

Award Number:
W81XWH-09-1-0655

TITLE:
The Soldier Medic Mettle Study

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TAMPA FL 33612-4745

REPORT DATE: October 2013

TYPE OF REPORT: Final

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE (DD-MM-YYYY) October 2013		2. REPORT TYPE Annual Report		3. DATES COVERED (From - To) 30September2009-29September2013	
4. TITLE AND SUBTITLE The Soldier Medic Mettle Study				5a. CONTRACT NUMBER W81XWH-09-1-0655	
				5b. GRANT NUMBER W81XWH-09-1-0655	
				5c. PROGRAM ELEMENT NUMBER Blank	
6. AUTHOR(S) Paula Chapman, Ph.D.				5d. PROJECT NUMBER Blank	
				5e. TASK NUMBER Blank	
				5f. WORK UNIT NUMBER Blank	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) JAMES A. HALEY VETERANS RESEARCH AND EDUCATION FOUNDATION TAMPA FL 33612-4745				8. PERFORMING ORGANIZATION REPORT Blank	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S) Blank	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) Blank	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES Blank					
14. ABSTRACT This study forges the existing gap in the literature on military health care providers by focusing solely on Combat Medics. Medics serve a vital role in the OEF/OIF theatres, yet, there is a paucity of research on Combat Medics. The overall purpose of the study was to conduct a behavioral health assessment among Combat Medics, to determine what factors account for resiliency among combat medics, and if resiliency is static, wanes, or cycles over time. The study incorporates a mixed-methods, prospective longitudinal design utilizing US Army Combat Medics. Findings can assist educators and leaders of Combat Medics to better prepare future Combat Medics for service in combat zones.					
15. SUBJECT TERMS Combat Medics, Resilience, Stress					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (include area code)
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Standard Form 298 (Rev. 8-98)

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1. INTRODUCTION

This study attempted to forge the existing gap on military health care providers by focusing solely on Combat Medics. Combat Medics serve a vital role in combat theatres, constantly placing themselves in danger in order to assist a fallen comrade. Yet, there is a paucity of research on Combat Medics generally, and factors accounting for their wellbeing, particularly. The overall purpose of the study was to conduct a behavioral health assessment among Combat Medics, to determine what factors account for resiliency among combat medics, and if resiliency is static, wanes, or cycles over time. By investigating resiliency, educators and leaders of Combat Medics can better prepare future Combat Medics for service in combat zones. The study was designed to incorporate a mixed-method, prospective longitudinal design to follow Combat Medics across the three years.

1.1 Objectives

The goal of this study was to develop a model of Soldier Resiliency utilizing the Combat Medic. The purpose of the proposed study was to determine risk and protective factors that account for Combat Medic resiliency. Objectives and research questions follow:

Objective 1: Determine the current Behavioral Health status of deployed Combat Medics.

This was accomplished with Year 1 data, using deployed combat medics only.

Objective 2: Identify risk and protective factors to predict Behavioral Health Outcomes of depressive symptoms, anxiety, and PTSD symptoms among deployed Combat Medics. This was accomplished using Year 1-Year 3 data.

Objective 3: Create an initial model of resiliency for the deployed Combat Medic.

This was conducted with the data from the resilient combat medics.

1.2 Inclusion/Exclusion Criteria

Participation in this study was open to all Europe-based Combat Medics who met the eligibility requirements, including women and minorities. Combat Medics were targeted because (a) a review of the research literature indicated that Combat Medics are rarely studied as a group, apart from other Soldiers and Marines; (b) they are often exposed to combat; and (c) Combat Medics, when studied comparatively, have tended to report higher PTS symptoms compared to Soldiers of other Military Occupational Specialties (MOS). Additionally, there is no reason to believe that US Army Combat Medics would respond differently to combat exposure than Combat Medics from other services (e.g. Corpsmen from the Navy and Marines), making the study generalizable across other services.

Inclusion Criteria: Eligible participants were (a) stationed in Europe at Time 1; (b) had returned from a recent deployment to OEF/OIF conflict between November 2008 to November 2009; and (c) agreed to complete follow-up surveys provided on Question Pro. **Exclusion Criteria:** We excluded Medics (a) who experienced combat-related physical injuries during the recent deployment requiring overnight hospitalization; (b) all other Military Operation Specialties (MOS).

(c) An additional exclusion criterion for Year 1 Non-deployed Medics: deployment to an OEF/OIF combat zone immediately prior to baseline data collection. However, they may be deployed to other places, such as Hong Kong or Panama or Cuba. These exclusion criteria are being enacted because the primary interest is to determine mental toughness and resiliency among Combat Medics deployed to combat zones. (d) An additional exclusion criteria for Year 1 Deployed Medics: membership is limited to those combat medics who recently returned from the OEF/OIF theatre of operations at least 3months prior baseline data collection.

1.3. Predictors of Behavioral Health and Cohort Design

Predictors of behavioral health and performance was based on the MHAT Model provided in Figure 1. Study design and cohort groupings are provided in Figure 2.

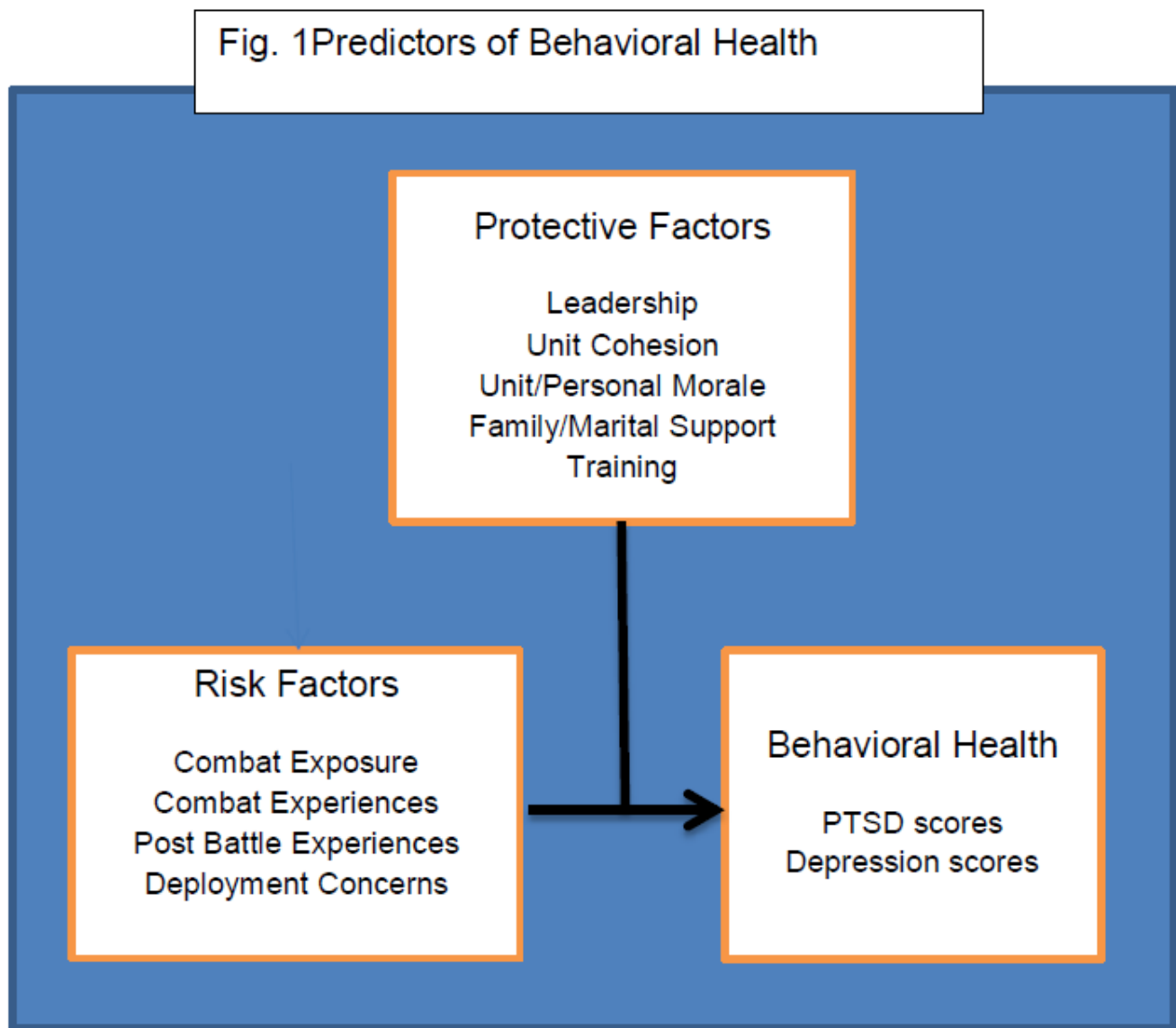
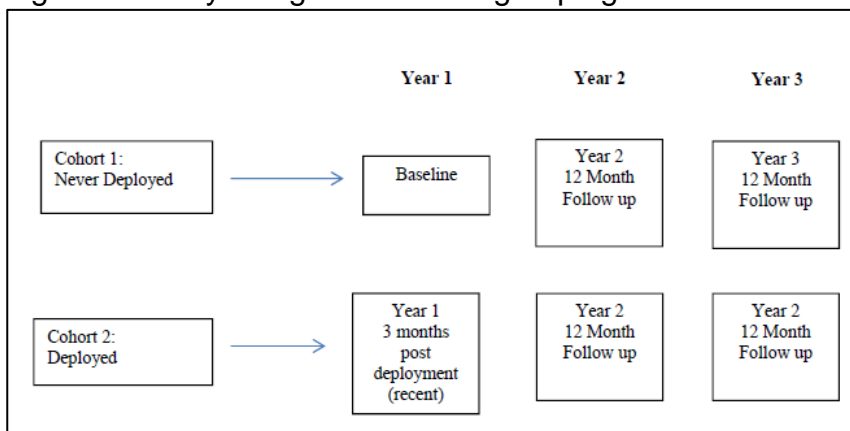


Figure 2. Study design and cohort groupings



2 FINAL REPORT

2.1 Overview of Report

The report below presents results of stated objectives, as well as some additional analyses.

2.2 Response Rates and Non-Response

2.2.1 Overall Response Rates. A natural concern when conducting a study that spans multiple time-points is whether or not those who responded to the survey differ from those who did not. A total of 841 surveys were collected in the first year of this study. Of the 841 cases, 288 responded to the Year-2 survey. This reflects a response rate of 34.3% for the Year-2 survey. Of the 288 medics that responded in Year-2, 191 (66.3%) responded to the Year-3 survey. 139 (25.1%) of the 553 medics that did not respond to the Year-2 survey, responded to the Year-3 survey. Therefore, the total Year-3 response rate—relative to the 841 medics surveyed in Year-1—is 39.2% (330). Of the 841 medics surveyed in Year-1, 191 (22.7%) responded in all years of the study; 414 (49.2%) did not participate after the first year.

2.2.2 Year-2 Non-Response among Year-1 Respondents. Medics who responded to the Year-2 survey were higher in rank, married, and older than those who responded in Year 1. Year-2 response did not differ based on Year-1 deployment status, gender, or race. No significant differences in Year-2 survey response were observed based on Year-1 mental health outcomes. In other words, those who met the criteria for a mental health issue were not more or less likely to respond to the Year-2 survey.

2.2.3 Year-3 Non-Response among Year-2 Respondents. Of the 288 medics that responded to the Year-2 survey, 191 (66.3%) responded in Year-3. Those who responded to the Year-3 survey were more likely to be married; Response to the Year-3 survey did not differ based on age, rank, gender, race, education, or deployment status. No significant differences in Year-3 response were observed based on Year-2 mental health outcomes.

2.2.4 Total Non-Response. Of the 841 medics that provided survey responses in Year-1 of the study, 414 (49.2%) did not respond again, while 427 (50.8%) responded to at least one of the subsequent survey request. The medics who responded more than once were higher in rank; more educated; likely to be married; and be older; No significant differences were observed for gender, race, or deployment status. No significant differences in depression or stress were observed based on participation in more than one survey.

2.3 Deployment Status

When surveyed in Year-1, 30.44% (256) of the entire sample stated that they had never been deployed, while 69.56% (585) stated that they had were 3 months from post-deployment. When surveyed in the second year of the study, 59.72% (172) stated that they had not been deployed within the past 12 months, while 28.82% (83) had been deployed; 33 cases (11.46%) did not provide a response to the deployment item. Of the 330 medics who responded to the Year-3 survey, 61.21% (202) had not been deployed within the past 12 months, while 30.61% (101) had been deployed; 27 cases (8.18%) did not provide a response to the deployment item. Of the total sample (841), 29 (3.45%) medics had been deployed in all three years of the study, while 37 (4.40%) had not been deployed throughout the entire study.

2.4 Demographics

Demographics are presented in Table 1 below. Deployment refers to being attached with a front line unit such as a BCT, where the majority of time is spent outside of the wire.

2.4.1 Demographics by Deployment Status. The deployed and non-deployed medics significantly differed on a number of demographic characteristics. In the first year of the study, deployed medics were male, higher in rank, and older than non-deployed medics. No significant differences in race, education, or marital status were observed by deployment status.

For Year-2, there were no significant differences in demographics between the deployed and non-deployed groups, with the exception of sex. No significant differences in any of the demographic characteristics are observed by deployment status in Year 3. Thus, the relationship between gender and deployment status observed in the first two years of the study was no longer significant among the Year-3 medics.

2.4.2 Demographic Characteristics by Level of Participation. Overall, medics who responded more than once were more likely to be older, married, report higher educational attainments and hold higher rank than Medics who only responded to the first Year of the survey. No significant associations were observed between level of participation and gender, race, or deployment status.

2.5 Behavioral Health Status

One of the main objectives of this study was to determine the current behavioral health status of Combat Medics who had recently deployed with line units. Some of the findings reported below were presented at the annual IPR in July 2011, and have been accepted for publication (Chapman, P., Elnitsky, C., Pitts, B., Figley, C., Thurman, R., & Unwin, B.; 2013); the presentation and publication only involve the Year-1 data.

2.5.1 Mental Health and Demographic Characteristics.

2.5.1.1 Year 1 Depression and PTSD In Year-1, Medics with a lower rank, identified as “Other” racial category, and with some college education more likely to screen positive for depression than their respective counterparts. No other significant associations were observed between Year-1 depression and demographic characteristics. In terms of stress, Medics with “some college” were more likely to screen positive for PTSD. All other associations between PTSD and demographic characteristics were non-significant.

2.5.1.2 Year 2 Depression and PTSD The Year-2 survey responses reflect a different pattern from that of the Year-1 responses. Medics holding lower rank were more likely to screen positive for depression, than those holding higher rank. No other significant associations were observed for depression. There were no significant associations between PTSD and demographic characteristics.

2.5.1.3 Year 3 Depression and PTSD The significant association between rank and depression observed in Year-1 and Year-2 was still present in Year-3: In terms of stress, medics with a rank of E1-E4 were more likely to screen positive for PTSD, compared to those with a rank of E5-

Table 1
Demographic Characteristics by Year and Deployment Status

Characteristic <i>n</i> (%)	Year-1		Year-2		Year-3	
	ND	D	ND	D	ND	D
Grade/Rank						
E1-E4	202 (78.91)	327 (55.99)	-	32 (38.55)	-	41 (40.59)
E5-E9	54 (21.09)	257 (44.01)	-	51 (61.45)	-	60 (59.41)
Age						
Mean (SD)	25.86 (6.01)	28.95 (6.41)	31.06 (6.50)	31.18 (6.91)	31.75 (6.81)	30.73 (6.80)
Sex						
Male	146 (57.25)	475 (81.62)	115 (67.25)	67 (82.72)	138 (68.66)	78 (78.00)
Female	109 (42.75)	107 (18.38)	56 (32.75)	14 (17.28)	63 (31.34)	22 (22.00)
Race						
White	164 (65.08)	398 (69.34)	115 (67.25)	60 (72.29)	125 (63.13)	74 (74)
Black	38 (15.08)	90 (15.68)	28 (16.37)	10 (12.05)	34 (17.17)	11 (11.00)
Other	50 (19.84)	86 (14.98)	28 (16.37)	13 (15.66)	39 (19.70)	15 (15.00)
Education						
High-school or Less	67 (26.38)	151 (26.40)	20 (11.63)	7 (8.43)	17 (8.42)	13 (12.87)
Some College	141 (55.51)	300 (52.45)	92 (53.49)	55 (66.27)	120 (59.41)	57 (56.44)
College Graduate	46 (18.11)	121 (21.15)	60 (34.88)	21 (25.30)	65 (32.18)	31 (30.69)
Marital Status						
Not Married	110 (43.31)	213 (36.72)	51 (29.65)	31 (37.35)	41 (20.30)	26 (25.74)
Married	144 (56.69)	367 (63.28)	121 (70.35)	52 (62.65)	161 (79.70)	75 (74.26)

Note. ND = Never/Non-Deployed. D = Deployed. $N_{\text{Year-1}} = 841$. $N_{\text{Year-2}} = 288$. $N_{\text{Year-3}} = 330$. Missing values are excluded. Non-deployed medics were not given a chance to respond to the grade/rank item in Year-2 or Year-3, as this variable was included in the deployment section of the survey. Information on Sex and Race was not collected in Year-2 or Year-3, as these values were not expected to change.

E9. No other significant associations between Year-3 depression or stress and demographic characteristics were observed.

2.5.2 Mental Health and Deployment Status. Not surprisingly, significant differences existed between the two deployment groups. In Year 1, deployed medics were more likely to screen positive for depression and PTSD, respectively, compared to those who had never deployed. The same results were found even after controlling for demographic characteristics. In Year 2 and Year 3, these differences have dissipated—with or without controlling for demographic characteristics. Year-1 deployed medics were more likely to report a functional issue related to depression than those who had never deployed. No significant differences in stress- or depression-related functional issues were observed between deployed and non-deployed medics in Year-2 or Year-3.

Approximately 18-28% of all Year-1 medics indicated that they had received help from a mental health professional (within the past year). Further, the deployed medics were 1.84 times more likely to utilize assistance than those who had never been deployed. In Year-2, the proportion of medics indicating that they had received help from a mental health professional within the past year was 30.81% and 26.51% for the non-deployed and deployed medics, respectively. No significant differences in the utilization of a mental health professional were observed between the two deployment groups in Year-2 or Year 3.

2.5.3 Changes in Mental Health Issues over Time. A significant change in depression screening from Year-1 to Year-2 was observed. The proportion of medics meeting the criteria for depression in Year-2 but not Year-1 was 12.54%, while the proportion of medics making an opposite switch was 5.73%. As a result, there was increase in positive depression screening from 13.62% in Year-1 to 20.43% in Year-2 among those who responded to the Year-2 survey. No significant changes in depression screening were observed from Year-2 to Year-3. Lastly, significant changes were observed between Year-1 and Year-3 positive depression screening. 15.09% of medics had moved from negative to positive, while only 5.97% moved from positive to negative; this reflects an increase of 9.12% in the proportion of medics screening positive for depression from Year-1 to Year-3.

2.5.4 Mental Health and Deployment Status among Medics with Full Response.

Roughly 23% (n=191) of the total sample provided survey responses for all three survey years of the study. Deployment status among these medics can be categorized as such: Never Deployed (22.16%), Deployed (60.48%), and Always Deployed (17.37%). These categories correspond to the number of times the medic indicated that they had been deployed). Among these 191 medics, we find significant differences in Year-1 depression and PTSD by deployment status. but these differences no longer existed in Year-2 and Year-3.

Table 2
Mental Health Outcomes by Year and Deployment Status

Mental Health Outcome	Year-1		Year-2		Year-3	
	ND	D	ND	D	ND	D
Depression						
Doesn't Meet	234 (91.41)	489 (83.59)	133 (77.78)	67 (80.72)	158 (78.61)	79 (78.22)
Meets	22 (8.59)	96 (16.41)	38 (22.22)	16 (19.28)	43 (21.39)	22 (21.78)
PTSD						
Doesn't Meet	244 (96.06)	535 (91.61)	149 (86.63)	70 (84.34)	181 (89.60)	87 (86.14)
Meets	10 (3.94)	49 (8.39)	23 (13.37)	13 (15.66)	21 (10.40)	14 (13.86)

Note. ND = Never/Non-Deployed. D = Deployed. $N_{\text{Year-1}} = 841$. $N_{\text{Year-2}} = 288$. $N_{\text{Year-3}} = 330$. Missing values are excluded. PTSD = Posttraumatic Stress Disorder. Depression was measured using the PHQ-9. PTSD was measured using the PCL.

2.6 Perceived Stigmas and Barriers to Care

In Year-1, significant associations were observed between all stigma/barriers to care items and mental health issues (depression or PTSD), with medics who met the screening criteria for either depression or PTSD more likely to report concerns about being stigmatized and/or barriers to accessing and receiving mental health services than those who did not meet the criteria. The only exception was “My visit would not remain confidential,”

With the exception of the items “I don’t know where to get help” and “My visit would not remain confidential,” all associations between stigmas/barriers to care and mental health issues were significant among the Year-2 survey responses. Among the items for which significant associations were observed, medics who met the criteria for either depression or PTSD, in Year-2, were twice as likely (or greater) to report concerns related to stigmas and barriers to care, compared to those who did not meet the criteria.

In Year-3, the only items with non-significant associations were “I don’t know where to get help” and “I don’t have adequate transportation.” Among all other items, the medics who met the criteria for some mental health issue were more than twice as likely to report concerns—more than 3 times as likely for most items. Therefore, for most items, medics who met the screening criteria for either depression or PTSD displayed significantly greater stigmas/barriers to care endorsement—across all years of the study—compared to those who did not meet the criteria.

The two most commonly endorsed barriers to care among all Year-1 medics were difficulty scheduling an appointment (24.49%) and difficulty getting time off (23.19%), while the two most common stigmas endorsed were “members of my unit might have less confidence in me” (33.29%) and “my unit leadership might treat me differently” (36.86%). These same four items remained the most commonly endorsed stigmas and barriers to care among all of the medics who participated in the Year-2 survey. The most commonly endorsed barriers to care items were, once again, the same in Year-3. However, the two most commonly endorsed stigma items were “My unit leadership might treat me differently” (30.09%) and “I would be seen as weak” (28.57%).

2.7 Training and Combat Experiences

Training, deployment preparation, and combat experiences of deployed Combat Medics were analyzed and are reported in a manuscript in the appendices (Chapman, P., Cabrera, D., Varela-Mayer, C., Baker, M., Elnitsky, C., Figley, C., Thurman, R., Lin, C.D. & Mayer, P.; 2012)—this manuscript involves only the Year-1 data.

2.7.1 Deployment Training. In Year-1, a majority of medics felt that they: were adequately trained to work the shifts required during deployment (58.10%), had all of the supplies needed to get the job done (66.75%), were given equipment that functioned the way that it is supposed to (75.52%), and received adequate training on how use the equipment (80.15%). Roughly 80% of the medics felt that they knew how to treat most animal, insect, and plant issues in the region. In terms of combat, 20.05% of the medics reported seeing as much combat as expected and 39.07% indicated that they were accurately informed about what daily life would be like during deployment. Additionally, 79.12% of medics felt that they had demonstrated success in their training during deployment.

The Year-2 responses reflect a similar pattern in terms of training. 60.98% of medics felt that they had all of the supplies needed to get the job done, while 70.73% felt that the equipment they were given functioned in the manner that it should. 75.61% stated that they had been adequately trained on how to use the equipment that they were given. 74.39% felt that they knew how to treat

most animal, insect, and plant issues in the region. In terms of training related to combat, 37.80% of the medics reported seeing as much combat as expected, while 31.71% indicated that they were accurately informed about what daily life would be like during deployment. Additionally, 70.73% of medics felt that they had demonstrated success in their training during deployment.

Among the Year-3 deployed medics, 67.01% felt that they had all of the supplies needed to get the job done, while 72.16% felt that the equipment they were given functioned in the manner that it should. 74.23% stated that they had been adequately trained on how to use the equipment that they were given. 83.51% felt that they knew how to treat most animal, insect, and plant issues in the region. In terms of combat, 43.30% of the medics reported seeing as much combat as expected, while 46.39% indicated that they were accurately informed about what daily life would be like during deployment. Additionally, 64.95% of medics felt that they had demonstrated success in their training during deployment.

2.7.2 Suicide Prevention and Stress Training. In Year-1, 80.00% of medics felt confident in their ability to identify soldiers at risk for suicide, with 70.95% indicating that said training was adequate. Roughly 90% reported being confident in their ability to help soldiers get mental health assistance. 49.40% of medics reported that the training in managing the stress of deployment/combat was adequate. Among the medics who responded to the Year-2 survey, 84.29% felt confident in their ability to identify soldiers at risk for suicide, with 77.39% indicating that said training was adequate. 90.42% reported being confident in their ability to help soldiers get mental health assistance, while 62.45% reported that the training in managing the stress of deployment/combat was adequate. In the third year of the study, 82.64% felt confident in their ability to identify soldiers at risk for suicide, with 72.35% indicating that said training was adequate. 89.71% reported being confident in their ability to help soldiers get mental health assistance, while 59.81% reported that the training in managing the stress of deployment/combat was adequate.

2.7.3 Overall Mental Health Service Utilization. Among the medics surveyed in Year-1, 24.97% had sought the assistance of a mental health professional, while 15.78% had received assistance from a general medical doctor, and 10.60% from a combat stress control professional. 11.15% were seen by Chaplains, 3.95% sought the assistance of another soldier in their unit, and 3.61% spoke with a fellow medic. In Year-2, 28.77% had sought the assistance of a mental health professional, 36.49% received assistance from a general medical doctor, and 7.72% consulted a combat stress control professional. 10.53% were seen by Chaplains, 5.61% sought the assistance of another soldier in their unit, and 4.91% spoke with a fellow medic. Finally, in Year-3, 35.76% had sought the assistance of a mental health professional, 44.55% received assistance from a general medical doctor, and 14.55% consulted a combat stress control professional. 9.39% were seen by Chaplains, 5.15% sought the assistance of another soldier in their unit, and 7.27% spoke with a fellow medic.

2.7.4 Combat Experiences and Exposures. Information on combat experiences was obtained using measures from both the DRR and the MHAT.

2.7.4.1 Combat Exposures Almost 90% of Year-1 deployed medics went on combat patrols, and 82.78% received some type of hostile incoming fire. Roughly a third witnessed someone from their unit or an ally unit being seriously wounded or killed. While almost 20.05% fired their weapon at the enemy, 8.23% killed or thought that they had killed someone in battle. Of note, a large percentage of deployed medics provided aid to the wounded (82.73%), with 40.21% saving the life of a

soldier/Marine. However, 52.70% of medics reported seeing injured women and children that they were unable to help.

The same combat experience measures were utilized in the Year-2 and Year-3 surveys. 73.17% of Year-2 deployed medics had been on combat patrols, with 81.71% having received some type of hostile incoming fire. Almost 25.0% of deployed medics had witnessed someone from their unit or an ally unit being seriously wounded or killed. 14.63% of deployed medics had fired their weapon at the enemy, while 10.98% killed or thought that they had killed someone in battle. 68.29% of deployed medics provided aid to the wounded, with 45.12% having saved the life of a soldier/Marine. However, 34.15% of medics reported seeing injured women and children that they were unable to help.

2.7.4.2 Combat Experiences. Year-1 deployed medics participated in a number of soldier-centric duties, such as clearing and searching homes/building (54.76%) or bunkers/caves (17.22%); disarming civilians (34.45%); being attacked or ambushed (57.88%); receiving small arms fire (52.20%); working in mined areas (72.35%); and having an IED explode near them (54.26%). Overall, 52.70% reported having a member of their unit become a casualty. Year-2 deployed medics also reported participating in a number of soldier-centric duties: 21.95% had cleared and searched homes/buildings, 14.63% had cleared and searched bunkers/caves, 18.29% had disarmed civilians, 40.24% had been attacked or ambushed, 29.27% had received small arms fire, 52.44% had worked in mined areas, and 32.93% had had an IED explode near them. 43.90% of deployed medics reported having a member of their unit become a casualty. Among Year-3 deployed medics, 26.80% had cleared and searched homes/buildings, 19.59% had cleared and searched bunkers/caves, 16.33% had disarmed civilians, 43.88% had been attacked or ambushed, 41.84% had received small arms fire, 51.02% had worked in mined areas, and 32.65% had had an IED explode near them. 41.24% of deployed medics reported having a member of their unit become a casualty.

2.7.4.3 Post Battle Experiences. In addition to combat experiences, information on post-battle experiences was also collected. About half of the deployed medics saw civilians (52.19%), soldiers or allies (48.84%) or enemy combatants (41.13%) severely wounded or disfigured in combat. Many medics cared for the injured or dying (76.35%), while 41.39% were exposed to the sight, sound, or smell of dying men and women. In terms of death, 38.30% of medics reported seeing the bodies of dead civilians, with 35.48% had seen the bodies of dead enemy soldiers; 33.42% had seen the bodies of deceased soldiers/allies. The Year-2 survey also included post-battle experience items. The deployed medics saw a number of individuals wounded or disfigured in combat: civilians (30.49%), soldiers or allies (42.68%), and enemy combatants (32.93%). 53.66% had taken care of injured or dying people, while 34.15% were exposed to the sight, sound, or smell of dying men and women. In terms of death, 26.83% of medics reported seeing the bodies of dead civilians, with 26.83% had seen the bodies of dead enemy soldiers; 29.27% had seen the bodies of deceased soldiers/allies. Year-3 deployed medics also saw a number of individuals wounded or disfigured in combat: civilians (38.14%), soldiers or allies (39.18%), and enemy combatants (31.96%). 56.70% had taken care of injured or dying people, while 35.05% were exposed to the sight, sound, or smell of dying men and women. In terms of death, 31.96% of medics reported seeing the bodies of dead civilians, with 31.96% had seen the bodies of dead enemy soldiers; 29.90% had seen the bodies of deceased soldiers/allies.

2.8 Predicting Behavioral Health Outcomes

The second major objective of this study was to predict behavioral health outcomes by identifying the relevant risk/protective factors associated with enhanced/diminished mental health issue endorsement.

2.8.1 Risk and Protective Factors Year 1. The risk factors for depression among Year-1 deployed medics included age, and family concerns; while protective factors included marital status (married), education (higher educational attainment), personal morale (higher morale), and dispositional resilience. Among this same group, the risk factors for PTSD included deployment concerns, and family concerns; while protective factors included dispositional resilience and NCO perceptions.

Among Year-1 medics that had never been deployed, the risk factor for depression was family concerns, while the protective factor was personal morale (higher morale). For PTSD, there were no significant risk factors, and the protective factor was dispositional resilience.

2.8.2 Risk and Protective Factors Year 2. The results for the second year of the study display a somewhat different pattern. There were no risk factors for depression among the deployed medics, and the protective factor was dispositional resilience. The risk factors for PTSD among the deployed medics in Year-2 were deployment concerns and combat experiences; the protective factors were deployment perceptions and confidence.

Among non-deployed medics in Year-2, the risk factor for depression was family concerns; the protective factors were personal morale (higher morale) and dispositional resilience. For stress, the risk factor was grade/rank (higher rank); the protective factor was personal morale (higher morale).

2.8.3 Risk and Protective Factors Year 3. Among deployed medics, no significant risk factors for depression were observed; the protective factors included personal morale (higher morale) and dispositional resilience. In terms of stress among deployed medics, the risk factors were combat experiences (more experiences) and cohesion (more cohesive), while the protective factors were rank (higher rank), personal morale (higher morale), and deployment perceptions (more positive perceptions).

There were no significant risk factors for depression among non-deployed medics but protective factors included personal morale (higher morale) and dispositional resilience. The protective factor for PTSD among non-deployed medics was dispositional resilience, while no significant risk factors were observed.

2.8.4 Risk and Protective Factors Across Years By the end of the third year, only 37 Soldiers had not been deployed. Therefore, risk and protective factors were assessed using the complete sample, allowing for dependence across years. For depression, there was no overall significant risk factor, but higher rank, and higher personal morale were protective factors. For combat stress, the overall risk factor was being younger in age, while the protective factors were higher dispositional resilience and higher personal morale

2.9 Resilient Medics

The "Resilient Medics" were nominated by their peers. Participants were asked to list the first and last names or nicknames of 3 Combat Medics from their unit that they thought were resilient. Resilience was further defined as *'a Soldier who seemingly manages to endure the stressors and traumatic*

events of war remarkably well, with no apparent disruption in their ability to function at work or in close relationships, and seem to move on to new challenges with apparent ease’.

Nominations were weighted by number of medics/unit. We originally adopted 30 as the number of resilient medics that we would designate. Due to ties, there were a total of 36 resilient medics, as nominated by their peers.

The qualitative team managed to interview 17 of these medics. However, without the results of the qualitative analysis, it was not possible for the quantitative team to run the original analyses.

2.9.1 Demographic Characteristics of Resilient Medics.

Demographic characteristics of those Soldiers nominated by their peers as the most resilient are provided in Table 3. Those nominated as resilient were just as likely to be of higher or lower rank, not married, white, male, and have at least some college education.

Table 3 Demographic Characteristics of Resilient Medics

Characteristic	Resilient Medics n=36 f(%)	Characteristic	Resilient Medics n=36 f(%)
Grade/Rank		Marital Status	
E1-E4	18(50)	Not Married	21(58)
E5-E9	18(50)	Married	15(42)
Race		Education	
White	27(77)	High-school or Less	9 (26)
Black	1(3)	Some College	25(71)
Other	8(20)	College Graduate	1(3)
Age		Sex	
Mean (SD)	28.72 (6.48)	Male	32/(89)
		Female	4(11)

Deployment locations and number of deployments to those locations are presented in Table 4. As depicted, these nominated Soldiers were war-tested, having been deployed to combat zones numerous times.

Table 4. Deployment Destinations and Frequencies of Resilient Medics

Iraq(OIF)	f(%)	Afghanistan (OEF)	f(%)
Once	21(58)	Once	16(80)
Twice	11(31)	Twice	3(15)
3 or more	4(11)	3 or more	2(5)

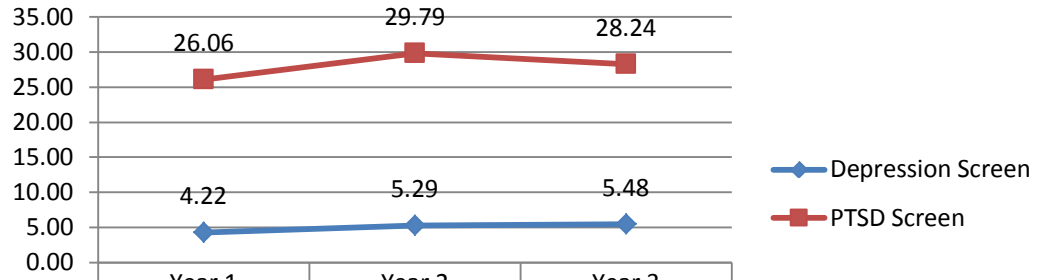
2.9.2 Behavioral Health Outcomes of Resilient Medics. Behavioral health outcomes as a function of PTSD and depression symptom severity scores are presented in Table 5. Results are presented by clinical cut-off classifications as described elsewhere in this report.

Figure 2, provides the mean scores for depression and PTSD symptom severity scores across the three years. Surprisingly, none of scores across the three years were significantly different, and the line appears to be static for both PTSD and depression scores.

Table 5. Mental Health Outcomes of Resilient Medics by Clinical Cut-off Classification

Mental Health Outcome	Year 1 (n=36)	Year 2 (n=14)	Year 3 (n=21)
Depression	f(%)	f(%)	f(%)
Doesn't Meet	36 (100)	13(93)	18(86)
Meets	0 (0)	1(7)	3(14)
PTSD			
Doesn't Meet	35(97)	12(86)	19(91)
Meets	1(3)	2(14)	2(9)

Mean PCL and Depression Screens Among Resilient Medics



	Year 1	Year 2	Year 3
Depression Screen	4.22	5.29	5.48
PTSD Screen	26.06	29.79	28.24

3 KEY RESEARCH ACCOMPLISHMENTS

- Characterized behavior health status of deployed combat medics, leading to a better understanding of the behavioral health status of US Army Combat Medics.
- Compared the behavioral health status of deployed combat medics to a group of combat medics who had never deployed.
- Identified longitudinal risk and protective factors predictive of behavioral health outcomes, generating knowledge regarding specific risk and protective factors inherently important in influencing the behavioral health of US Army Combat Medics deployed to OEF/OIF combat theatres of operations.
- Characterized the behavioral health of peer nominated resilient combat medics.
- Determined that peer nominations of resilience by fellow Soldiers may be an adequate method of determining the resilience of another Soldier.

4 REPORTABLE OUTCOMES

The following is a comprehensive list of published, submitted, and in progress manuscripts, abstracts, and presentations that have resulted from the current project:

4.1 Peer-Reviewed Publications

Chapman, P., Elnitsky, C., Pitts, B., Thurman, R., Figley, C., & Unwin, B. (2013, accepted). *Mental Health and Stigma and Barriers to Care at 3- and 12- Months Post Deployment among U.S. Army Combat Medics. Military Medicine.*

Chapman, P., Elnitsky, C., Thurman, R., Pitts, B., Figley, C., & Unwin, B (2013, accepted). *Posttraumatic stress, depression, stigma and barriers to care among US Army healthcare providers. Traumatology.*

Elnitsky CA, **Chapman PL**, Thurman RM, Pitts BL, Figley C, Unwin B (2013). Gender differences in combat medic mental health services utilization, barriers, and stigma. *Mil Med*;178(7):775-84.

Unwin BK, Pitts BL, Thurman RM, Figley C, **Chapman P** (2013). Medics and their meds: Psychoactive medication use among Combat Medics (The Medic Mettle Study). 2013 Uniformed Services Academy of Family Physicians Annual Meeting and Exposition (Lake Buena Vista, FL). *Published Abstract.*

Chapman, P., Cabrera, D., Varela-Mayer, C., Baker, M., Elnitsky, C., Figley, C., Thurman, R., Lin, C., Mayer, P. (2012). Training, deployment preparation, and combat experiences of deployed health care personnel: Key findings from U.S. Army combat medics deployed with line units. *Military Medicine, 177(3), 270-277.*

4.2. Manuscript Submitted for Publication (under review or revision)

Pitts, B., **Chapman, P.**, Safer, M., Unwin, B., Figley, C., Thurman, R. (in review). *The Effect of Killing Versus Witnessing on PTSD Symptom Development in U.S. Army Combat Medics*. **Military Psychology**

4.3. Manuscripts in Preparation

Pitts, B.L., Chapman, P., Safer, M.A. & Russell, D.W. (in progress). *Relationship of combat experiences to behavioral health symptoms in post-deployed U.S. Army Combat Medics*.

Pitts, B.L., Chapman, P., Unwin, B., & Russell, D.W. (in progress). *A comparison of combat experiences and behavioral health of U.S. Army combat medics with soldiers from operational units*.

Pitts, B.L., Chapman, P., Safer, M.A., & Russell, D.W. (in progress). *Factors that mediate or moderate the relationship between combat experience and behavioral health in U.S. Army combat medics*.

Chapman, P., Pitts, B.L., & Russell, D.W. (in progress) *Revisiting Loss: the impact of loss on the behavioral health of US Army Combat Medics*

Chapman, P., Pitts, B.L., & Russell, D.W. (in progress) *Woman in War: Combat and female US Army Combat Medics*.

Chapman, P., Pitts, B.L., & Russell, D.W. (in progress) *Peer Nomination of Resilient Soldiers*.

4.4. Presentations of Findings at Scientific Meetings

Unwin BK, Pitts BL, Thurman RM, Figley C, **Chapman P** (2013). Medics and their meds: Psychoactive medication use among Combat Medics (The Medic Mettle Study). 2013 Uniformed Services Academy of Family Physicians Annual Meeting and Exposition (Lake Buena Vista, FL). *Published Abstract*.

Maiers, A., Mayer, P., Baker, M., Escolas, S., & **Chapman, P.** (2011, Mar). Combat medics and Resilience. 2011 Armed Forces Public Health Conference, Newport News. Paper.

Chapman, P., Pitts, B., Elnitsky, C., Figley, C., Unwin, B. (August, 2012). Mental Health, Stigma and Barriers to Care: Key Findings from U.S. Army Combat Medics Deployed with Line Units. Military Health System Research Symposium, Ft. Lauderdale, FL. Poster.

Pitts, B., **Chapman, P.**, Safer, M.A., Unwin, B., Figley, C., & Cabrera, D. (May, 2012). The effect of killing versus witnessing on PTSD symptom development in US Army Combat Medics. Navy and Marine Corps Combat Operational Stress Control Conference, San Diego, CA. Poster Presentation.

Figley, C., Cabrera, D., & **Chapman, P.** (2010, November). An investigation into the factors predicting resilience among combat medics between deployments: Preliminary findings. In J. Bisson & N. Roberts (Chairs), *ISTSS 26th Annual Meeting*. Symposium conducted at the meeting of International Society for Traumatic Stress Studies, Quebec, Canada.

Chapman, P., Cabrera, D., & Figley, C. (2010, August). Combat medics 3-6 months post deployment and MHAT findings: Preliminary analysis of a 3 year mixed methods study designed to build a model of resiliency. 2010 US Army Force Health Protection.

Chapman, P., Elnitsky, C., Scott, B., Lapcevic, W., Spehar, A., & Siddarthan, K. (2010, July). Chronic PTSD symptoms among OEF/OIF combat veterans with PTSD and mTBI: A pilot indicating type and number of combat losses matter. 4th Annual DVA National Mental Health Planning Committee, Baltimore.

Chapman, P., Elnitsky, C., Scott, B., Lapcevic, W., Spehar, A., & Siddarthan, K. (2010, May). Chronic PTSD and loss: A pilot study on the importance of frequency and type of loss among OEF/OIF veterans. Research Center for Excellence: Maximizing Rehabilitation Outcomes.

Pitts, B., Thurman, R., Varela, C., **Chapman, P.** (2011, November). *The soldier Medic Mettle Study: Perceptions of training and combat experiences*. Poster presented at the 19th Annual Poster Session of Association of Military Surgeons of the United States, San Antonio, TX.

Varela, C., Thurman, R., Pitts, B., **Chapman, P.** (2011, November). *Stigma and barriers to care among Army combat medics*. Poster presented at the 19th Annual Poster Session of Association of Military Surgeons of the United States, San Antonio, TX.

Figley, C., Cabrera, D., Pitts, B., & **Chapman, P.** (2011, November). Saving not taking lives: Measuring combat medic mettle. In C. Jackson & B. Stolbach (Chairs), *ISTSS 27th Annual Conference*. Symposium conducted at the meeting of International Society for Traumatic Stress Studies, Baltimore, MD.

Maiers, A., Mayer, P., Baker, M., Escolas, S., & **Chapman, P.** (2011, March). Research with psychological risk and resiliency factors of combat medics and corpsmen. In C. Engel & C. O'Hara (Chairs), *2011 Armed Forces Public Health Conferences Partners in Prevention*. Symposium conducted at the meeting of U.S. Army Public Health Command and Navy & Marine Corps Public Health Center, Newport News, VA.

4.5. Invited Presentations/Workshops/Interviews

Chapman, P., Maiers, A., Mayer, P., Baker, M., & Escolas, S. (2010, December). Resilience and behavior health of combat medics. In J. Evans, K. Roberts & J.E. Gorman (Chairs), *3rd Annual Trauma Spectrum Conference*. Symposium conducted at the meeting of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DcoE), National Institutes of Health, and the Department of Veterans Affairs (VA), Bethesda, MD.

Chapman, P. (2011, Dec). Case study: Resilience among today's service members. Military Healthcare Convention & Conference, San Diego, CA. Invited speaker.

Robbins, S., & Beardsley, S. (2011, Sep). Study looks at psychological effects suffered by combat medics: Interview with **Chapman, P.** Stars and Stripes [website]. Posted [<http://www.stripes.com/news/study-looks-at-psychological-effects-suffered-by-combat>].

Tozer, J. (2011, Jul). Medical Monday: Care for the combat medic: Interview with **Chapman, P.** Research Spotlight for DoD Live [website]. Posted [<http://www.dodlive.mil/index.php/2011/07/care-for-the-combat-medical/>].

VA Research Currents (2011, May) Caring for the medic: Interview with **Chapman, P.** Research News from the U.S. Department of Veterans Affairs. Posted [http://www.research.va.gov/resources/pubs/docs/va_research_currents_mayjune_11.pdf].

4.6. Grant Proposals Submitted/Pending

Proposal Number: D61_I_10_J5_164 Title: Ameliorating Pre-Existing Risk Factors & Enhancing Protective Factors of Soldiers Medics During Training; Escolas, Military PI; Chapman Civilian PI.

5 CONCLUSION

As this is the first study to be conducted of US Army Combat Medics who have deployed with line units, results are very important. The first objective was to conduct a behavioral health assessment among deployed combat medics. While further research should be conducted, these results seem to indicate that symptoms of depression may be a driving force for the development of mental health outcomes among combat medics, rather than symptoms of stress. Results from this study indicate that combat medics appear to be inclined to seek mental health assistance prior to the development of a functional issue. However, Combat medics who need the most assistance appear to be the ones who report greater perceived barriers to mental health-seeking, as well as stigma from seeking such care. These findings are consistent with previous studies examining the relationship between psychological symptomatology and perceived treatment-barriers among service members and suggest that perceptions of and willingness to use care could be negatively impacted by the presence of psychological symptoms (Hoge et al., 2004; Kim et al., 2010; Wright et al., 2009; Vogt, 2011). Likewise, it could be that those service members needing care have actually initiated help-seeking activities in the past, only to realize the difficulty due to barriers and stigma. While the Army has taken steps to improve the stigma across the military, it is still very influential among soldiers, including medics, who are trained in the identification of soldiers who may need assistance, as well as where to obtain such services (Adler, Bliese, McGurk, Hoge, & Castro, 2011; Deahl et al., 2000). Certainly, additional research is needed to more fully comprehend the underpinnings of these issues.

Combat Medics reported being well-trained and capable of performing their mission during combat operations. However, other intangible elements of modern day combat infuse an ever-changing element into the mission that Medics must learn to overcome. This includes the types of shifts required during deployment, intensity and frequency of combat, and the ubiquitous nature of daily life on the front lines. While training on equipment was perceived as adequate, about a third reported that the equipment did not function the way it was intended and that they lacked needed supplies.

A second finding is that 40% indicated that they were accurately informed about what daily life would be like during deployment. While the diffuse nature of combat, unit types, regions of war etc, makes it difficult to explain 'daily life' for any particular soldier in a war zone, it may be prudent to depict such conditions -- be it environmental, physical, or mental -- as closely as possible. Another alternative would be to have a recent graduate return to the school to provide a very real account of what the Medic has experienced, allowing for questions and answers from the current graduating class. This recommendation would be in addition to the combat veterans who are already teaching

the Combat Medic courses. Addressing these two issues may be necessary in future training of Combat Medics to insure optimal performance.

Combat Medics felt confident in their ability to identify soldiers at risk for suicide and in their ability to help soldiers get mental health assistance. However, fewer felt that this training was adequate. Given the Army's focus on soldier suicides coupled with the fact that Medics may be called upon to serve as the moral compass or mental health counselor when elements go out on foot patrol, suggests that further training in stress management and mental health care may be warranted. An evidence-based, validated program could be utilized in preparing Medics to recognize mental health issues on the battlefield from two perspectives - that of a combat soldier and that of a medical provider. It is important that they receive adequate training in their ability to assess, refer, and manage stress and other mental health issues, as the enlisted medic is often the frontline trauma care provider. As such, an appropriate program should be specifically tailored to the Combat Medic, whose dual battlefield duties are unique.

The second major objective of this study was to predict behavioral health outcomes by identifying the relevant risk/protective factors associated with enhanced/diminished mental health issue endorsement. Two of the major risk factors across years were family concerns as well as deployment concerns. However, this is nothing new to the Army. Dispositional resiliency arose as a protective factor from both depression and combat stress

The final the last objective was to create a model of resiliency using the peer nominated resilient medics. While we were unable to accomplish this due to circumstances beyond our control, we did run some analyses on peer-nominated resilient medics. Specifically, the group appear to be resilient across the three years in terms of both depression and PTSD symptom severity scores.

A word of caution is in order, as it must be said that these findings are, in a way, dependent upon our choice of definition of depression and/or PTSD. The definitions utilized in this study are consistent with those found in other major studies. For depression, a cut-off score of 10 was chosen, primarily on the grounds of a statement given by the creators of the PHQ-9: "If a single screening cut-point were to be chosen, we currently recommend a PHQ-9 score of 10 or greater, which has a sensitivity for major depression of 88%, a specificity of 88%, and a positive likelihood ratio of 7.1." The criteria for PTSD was defined as a PCL sum score at or above 50 and a positive response using the DSM scoring criteria for the PCL. This is the same definition of PTSD utilized in the MHAT studies.

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