Piazza, & Preacher, 2017).

In evaluating the long-term impacts of combat experience and the potential for negative, positive, or neutral long-term outcomes, LS provides a global predictor of subjective wellbeing in later life. LS is thought to encompass an appraisal process of the quality of one's life that unfolds over-time based on individual, subjective criteria (Pavot & Diener, 2008). Negative physical and psychological long-term outcomes extending from wartime service (Taylor, Ureña, & Kail, 2016; Ureña et al., 2017) may work alternately or in tandem with the personal growth and positive reappraisals of experiences often thought to accompany PTG (Elder & Clipp, 1989). In this way, among veterans, LS may be an especially appropriate way to capture the varied implications of combat exposure experienced earlier in life (Settersten, Day, Elder, & Waldinger, 2012).

The present study is concerned with combat exposure as well as traumatic military experiences often experienced during combat like exposure to the dead and wounded. Although exposures to specific traumas are often associated with negative outcomes among veterans, previous studies show that the experience of combat overall is related to both positive and negative outcomes. A recent study found that combat exposure predicted higher rather than lower LS (Evans et al., 2018), which is consistent with another recent study that showed a majority (72%) of combat-exposed veterans screened for post-traumatic stress disorder (PTSD) also reported personal growth or positive appraisals related to such events (Tsai, El-Gabalawy, Sledge, Southwick, & Pietrzak, 2015). The current study is concerned with tapping into the effects of combat and related exposures as they relate to later life wellbeing, and specifically to understand for whom these exposures have lasting negative, positive, or null effects.

Specifically, the purpose of the present study is assessing the relationship between combat experiences among older male veterans in the United States and LS in later life in the context of the persisting influence of early life maternal relationship quality. Our study relies on retrospective responses provided by a sample of older male veterans drawn from the Health and Retirement Study, the only data source available to test these relationships among older adults. Although prospective data would be preferable, retrospective reports are necessary for capturing early life factors in studies about later life. Retrospective reports are known to be shaped by current circumstances (Haas, 2007), a known limitation of life history studies. Despite the limitations of the Health and Retirement Study (HRS), these data do offer some unique strengths important to the current study—the HRS has refined measures related to later life wellbeing and important historic data about events that occurred in adolescence/early adulthood forward. Individuals are more likely to remember accurately these kinds of data, particularly things such as parental characteristics, parental and respondent achievement (e.g., education and income), health factors and events, along with the timing and experiences related to military participation. Although several recent

studies have considered the role of military exposures on health in later life (Taylor et al., 2016), we are aware of no studies that have explored the relationship between combat exposure and LS in later life, particularly with respect to the way it is shaped by early parental relationships.

We hypothesize:

H1: Combat exposure will be associated with lower life satisfaction (LS) in later life.

H2: Early life maternal relationship quality will be associated with higher LS in later life.

We then examine whether and in what way maternal relationship quality influences the association between combat exposure and LS in later life. Thus, we hypothesize:

H3: Good early life maternal relationship quality will moderate (i.e., attenuate) the negative effect of combat exposure on LS.

Method

Data

Our study uses a cross-sectional sample of male veterans 51+ drawn from the HRS. The HRS is a biennial longitudinal study of adults age 51+ that began in 1992. In 2013, the HRS implemented a supplemental questionnaire focused on military related experiences among active duty veterans—the Veteran Military Survey (VMS)—which was provided to a subsample of HRS respondents who indicated previously serving in the military ($N = 1,860$ veterans). Our sample is based on completion of this survey, drawing from the male respondents who were age-eligible for the HRS (51+). A Psychosocial and Lifestyle leave behind questionnaire (LBQ) was piloted in 2004, and implemented in 2006 to a random sample of half of HRS respondents, with the remaining half completing the questionnaire in 2008. The survey has continued in the same pattern in subsequent biennial waves, so that respondents complete the survey every four years. Although LS, our outcome variable, has been included in every wave, the maternal relationship quality instrument was only included in the 2008, 2010, and 2012 data waves. For this reason, our sample is pooled based on completion of the LBQ in either 2010 or 2012, with the data file structured based on completion year, as well as completion of the VMS. We also use data drawn from the RAND HRS Data File (v.P), which is a cleaned and imputed data file developed for ease of use (Bugliari et al., 2016). Finally, we only include individuals who report having a mother and a father in their life prior to age 18 to decrease the potential bias associated with growing up having a relationship with only a single parent.

Specifically, among the 1,871 who were given the veteran's survey, we only included individuals who were male and age eligible for the HRS (i.e., age 51 years or older). This resulted in a total sample of 1,589. We then excluded those who did not provide responses in the VMS

for combat and military experiences, and those who did not fully complete the psychosocial questionnaire in either 2010 or 2012. This resulted in the loss of 236. We further excluded anyone who did not have data on our early life factor variables. These measures rely on the data collected during one of eight survey waves, but 190 individuals did not have data collected on these measures. In addition, 18 individuals were excluded because they did not have data for functional limitations. This produced a final sample of 1,145. We excluded 50 individuals who did not have a relationship with a father during their childhood to minimize bias of our results (sensitivity tests are described earlier in this memo). In total, our sample includes 1,095 veterans, 303 who reported combat experience, and 792 who did not. Although war cohort is not included as a measure in our study, using thresholds defined by Wilmoth and colleagues (2010), in our sample of older adult veterans, our sample included 41% who served during the Vietnam War, with only 23% serving in Korea, 12% in World War II, and about a quarter (24%) serving during peace time only.

Measures

Dependent variable

The dependent variable for this study is LS. This measure, the Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985), assesses subjective wellbeing (Pavot & Diener, 1993). The SWLS is based on five items: (1) "In most ways my life is close to ideal", (2) "The conditions of my life are excellent", (3) "I am satisfied with my life", (4) "So far, I have gotten the important things I want in life", and (5) "If I could live my life again, I would change almost nothing". The response scale was a Likert type scale 1–7, anchored by (1 = Strongly disagree and 7 = Strongly agree). The measure had a range of 1–7, with the mean of 5.085 ($SD = 1.4$). The Chronbach's alpha for this measure in our sample is 0.89.

Key variables of interest

We included two primary variables of focus for this study. We included a measure capturing *Maternal Relationship Quality*. This scale was comprised of three items drawn from the Psychosocial Questionnaire: (1) "How much time and attention did your mother give you when you needed it?" (2) "How much effort did your mother put into watching over you and making sure you had a good upbringing?" (3) "How much did your mother teach you about life?" The response scale was as follows: (1 = not at all, 2 = a little, 3 = some, 4 = a lot). The score was calculated as the average response to the three items. Our second measure is drawn from the 2013 VMS. We assessed whether the veterans were exposed to *Combat*. This measure is based on a question about whether they ever served in an active combat zone.

Early childhood factors

We included six control measures related to early childhood factors. Childhood socioeconomic status (*Childhood SES*) is measured based on the following question: Now

think about your family when you were growing up, from birth to age 16. Would you say your family during that time was pretty well off financially, about average, or poor?" Individuals were also able to indicate if their SES varied. Our response options included: *poor*, *average*, *well off* (reference group), and *variable SES*. We also included a measure of *self-rated health during childhood*. Specifically, individuals were given the following question: "Consider your health while you were growing up, from birth to age 16. Would you say that your health during that time was excellent, very good, good, fair, or poor?" This variable was measured as a continuous measure scored from 1 (poor) to 5 (excellent). Both of these measures were based on questions drawn from the core HRS survey waves. Beginning in 1998, individuals were asked about their childhood health and socioeconomic status, and these questions were asked only to new cohorts as they were added subsequent to 1998.

We also included factors related to early life exposures which are based on measures drawn from the psychosocial questionnaire. Our measure of early life traumas used the closest available measure in the HRS data to account for ACE, or early life traumas (see (Ezeamama et al., 2016). *Traumas before Age 18* is measured as a count (range 0–4) of the total number of the following self-reported traumas: (1) repeat a grade, (2) get in trouble with police, (3) parents were problem drinkers and/or used drugs, (4) physical abuse by parents. Note that the latter two traumas are consistent with definitions of ACEs from Dube et al. (2003). We also include *Relationship Quality with Father*, a single question was available: "I had a good relationship with my father before age 18." The response scale was a five-point Likert type scale anchored by: (1 = strongly disagree, and 5 = strongly agree). Finally, we controlled for parental educational attainment based on number of years of education the respondents' mother and father completed, a score based on total years, which is top-coded at 17.

Military factors

We control for exposure to several factors associated with military service to account for specific traumatic or harmful exposures that may be related or unrelated to combat experiences. All questions came from the VMS. First, we controlled for two specific exposures that may occur as a consequence of combat: *exposure to death*, which was measured with the question: During your military service, were you ever exposed to dead, dying, or wounded people? (exposed = 1). Second, we controlled for *exposure to toxins and hazardous materials*. Individuals were asked how likely they were exposed to hazardous materials, with options including definitely yes, probably yes, probably no, and definitely no. This measure was dichotomized so that individuals indicating definitely or probably yes were coded "1," all others "0." To address longer or repeated experiences during military service, we included *military duration*, measured as a categorical variable: *less than 3 years*, *3–5 years*, *6–9 years*, and *10 or more years*

(reference group). We also included an indicator measure for whether the respondent *recently used the VA* for medical services. Specifically, individuals were asked: “Have you obtained medical care or RX/drugs from a VA facility in the last 2 years?” Finally, we included an indicator measure for whether the respondent is *eligible to receive VA services*. Specifically, individuals were asked: “Are you eligible to receive services from the VA?”

Demographic measures

We include several demographic measures. *Age* is a continuous measure that ranges from 51 to 93. *Race* is measured as three mutually exclusive categories: Non-Hispanic White/Other Non-Hispanic Individuals (reference group), Non-Hispanic Blacks, and Hispanics. *Educational Attainment* is measured as a continuous measure based on years of completed schooling top-coded at 17 years. *Wealth* is measured as a continuous measure of household wealth, calculated as a net of assets and debt.

Health measures

Finally, we control for the health of respondents using two measures. First, we include *Self-rated health*, which is based on the following question: “Would you say your health is excellent, very good, good, fair, or poor?” Self-rated health is a continuous measure scored from 1 (poor) to 5 (excellent). We also include *functional limitations*, which is the total number the respondent self-reports having difficulty: (1) walking one block, (2) climbing one flight of stairs, (3) stooping, (4) lifting 10 pounds, (5) picking up a dime, (6) pushing/pulling a large object.

It should be noted that a number of other variables were included in models but ultimately removed in the interest of parsimony and sample size when results were very similar to those we report here including marital status, VA disability rating, War Cohort, heavy alcohol use, smoking, depressive symptoms, and alternate measures of functional health.

Analytic Plan

To address our research hypotheses, we first examined descriptive statistics for the sample of veteran males as a whole and then for veterans with and without combat exposure. To identify differences across exposure groups, we performed bivariate analyses (chi-square for dichotomous and *t* tests for continuous measures). Next, we used ordinary least squares (OLS) regression to examine the relationship between combat exposure and LS among male veterans in later life. Finally, to explore the moderating effect of positive versus negative maternal relationship quality in childhood, we examined the interaction between maternal relationship quality and combat exposure on LS net of other factors. We present marginal effects (predicted values) of LS for those with and without combat exposure according to early maternal relationship score, and test

significance at each level of maternal relationship quality for those with and without combat experience. All analyses are performed using Stata 14.0.

Results

The descriptive characteristics of our sample of male veterans are provided in [Table 1](#) ($N = 1,095$), which shows that 28% ($n = 303$) were exposed to combat. Bivariate analyses indicated that combat-exposed veterans had a significantly higher proportion who were exposed to hazardous toxins (45.2 vs 9.2%) and exposed to death (68.0 vs 9.6%), they remained in the military longer, and a higher proportion used VA services (39.9 vs 25.1%) and were eligible for VA services (55.4 vs 35.5%). Combat-exposed veterans also reported more overall functional limitations (1.261 vs 0.939 limitations). The lack of other variations between these two groups is likely a reflection of the more random nature of enlistment and deployment during conscription era service compared to today's All Volunteer Force. The overall sample was predominately White/Other (e.g., White = 89.7%, African American = 6.6%, Hispanic = 3.6%). The average age of the sample was 72.6 ($SD = 8.6$) years. The veterans in this sample had, on average, 13.8 ($SD = 2.4$) years of education. Notably, the vast majority of veterans reported a good quality relationship with their mother, with an average score of 3.5 ($SD = 0.66$) out of 4. Among the remaining control factors, it is useful to note that on average veteran in our sample reported 0.51 ($SD = 0.77$) traumas prior to age 18 and relatively good relationships with fathers as well (4.1 out of 5).

We used OLS regression models (see [Table 2](#)) to test our hypotheses. To test our first two hypotheses, we examine the direct effects of combat experiences and early maternal relationship quality on LS (Model 1). Results show that combat exposure is not significantly associated with LS on average, but maternal relationship quality is related to significantly higher LS for older veteran men ($p < .01$). Specifically, for each unit increase in maternal relationships quality, veterans experience an increase of 0.22 LS points. It is also notable that none of the military factor variables, including exposure to death and hazardous toxins, were significantly associated with LS in Model 1.

In Model 2, we address our third hypothesis, examining the moderating effect of early life maternal relationship quality on the association between combat exposure and LS. The results showed a statistically significant interaction between maternal relationship quality and combat exposure on LS. We performed a Wald test for these interaction between these two factors, with results indicating *F*-value (3,1069) 6.12, and significance at the 0.001 level.

To further explore this effect, we calculated marginal effects for LS from Model 2. Using the *margins* command in Stata 14.0 in which we calculate the expected LS score for older male combat and noncombat-exposed veterans, respectively, by maternal relationship quality score. We

Table 1. Descriptive Statistics and Bivariate Analyses for Combat and Noncombat-Exposed Men Age 51+

	All veterans (N = 1,095)		Combat exposed (N = 303)		Noncombat exposed (N = 792)		Min	Max
	Mean	SD	Mean	SD	Mean	SD		
Key Variables								
Life Satisfaction	5.056	1.463	5.030	1.520	5.066	1.442	1	7
Combat-Exposed	0.277				0		0	1
Maternal Relationship Quality ^a	3.502	0.661	3.463	0.648	3.517	0.666	1	4
Early Life Factors								
Childhood SES								
Poor	0.302		0.310		0.299		0	1
Average	0.631		0.624		0.634		0	1
Well Off	0.056		0.056		0.056		0	1
Variable SES	0.011		0.010		0.011		0	1
Self-Rated Health During Childhood	4.398	0.826	4.452	0.770	4.378	0.846	1	5
Traumas Before Age 18	0.508	0.772	0.518	0.805	0.504	0.759	0	4
Paternal Relationship Quality ^b	4.068	1.285	4.063	1.266	4.069	1.293	1	6
Mother's Educational Attainment	10.436	3.085	10.403	3.102	10.449	3.080	0	17
Father's Educational Attainment	9.947	3.690	9.832	3.562	9.991	3.739	0	17
Military Factors								
Exposure to Hazardous Materials	0.192		0.452**		0.092		0	1
Exposure to Death	0.258		0.680**		0.096		0	1
Military Duration								
<3 years	0.437		0.333**		0.477		0	1
3–5 years	0.361		0.373		0.356		0	1
6–9 years	0.096		0.079		0.102		0	1
10+ years	0.106		0.215**		0.064		0	1
VA Use	0.292		0.399**		0.251		0	1
VA Eligibility	0.410		0.554**		0.355		0	1
Control Variables								
Age	72.589	8.578	73.112	9.985	72.389	7.972	51	93
Non-Hispanic White/Other	0.897		0.898		0.896		0	1
Non-Hispanic Black	0.067		0.056		0.071		0	1
Hispanic	0.037		0.046		0.033		0	1
Educational Attainment	13.782	2.373	13.759	2.300	13.790	2.402	0	17
Total Household Wealth (In \$1,000s)	\$553	\$871	\$568	\$949	\$547	\$839	-\$1,510	\$10,200
Self-Rated Health	3.343	0.938	3.271	0.931	3.371	0.940	1	5
Functional Limitations	1.028	1.397	1.261**	1.501	0.939	1.346	0	6

Note: SES = Socioeconomic status.

Statistical significance indicates veterans who experienced combat were statistically different from those who did not experience combat: * $p < .05$; ** $p < .001$.

^aThe measure for relationship quality of mother is based on the average response to three questions in which individuals indicated how much they agreed: How much time and attention did your mother give you when you needed it?; How much effort did your mother put into watching over you and making sure you had a good upbringing?; How much did your mother teach you about life? ^bThe measure for relationship quality of father is based on a single item in which respondents indicated how much they agree with the following statement: "I had a good relationship with my father before age 18."

Table 2. OLS Regression Models Examining the Association Between Combat Experience and Early Life Maternal Relationship Quality on Life Satisfaction for Older Male Veterans

	<i>Model 1</i>		<i>Model 2</i>	
<i>Key Variables</i>				
Combat-Exposed	0.066 0.117		-1.288 0.498	**
Maternal Relationship Quality	0.215 0.068	**	0.116 0.076	
Combat × Maternal Relationship Quality			0.387 0.138	**
<i>Early Life Factors</i>				
Childhood SES				
Poor	0.143 0.209		0.131 0.204	
Average	0.128 0.198		0.105 0.194	
Variable SES	0.165 0.299		0.156 0.299	
Self-Rated Health During Childhood	0.031 0.052		0.035 0.052	
Traumas Before Age 18	0.011 0.058		0.018 0.059	
Paternal Relationship Quality	0.043 0.035		0.045 0.035	
Mother's Educational Attainment	-0.009 0.017		-0.011 0.017	
Father's Educational Attainment	0.023 0.015		0.025 0.015	+
<i>Military Factors</i>				
Exposure to Hazardous Materials	0.034 0.113		0.066 0.114	
Exposure to Death	0.017 0.115		0.015 0.115	
Military Duration				
3–5 Years	-0.070 0.090		-0.083 0.090	
6–9 Years	-0.267 0.158	+	-0.269 0.157	+
10+ Years	-0.051 0.145		-0.054 0.145	
VA Use	-0.192 0.103	+	-0.198 0.103	+
VA Eligible	-0.120 0.088		-0.108 0.088	
<i>Control Variables</i>				
Age	0.026 0.006	***	0.026 0.005	***
Non-Hispanic Black	0.064 0.175		0.049 0.175	
Hispanic	-0.087 0.244		-0.094 0.244	
Educational Attainment	0.020 0.019		0.020 0.019	
Total Household Wealth	0.000 0.000	***	0.000 0.000	***
Self-Rated Health	0.426 0.051	***	0.427 0.051	***

Table 2. Continued

	Model 1		Model 2	
Functional Limitations	-0.106	**	-0.108	**
	<i>0.037</i>		<i>0.037</i>	
Constant	0.306		0.616	
	<i>0.647</i>		<i>0.654</i>	
ll(model)	-1839		-1835	
Akaike information criterion	3728		3722	
R-Squared	0.2125		0.2183	

Note: SES = Socioeconomic status.

Significance indicates a statistically significant associations with life satisfaction of veteran men: *** $p < .001$; ** $p < .01$; * $p < .05$; + $p < .10$. The F value (3,1138) for interaction between combat and relationship with mom is 5.35*** indicating a significant interaction effect. The values in italics are the standard errors.

hold all other factors in the model at the mean to complete these calculations. We perform additional tests to calculate whether the slopes by maternal relationship quality for combat and noncombat exposed are significant, and to determine the point at which maternal relationship quality thresholds between groups are statistically different. These findings are shown in Figure 1. Analyses reveal that combat-exposed veterans report lower LS relative to noncombat-exposed veterans at lower maternal relationship scores, which persists until the score reaches approximately 3, at which time the combat-exposed individuals report similar LS scores. At the highest threshold, a maternal relationship score of 4, combat-exposed veterans had a *higher* predicted LS score compared with their noncombat counterparts (5.3 vs 5.1, respectively). This difference was significant and suggests that combat exposure, net of specific traumatic and hazardous exposures, may offer a potential benefit to LS among veterans with supportive early life environments. This finding is also consistent with the findings of PTG in other studies. Further, the slope of maternal relationship effects for the combat exposed is significant, but not for the noncombat veterans. This further suggests that early maternal relationship has a persistent impact on LS in later life for veterans who experienced combat, but not for those who were not exposed to combat. We also note here that we tested interactions between exposure to death and hazardous toxins and maternal relationship quality, respectively, in models not shown. The interactions were not significant, suggesting that combat exposure, net of these specific hazardous and traumatic exposures, is unique in these varying long-terms effects for LS dependent on early life environment. However, these results should be interpreted cautiously due to the relatively small number of veterans in the sample with these exposures.

Discussion

Currently, the majority of U.S. veterans are in later life stages (USVA, 2016). Despite this common experience among older men, we are only beginning to understand how military exposures, such as combat, influence their later life

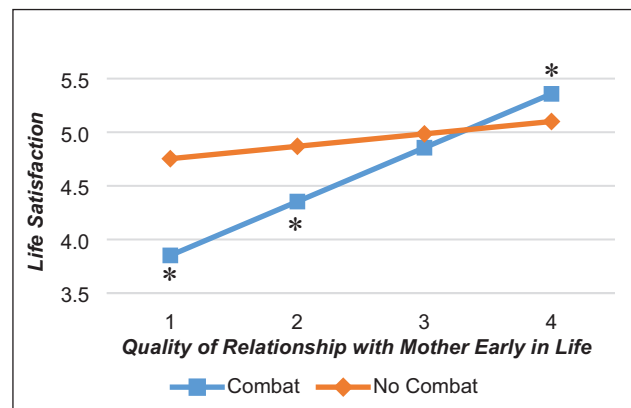


Figure 1. Marginal probabilities predicting life satisfaction by Quality of relationship with mother early in life for veterans with and without combat experience. * indicates data points at which combat and non-combat groups are statistically different at the $p < .05$. The + indicates a trend towards significance ($p < .10$). The slope for the combat group is statistically significant at $p < .001$. The slope for the no combat group is not statistically significant.

and wellbeing (Hoglund & Schwartz, 2014). Whereas some individuals exposed to combat have long lasting psychiatric and health difficulties, others appear to function better in some ways than noncombat-exposed veterans (Tsai et al., 2015). Our study sought to better understand these discrepant findings, with a focus on the role of early life maternal relationships. Specifically, we examined how early life maternal relationship quality interacts with combat exposure to affect appraisals of LS in later life among men who served in the military during early adulthood and who had a relationship with a father and a mother early in life.

Regarding our first hypothesis, we discovered that, on average, combat exposure is not associated with LS on average in our sample of older male veterans. In other words, our first hypothesis was not supported. Regarding our second hypothesis, we found higher maternal relationship quality was associated with *higher* LS in later life. This hypothesis was supported.

Regarding our third hypothesis, the neutral effect of combat exposure on LS in later life was clarified when considering early life relationships. Specifically, among

veterans with highly supportive childhood environments (i.e., those with high quality maternal relationships), those exposed to combat reported *higher* LS than those veterans not exposed to combat. These findings are consistent with previous research that shows that those who report positive, trusting relationships with parents in childhood are able to maintain higher levels of psychological wellbeing in later life (An & Cooney, 2006). Combat-exposed veterans with moderately high maternal relationship quality scores reported similar LS scores as their noncombat-exposed counterparts. We note here that according to Figure 1, the crossover of these effects occurs at a maternal quality level of roughly 3.5 which was the average score reported in our sample. In contrast, among those with poor maternal relationship quality, combat-exposed veterans reported *lower* LS compared to their noncombat-exposed counterparts. These results are similar to other research findings that negative early life experience such as poor quality relationship with parents and exposure to other ACEs are associated with negative long-term health and psychological outcomes (Sachs-Ericsson et al., 2016).

These findings suggest that early life environments, particularly relationships with important adult figures, may be a critical ingredient in shaping how individuals respond to traumas or adversities that occur during adulthood. Although our study does not allow us to extrapolate the specific mechanisms that underlie the moderating influence of the mother's relationship quality on the association between combat and wellbeing, it is plausible that good early relationships provide people with particularly important psychological resources that are critical to coping with difficult life circumstances. In this regard, those with good maternal relationship quality are thought to experience oneself as valued, loved, and competent (Harter, 2006) and to have the ability to form good interpersonal relationships (Flouri & Buchanan, 2002). Good interpersonal skills enhance one's ability to develop a social support network to lean on when times get tough; social support is thought to be integral for psychological growth to occur after experiencing a trauma (Prati & Pietrantonio, 2009). Research has shown that those with early positive relationships develop active and successful coping styles that enhance the individual's ability to experience mastery in the face of stressful situations (Rutter, 1979). Such internal resources (e.g., social support and active coping strategies) may allow an individual to potentially benefit through the mastery of a difficult life stressor—a process referred to as PTG (Prati & Pietrantonio, 2009).

PTG is the experience of positive psychological changes that occur in the wake of a disruptive or challenging life event as a result of the ensuing (psychological) struggle with what happened (Tedeschi & Calhoun, 2004), and many factors may contribute to PTG (Prati & Pietrantonio, 2009). Elder and Clipp (1989) have postulated that the long-term effects of combat may depend, in part, on the individual's early life history and circumstances that may contribute

to psychological adjustment after combat (Zoellner & Maercker, 2006). The finding that combat-exposed individuals experienced higher overall LS than their noncombat counterparts at the highest level of early life maternal relationship quality suggests positive maternal relationships may facilitate development of internal resources individuals need to demonstrate mastery in the face of challenges.

In contrast, in the current study, we found individuals with poor maternal relationship quality report lower LS. Other studies have found that adverse childhood experiences and poor parental relationship quality contribute to a lower appraisal of quality of life over the life span (Logan-Greene, Green, Nurius, & Longhi, 2014). Additionally, we found that poor maternal relationship quality led to lower levels of LS among combat-exposed veterans—compared with noncombat counterparts. It may be the case that those with poor maternal relationships lack the skills required to thrive in the face of challenges in adulthood, and lack the abilities necessary to cultivate meaningful adult relationships needed when times get tough. In this regard, there has been extensive literature demonstrating that adverse childhood experiences and poor parental relationships are associated with the development of poor coping mechanisms (Huh, Kim, Yu, & Chae, 2014; Logan-Greene et al., 2014; Sachs-Ericsson, Rushing, Stanley, & Sheffler, 2016). Coping strategies associated with such early life difficulties are often characterized as passive or avoidant (see (Walsh, Fortier, & DiLillo, 2010) leading to difficulties regulating negative emotions during stress, and poor problem solving (see Sachs-Ericsson et al., 2016). These individuals may have more difficulty coping with trauma or adversity, such as combat exposure. Thus, such individuals are more likely to experience the negative long-term consequences of combat in later life that have been identified in other research studies (see Sachs-Ericsson, Joiner, Cogle, Stanley, & Sheffler, 2016).

Our findings should be considered in light of several important limitations that may be addressed in future research. First, our study uses cross-sectional data, and is therefore unable to definitively determine a causal association for combat and maternal relationship quality on LS. It is possible that by the time individuals reach later life, their recollection of their maternal relationship is colored by the relationship they maintained into adulthood. It may also be possible that those who are likely to report low LS in adulthood are the same kinds of individuals who are likely to recall early life in a more negative light overall.

In addition to problems related to retrospective reporting, our sample is not representative of all veterans. The older adult veterans in our sample only include individuals who selectively survived into later life, which excludes the relatively high proportion of veterans who face, for example, higher than average rates of suicide and homelessness (Kaplan, Huguet, McFarland, & Newsom, 2007). Further, the VMS survey has a 49% response rate among HRS respondents who identify as veterans. Previous research

with the VMS suggests this sample is slightly more advantaged than the broader Veteran HRS sample (Taylor et al., 2016). The nonrespondents (i.e., both HRS nonrespondents and those unable to be selected into the HRS to begin with) are likely to include veterans who are the most disadvantaged in a variety of ways including socioeconomic factors, health factors, and psychosocial factors. Our further exclusion of those who did not have a relationship with both parents during their early years likely accentuates these factors. As a result, our findings relate specifically to those older veterans who have fared the best with respect to responding to military experiences and potentially, to the way they reflect on their early life experiences during later life.

In sum, three groups of veterans did not make it into our analysis: those not surviving to old age, those not completing the VMS, and those with no reported relationship with father during childhood. Negative maternal relationship quality early in life likely produces more significant, negative effects on wellbeing over the life course than what could be observed in this study since individuals experiencing the worst early life relationships (e.g., those with no father) or other unobserved disadvantages were not represented in the analysis. These selection factors may have influenced our results, but it is not clear whether the bias is toward more or less conservative estimates for the broader veteran population.

It is also important to note some specific ways in which early maternal relationship quality may have selectively influenced those excluded from our sample. This is important to consider because those with poor parental attachment, for example, may face worse outcomes in relation to military exposures (i.e., PTSD or other psychological problems) including suicide. Early maternal relationship quality may also influence whether individuals select into more traumatic exposures while serving in the military, through riskier decisions (impulses) or through structural forces that result in different career trajectories within the military. For instance, those who served in infantry positions likely faced more significant traumatic exposures (and higher mortality rates) than those who served as pilots. It is not possible to determine how these unobserved effects, and our findings should be considered in light of these limitations.

Our results are also not generalizable to younger veterans. As noted earlier, among those who served during major war eras, the vast majority served during the Vietnam War, which do not reflect the same kind of war tactics and exposures as what is typical for soldiers in the United States today. The “All Volunteer” force (Elder et al., 2010) which is indicative of individuals who have participated in the military in the post-Vietnam era, is a more select group in a variety of ways, and we are unable to make inferences about how our results might influence the LS of these individuals as they approach later life.

Although we controlled for early life paternal relationship quality, this one-item measure in the HRS is less nuanced than the several items available in the HRS data set on maternal relationship quality. This measure is less likely

to capture the important factors that ultimately shape psychological resources in adulthood. Future research should consider the potential role that relationships with fathers play in building psychological resilience over the life course.

Additionally, we should consider that scores for maternal relationship quality may be highly correlated, or even a proxy, for the broader early life household environment (e.g., community environment, family constellation, or the occurrence of other adverse childhood experiences). Future research is needed to explore how parental relationship quality may uniquely contribute to the development of internal psychological resources, and whether these effects hold true for older nonveterans and women who face stressful events.

In spite of these limitations, the current findings also have important implications for clinical work and future intervention strategies. For example, interventions could be targeted towards soldiers directly postcombat, especially those who report poor quality childhood environments. Tsai and colleagues (Tsai et al., 2015) suggested the need for interventions geared at developing social connections and a sense of purpose to promote PTG in this population. Perhaps early intervention in this high-risk group (those reporting poor quality maternal relationships) could help to offset the negative impact of trauma. Additionally, it may be fruitful to consider implementing *preventative* strategies in soldiers who report poor quality childhood environments before they experience traumatic events. These interventions could be implemented before deployment, targeting social connectedness and resilience. Moreover, the results from the current study could be utilized preventatively in parenting interventions. For example, parents could be informed about the importance of their early relationships with their children, especially in the face of traumatic events occurring both in childhood and adulthood. This information could be presented along with guidelines or suggestions for how to build healthy parent/child relationships that carry lasting protective effects.

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Conflict of Interest

None reported.

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