

Leadership, Cohesion, Morale, and the Mental Health of UK Armed Forces in Afghanistan

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UK Armed Forces (AF) personnel deployed to Afghanistan are frequently exposed to intense combat and yet little is known about the short-term mental health consequences of this exposure and the potential mitigating effects of military factors such as cohesion, morale, and leadership. To assess the possible modulating influence of cohesion, morale, and leadership on post-traumatic stress disorder (PTSD) symptoms and common mental disorders resulting from combat exposure among UK AF personnel deployed to Afghanistan, UK AF personnel, during their deployment to Afghanistan in 2010, completed a self-report survey about aspects of their current deployment, including perceived levels of cohesion, morale, leadership, combat exposure, and their mental health status. Outcomes were symptoms of common mental disorder and symptoms of PTSD. Combat exposure was associated with both PTSD symptoms and symptoms of common mental disorder. Of the 1,431 participants, 17.1% reported caseness levels of common mental disorder, and 2.7% were classified as probable PTSD cases. Greater self-reported levels of unit cohesion, morale, and perceived good leadership were all associated with lower levels of common mental disorder and PTSD. Greater levels of unit cohesion, morale, and good leadership may help to modulate the effects of combat exposure and the subsequent development of mental health problems among UK Armed Forces personnel deployed to Afghanistan,

Previous research has examined the mental health of United Kingdom Armed Forces (UK AF) personnel both before and after deployment to Afghanistan (Fear et al., 2010; Hotopf et al., 2006). However, studies of deployment mental health are largely based on retrospective accounts of deployment experiences, and there is a paucity of mental health survey data gathered while personnel are deployed. Currently, the United

States deploys the Mental Health Advisory Team (MHAT) to assess the mental health of personnel during their deployment. The results of these surveys have been used to support a reduction in deployment length from 16 months to 12 months and an increase in psychological support provision for deployed U.S. forces (Office of the Command Surgeon, 2009). In 2010, the Academic Centre for Defence Mental Health (ACDMH),

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a UK-based military research team, conducted a mental health survey of UK military personnel while they were deployed in Iraq (the Operational Mental Health Needs Evaluation – Iraq: OMHNE (I) (Mulligan et al., 2010), using a similar methodology to the U.S. MHAT. Results from OMHNE (I) found low levels of probable PTSD (3.4%) and a rate of common mental health disorders similar to that found in the UK population (McManus et al., 2009). However, since the operational environment in Afghanistan is considerably more dangerous and austere than was the case in Iraq during OMHNE (I), repeating the survey in Afghanistan was thought to be useful.

There is considerable confusion about how to best implement primary prevention of mental health disorders for those facing combat. Is this best achieved, as military doctrine often states, by promoting group identity and cohesion, or is it related to delivering specific mental health interventions, such as pre-deployment stress briefings, stress inoculation, or, as is being currently tried in the United States, emotional fitness training (Mental Stress Training Is Planned for U.S. Soldiers, 2009)? Previous research suggests that having a combat role is associated with the development of PTSD (Fear et al., 2010), however, military factors such as leadership, morale, and unit cohesion may help to reduce this risk (Office of the Command Surgeon, 2009; Mulligan et al., 2010). This paper uses data from a survey of mental health in UK AF personnel deployed to Afghanistan to examine the relationship between combat exposure, cohesion, morale, leadership, and measures of mental health. The OMHNE (A) survey examined the following hypotheses: (1) the levels of both PTSD symptoms and symptoms of common mental disorder would be higher for those experiencing greater levels of combat exposure, and (2) subjectively high levels of perceived leadership, morale, and cohesion would be associated with lower levels of both PTSD symptoms and symptoms of common mental disorders.

METHODS

The OMHNE (A) visit was conducted between January 23 and February 26, 2010, during operation HERRICK 11; HERRICK is the codename for the current UK operations in Afghanistan. Participants were eligible for the study if they were members of the Royal Navy (including the Royal Marines), Army, or the Royal Air Force and were deployed to Afghanistan during the study data collection period. The target sample size was 1,425 personnel, which represented 15% of the 9,500 personnel that made up the UK's deployed force in Afghanistan at the time of the survey. The sampling strategy aimed to include a mixture of personnel deployed to major base areas and to more austere and dangerous locations. Although our sampling strategy was not random, we based it on personnel records obtained from headquarters staff, in an effort to ensure that the final sample was representative of the whole deployed force.

Data were collected using a self-report questionnaire distributed by the OMHNE (A) survey team. During a location visit, commanders were asked to assemble all available personnel in one central location to receive a brief from a member of the survey team prior to the surveys being distributed. The briefing explicitly informed potential respondents that completion of the questionnaire was voluntary. Personnel were assured that all information was confidential, that their individual responses would not be passed on to commanders or medical staff, and that no individual would be named in any study report. Respondents were informed that all personal identification information would be separated from the questionnaire by the study team and stored separately. Minimal information about each respondent's identity was gathered to avoid any one individual filling out more than one questionnaire. The questionnaire took approximately 25 minutes to complete. Participants were not given any payment or any other inducement

to take part in the study. Once completed, participants placed their questionnaire in an envelope and sealed it before giving it to a member of the study team. The study gained ethical approval from the Ministry of Defence's Research Ethics Committee.

The survey tool included questions about socio-demographic and military characteristics, deployment experiences, unit factors, the homeland environment, and force health protection factors, such as receiving a stress brief prior to the deployment and taking a period of rest and recuperation (R&R) in a location outside the operational theatre. Psychological health status was assessed using the 12-item General Health Questionnaire (GHQ-12) (Goldberg et al., 1997) using a cut-off score of four or more to identify "cases" and severity scores of 0, 1, 2, and 3 for each item to generate a continuous measure (range 0 to 36). Symptoms of PTSD were assessed using the 17-item National Centre for PTSD Checklist Civilian Version (PCL-C) (Weathers et al., 1994). Probable PTSD caseness was defined using a validated cut-off score of 50 or more, and for the purposes of examining the effect of the three variables of interest (morale, leadership, and cohesion) on PTSD, the PCL scores were treated as a count variable, ranging from 17 to 85. To improve model fit, the scores were recoded to score from 0 to 68. Combat exposure was assessed with a 17-item measure that asked about the frequency of exposure to potentially traumatic combat events adapted from the combat experiences scale (Hoge et al., 2004). The 5-point rating scale measured increasing levels of exposure to each of the questionnaire items, from never through once, 2–4 times, 5–9 times, to 10 or more times. This was also treated as a count variable in the analysis.

The cohesion items were: "I feel a sense of comradeship (or closeness) between myself and other people in my unit," "I am able to go to most people in my unit when I have a personal problem," and "I feel well informed about what is going on in my unit." Participants were asked to rate their strength

of agreement (strongly agree, agree, disagree, and strongly disagree). The dropped cohesion item was "my seniors are interested in what I do or think," which was associated with leadership rather than cohesion.

Leadership items were: "my seniors embarrass juniors in front of other unit members" (reverse scored), "my seniors accept extra duties or tasks for the unit in order to impress their superiors" (reversed scored), and "my seniors treat all members of the unit fairly and show concern about the safety of unit members." The items were rated never, seldom, sometimes, and always.

Morale items were: "morale within the unit has generally been high," "the unit has been motivated and enthusiastic," "the unit has been operating efficiently," and "I have felt good about being part of this unit." Again, participants were asked to indicate their strength of agreement, ranging from strongly agree, agree, no strong feelings either way, disagree, to strongly disagree. The cohesion and leadership measures have been used in other studies of health in the UK AF (Fear et al., 2010; Hotopf et al., 2006).

Analysis

Analyses were carried out in STATA 10.1. Statistical significance was defined as $p < 0.05$. To allow us to generalize our results to the whole deployed force, whole force demographic data at the time of the survey were confirmed and sample weights were generated for the following variables: rank, sex, and reserve or regular engagement status. Sample weights for age and relationship status were not generated, as comparative data were not available. The weights were applied using the `svy` command in STATA. The effect of demographic characteristics, combat exposure, and the three variables of interest on GHQ12 caseness was examined using unadjusted and adjusted binary logistic regression analysis, with combat exposure, morale, leadership, and cohesion entered into the model as continuous vari-

TABLE 1. Demographic Characteristics of the OMHNE Sample

Characteristic	OMHNE Sample	Deployed Force
Rank	<i>n</i> (%)	<i>n</i> (%)
Junior	1051 (73.4)	8520 (65.9)
Officers and Senior Ranks	379 (26.5)	4410(34.1)
Total	1430	12930
Sex		
Male	1308 (91.7)	12090 (93.6)
Female	119 (8.3)	820 (6.4)
Total	1427	12910
Regular/Reserve		
Regular	1315 (93.1)	11684 (94.0)
Reserve	98 (6.9)	750 (6.0)
Total	1413	12434
Age		
< 25 years	605 (42.3)	
> 25 years	825 (57.7)	
Total	1430	Not Available
Relationship		
In a Relationship	945 (66.2)	
Not in a Relationship	483 (33.8)	
Total	1428	Not Available
GHQ12 Caseness		
Case	242 (17.1)	
Non-case	1174 (82.9)	
Total	1416	
PCL-C Caseness		
Case	38 (2.7)	
Non-case	1374 (97.3)	
Total	1412	

ables. As small numbers of personnel were classified as PTSD cases, the PCL-C was analyzed as a continuous variable. Also, as both the PCL-C and combat exposure scores were skewed (skewness = 2.148 and 0.973, respectively), the effect of combat exposure morale, cohesion, and leadership on PCL-C scores was examined using unadjusted and adjusted negative binomial regression with incidence-response rates (IRRs). We adjusted for demographic variables in the first model and combat exposure with the demographic variables in the second model. To determine the actual relationship between combat exposure and symptoms of PTSD, the PCL-C and combat exposure scores were examined using unweighted data before proceeding to

the full analysis using sample weights. Pearson's test was used without sample weights applied to examine the correlations between the three variables of interest (morale, cohesion, and leadership) prior to adjusting for them in the various weighted analyses. The results suggested that cohesion and morale were correlated ($r = 0.58$). Morale and leadership were also correlated but at a lower level ($r = 0.42$), and cohesion and leadership had the weakest correlation ($r = 0.38$). In view of the correlation between cohesion and morale, we decided not to control for these variables in the adjusted binomial and logistic regressions.

TABLE 2. Cohesion, Leadership and Morale: Itemized Responses

Deployment Unit Attribute (<i>n</i>)	Response <i>n</i> (%)				
	Strongly Disagree	Disagree	Agree	Strongly Agree	Never
Unit Cohesion: During THIS DEPLOYMENT:					
I feel a sense of comradeship (or closeness) between myself and other people in my unit (<i>n</i> = 1,415)	14 (1.0)	94 (6.6)	765 (54.1)	542 (38.3)	
I am able to go to most people in my unit when I have a personal problem (<i>n</i> = 1,417)	68 (4.8)	349 (24.6)	716 (50.5)	284 (20.0)	
My seniors are interested in what I do or think (<i>n</i> = 1,414)	77 (5.4)	291 (20.6)	823 (58.2)	223 (15.8)	
I feel well informed about what is going on in my unit (<i>n</i> = 1,417)	154 (10.9)	379 (26.7)	694 (49.0)	190 (13.4)	
Leadership: During THIS DEPLOYMENT my Commanders do the following:					
* Embarrass juniors in front of other unit members (<i>n</i> = 1,416)	20 (1.4)	95 (6.7)	348 (24.6)	309 (21.8)	644 (45.5)
* Accept extra duties or tasks for the unit in order to impress their superiors (<i>n</i> = 1,411)	85 (6.0)	180 (12.8)	400 (28.3)	283 (20.1)	463 (32.8)
Treat all members of the unit fairly (<i>n</i> = 1,413)	401 (28.4)	434 (30.7)	326 (23.1)	157 (11.1)	95 (6.7)
Show concern about the safety of unit members (<i>n</i> = 1,417)	658 (46.4)	387 (27.3)	249 (17.6)	82 (5.8)	41 (2.9)
Morale: During THIS DEPLOYMENT:					
Morale within the unit has generally been high (<i>n</i> = 1,419)	28 (2.0)	97 (6.8)	298 (21.0)	715 (50.4)	281 (19.8)
The unit has been motivated and enthusiastic (<i>n</i> = 1,417)	20 (1.4)	74 (5.2)	326 (23.0)	746 (52.6)	251 (17.7)
The unit has been operating efficiently (<i>n</i> = 1,417)	10 (0.7)	71 (5.0)	200 (14.1)	779 (55.0)	357 (25.2)
I have felt good about being part of this unit (<i>n</i> = 1,418)	47 (3.3)	81 (5.7)	324 (22.8)	596 (42.0)	370 (26.1)

* Reverse scored

TABLE 3. The Effect of Leadership, Morale, and Cohesion on GHQ12 Caseness, Unadjusted and Adjusted Odds Ratios (OR and AOR), with 95% Confidence Intervals (95% CI)

Factor (<i>n</i>)	OR (95% CI)	¹ AOR (95% CI)	² AOR (95% CI)
Leadership (<i>n</i> = 1,370)	0.85 (0.82–0.89)	0.85 (0.81–0.89)	0.86 (0.82–0.90)
Morale (<i>n</i> = 1,377)	0.77 (0.73–0.81)	0.78 (0.74–0.82)	0.78 (0.75–0.83)
Cohesion (<i>n</i> = 1,379)	0.66 (0.6–0.72)	0.67 (0.61–0.73)	0.67 (0.61–0.74)

Note. 1. Adjusted for Age, Rank, Engagement, Sex, and Relationship Status; 2. Adjusted for Age, Rank, Engagement, Sex, Relationship Status, and Combat Exposure

RESULTS

The final sample consisted of 1,431 participants, 16.4% of the UK AF personnel deployed to Afghanistan at the time the survey was conducted. Three personnel refused to complete the questionnaire and a further three provided only brief demographic information and left the rest of the questionnaire blank; the final response rate was thus 99.6%. The OMHNE sample contained greater proportions of junior ranks, females, and reservists than the deployed force. To account for this, sample weights were generated and applied. The demographic characteristics of the sample are shown in Table 1.

Looking at the components of leadership in more detail showed that 67.3% of leaders seldom or never embarrassed their subordinates, 52.9% seldom or never accepted extra duties to impress, 59.1% often or always treated their subordinates fairly, and 73.7% often or always showed concern for their subordinates.

Measures of cohesion showed that 92.4% of respondents felt a sense of comradeship with others in their unit, 70.5% felt that they could go to most people in their unit if they had a personal problem, 73.8% felt that their seniors were interested in them (although this was dropped from the analysis as described in the methodology section of this paper), and 62.4% reported that they were well informed about what was going on in the unit.

For morale, 70.2% of respondents reported morale in their unit as being generally

high, 70.3% reported that motivation and enthusiasm were high, 80.2% felt that their unit was operating efficiently, and 68.1% felt good about being part of their unit. The itemized responses to the three domains are shown in Table 2.

The analysis of the effect of combat exposure on PCL-C scores suggested that higher levels of combat exposure were associated with raised levels of PTSD symptoms (IRR 1.013 95% CI 1.012–1.015).

A total of 17.1% (*n* = 242) of the unweighted OMHNE sample (*n* = 1,416) reported symptoms of common mental disorders at caseness levels, as measured by the GHQ12. Table 2 shows the association of leadership, morale, and cohesion with GHQ12. Higher levels of cohesion, morale, and leadership are associated with lower levels of GHQ caseness, with cohesion having the greatest effect, followed by morale and then leadership. This effect persisted after adjusting for sociodemographic characteristics and then combat exposure.

A total of 2.7% (*n* = 38) of the unweighted OMHNE sample (*n* = 1,412) reported symptoms of probable PTSD at caseness levels as measured by the PCL-C, with a cut-off score of 50 or more. Table 3 shows the associations of leadership, morale, and cohesion with PCL-C scores. Greater levels of perceived leadership, morale, and cohesion were associated with lower scores on the PCL-C. After adjusting for demographic characteristics and combat exposure, cohesion had the strongest association with PCL-C scores followed by leadership and then morale (see Table 4).

TABLE 4. The Effect of Leadership, Morale, and Cohesion on PCL-C Score, Unadjusted and Adjusted Incidence-Response Ratios (IRR and Adj IRR) with 95% Confidence Intervals (95% CI)

Factor (n)	IRR (95% CI)	¹ Adj IRR (95% CI)	² Adj IRR (95% CI)
Leadership (<i>n</i> = 1,365)	0.89 (0.88–0.91)	0.90 (0.88–0.92)	0.90 (0.88–0.92)
Morale (<i>n</i> = 1,374)	0.93 (0.90–0.95)	0.93 (0.90–0.95)	0.91 (0.89–0.93)
Cohesion (<i>n</i> = 1,375)	0.89 (0.86–0.93)	0.89 (0.86–0.93)	0.86 (0.82–0.89)

Note. 1. Adjusted for Age, Rank, Engagement, Sex, and Relationship Status; 2. Adjusted for Age, Rank, Engagement, Sex, Relationship Status, and Combat Exposure

DISCUSSION

In this study of deployed UK military personnel, we found low levels of both symptoms of PTSD and common mental disorders, despite exposure to high levels of combat, serious injury and death (at the time of writing, there have been 322 deaths since 2001, the majority of which have been clustered in recent years, with 108 deaths occurring in 2009, of which 107 were combat related [Defence Analytical Services and Advice, 2010]). Our study took place in January and February 2010, which continued to be a very busy operational period for UK troops. The results of the current study are consistent with our findings from a previous survey conducted in Iraq, which also demonstrated low levels of PTSD; however, the level of combat exposure at the time of the Iraq survey was much lower. The rates of probable PTSD in the current survey are similar to those reported in our studies of non-deployed personnel (Fear et al., 2010; Hotopf et al., 2006). It therefore seems that certain characteristics of either the deployment to the Afghanistan theatre of operations or the personnel deployed appear to promote high levels of resilience in the face of substantial combat exposure. In the current study, there was a small but significant relationship between the frequency of combat exposure and levels of PTSD. However, greater levels of perceived leadership, morale, and cohesion were associated with lower levels of self-reported PTSD symptoms, suggesting that they may have some role to play in mitigating against the development of PTSD symptoms

or are at least reported by those who have better mental health.

There are a number of explanations for the association between subjectively good cohesion leadership and morale and better mental health (Updegraff, Silver, & Holman, 2008; Brailey et al., 2007). First, it is possible that they contribute directly to better mental health. Good leaders are likely to be generally supportive of their subordinates and will endeavor to ensure that they feel cared for and respected. In our study, this was evidenced by the highest rating of leader behavior being given to “showing concern for subordinates and not embarrassing juniors in front of others.” It is likely that positive leader behaviors, such as encouraging help seeking for personal problems, may help to offset the effects of stigmatizing beliefs about mental health problems that are known to have a detrimental effect on stress (Gould et al., 2010). There was some evidence suggesting that this may have been so, as nearly three-quarters of our respondents reported that they would seek help from another person in their unit if they had a personal problem, which may also reflect the high levels of cohesion reported in this study. Given that resilience to adversity may be associated with a positive state of mind, it is possible that the stress-mitigating effect of all three military variables was associated with feeling both physically and emotionally protected by leaders in the unit and also having trust in peers and friends. As the study was cross-sectional in nature, we could not, however, show causality, and it may be that personnel who reported generally good mental health

were more likely to perceive and report good leadership cohesion and morale.

In our study, cohesion was most strongly associated with lower levels of symptom reporting. Good social support, a substantial component of cohesion, reportedly reduced the severity of traumatic stress and depressive symptoms in US veterans (Pietrzak et al., 2009). Unit cohesion may have influenced mental health directly through the facilitation of peer support. As previously stated, substantial numbers of personnel would seek help from other unit members if they had a personal or emotional problem. Further, approximately three-quarters of the leaders were perceived to act in such a way as to protect subordinates from embarrassment, which might further reduce potential barriers to disclosing and solving personal problems and thereby promote cohesion. Of course, it is possible that feeling part of a cohesive unit is a product of better mental health. Whatever the direction of effect, our data suggest that for good operational mental health, high levels of perceived cohesion probably also need to be present. Personnel in cohesive units are likely to have greater confidence in both their leaders and comrades and as a result may be more effective in combat and in adversity. Historically, morale has been suggested as an important component of both operational efficiency and good mental health in military personnel (Grinker & Spiegel, 1963). In our study, morale in the units surveyed was good, with over three-quarters reporting high morale. Cohesion and morale operate at a group level, but they impact on the individual and rely on both leaders and peers fostering them, whereas leadership is behavior-driven and modifiable and will undoubtedly impact on both cohesion and morale. We therefore suggest that leadership is given the prominence it deserves as a primary driver of good mental health rather than over-investing in indirect methods such as stress briefing and other educational approaches, which in their current form appear to have limited value in the UK military (Mulligan et al., 2010).

The key message of this study is that poor mental health, specifically PTSD, does not inevitably follow exposure to combat and that good perceived cohesion, morale, and leadership will be reported by those who have better mental health. This is somewhat reassuring as all are directly modifiable through effective leadership training, personal training, and group-based military activities. Although mental health disorders can be treated by deployed mental health teams (Jones et al., 2010), the promotion of leadership, morale, and cohesion by unit commanders appears worthwhile, whereas strategies such as pre-deployment briefing (Sharpley et al., 2008) and reactive measures such as critical incident stress debriefing appear to have little effect (Sijbrandij et al., 2006). Finally, the data sampling strategy sought to ensure that a cross-section of all units deployed in theatre were surveyed, and as a consequence, we sampled a considerable number of units. In addition, these units were widely dispersed in various locations, often in small groups. It was therefore impossible to control for cluster effects, and we are thus unable to say whether perceptions of morale, cohesion, and leadership were influenced by unit factors or were related to the individual's prevailing state of mind.

Implications

Our results indicate that, in the main, the psychological health of UK personnel currently deployed to high intensity combat operations is robust, with levels of common mental health problems similar to both the non-deployed setting and the general population (approximately 17% in the OMHNE sample compared with approximately 17.6% in the general and non-deployed population) (Jenkins et al., 2009). The importance of leadership, cohesion, and morale are likely to have equal salience in non-military organizations that require personnel to undertake arduous duties in challenging environments. These data suggest that UK Armed Forces

have correctly placed great emphasis on developing credible leaders through training and selection, as good perceived leadership was reported by those with better mental health. High quality leadership in all units is a vital piece of the moral component of modern warfare and has effects at an individual psychological level that go well beyond operational effectiveness. The continued focus on all three factors both during steady state and in the period before, during, and after deployment may help to promote military effectiveness and reduced sickness absence. As King (2006) states, “military institutions depend on a level of social cohesion that is matched in few other social groups” (King, 2006). Our data also suggest that levels of perceived high quality leadership, cohesion, and morale may have an effect on the mental health of personnel deployed to high tempo combat operations. At the very least, better mental health was present when any of the three elements was endorsed by personnel. And as previous generations knew, no matter how well led and how high the morale, in every military conflict some personnel will inevitably become psychiatric casualties. We therefore suggest that regardless of how high the cohesion and morale, and however good the leadership, the provision of good quality mental healthcare on deployment is essential (Lazarus, 1991).

Study Limitations

While considerable efforts were made to minimize selection bias and apply sample weights, the OMHNE (A) data were derived from a non-random sample of UK AF personnel. Therefore, some caution should be exercised when generalizing the findings to all personnel deployed to HERRICK 11 and other deployments. In common with many other epidemiological studies, we used self-report measures which may not have the accuracy of an in-depth clinical interview and which may have inflated the levels of disorder and symptom reporting (Forbes, Cream-

er, & Biddle, 2001; Decoufle, Holmgren, & Boyle, 1992). Studies that have examined the influence of anonymity in research studies with military personnel suggest that reporting bias can occur when using anonymous and identifiable forms in the same survey (Fear et al., submitted; McLay et al., 2008). The OMHNE (A) team did their utmost to reassure personnel that the information they provided was confidential; however, fears about a potential breach of confidentiality and potential stigmatization may have influenced the participants’ responses. We did not measure individual psychology in our study and therefore cannot incorporate this into our findings. We are thus unable to say whether having a positive mindset influenced the reporting of leadership, morale, and cohesion. Finally, because of the way in which the data sampling strategy was constructed—that is, to ensure that we included a cross-section of all units deployed in theatre—we have a substantial number of units in the sample. This is further compounded by the fact that the units were often widely dispersed in a variety of locations, often in small platoon-sized groups. It was therefore not possible to control for cluster effects in this sample, even though we feel that this would have been desirable.

CONCLUSION

The results of this study support both hypotheses: levels of both PTSD symptoms and symptoms of common mental disorder were found to be higher for those experiencing greater levels of combat exposure; and leadership, morale, and cohesion were associated with lower rates of both PTSD and symptoms of common mental disorder. In spite of the high levels of combat exposure, death, and severe injury experienced over recent years by UK troops in Afghanistan, we found no evidence to suggest that the mental health of the deployed force was substantially different from that found in non-deployed

samples. The distribution of mental health cases was not uniform, and it varied with the frequency of combat exposure. We found there to be a strong effect for cohesion, good leadership, and morale on mental health overall and that the best primary prevention

of mental disorders, particularly PTSD, depends on the promotion of cohesion, good leadership, and morale, not on specific psychological interventions.

REFERENCES

- Brailey, K., Vasterling, J., Proctor, S., Constans, J., & Friedman, M. (2007). PTSD symptoms, life events, and unit cohesion in U.S. soldiers: Baseline findings from the neuro-cognition deployment study. *Journal of Traumatic Stress, 20*, 495-503.
- Decoufle, P., Holmgreen, P., Boyle, C.A., & Stroup, N.E. (1992). Self-reported health status of Vietnam veterans in relation to perceived exposure to herbicides and combat. *American Journal of Epidemiology, 135*, 312-323.
- Defence Analytical Services and Advice. (2010). UK Operational Morbidity Reports. British Casualties – Afghanistan Edition, 07 October 01–15 October 10. Retrieved November 8, 2010 from www.dasa.mod.uk.
- Fear, N.T., Jones, M., Murphy, D., Hull, L., Iversen, A., Coker, B., et al. (2010). What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK Armed Forces? *Lancet, 375*, 1783-1797.
- Fear, N.T., Seddon, R., Mulligan, K., Wessely, S., Jones, N., & Greenberg, N. (submitted for publication). Does anonymity increase the likelihood of participants reporting mental health symptoms? *British Journal of Psychiatry*.
- Forbes, D., Creamer, M., & Biddle, D. (2001). The validity of the PTSD checklist as a measure of symptomatic change in combat related PTSD. *Behaviour Research and Therapy, 39*, 977-986.
- Goldberg, D.P., Gater, R., Sartorius, N., et al. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine, 27*, 191-197.
- Gould, M., Adler, A., Zamorski, M., Castro, C., Hanily, N., Steele, N., et al. (2010). Do stigma and other perceived barriers to mental health care differ across armed forces? *Journal of the Royal Society of Medicine, 103*, 148-156.
- Grinker, R.R., & Spiegel, J.P. (1963). *Men under stress. War neuroses among combat fliers*. New York: McGraw Hill.
- Hoge, C.W., Castro, C.A., Messer, S.C., McGurk, D., Cotting, D.I., & Koffman, R.L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine, 351*, 13-22.
- Hotopf, M., Hull, L., Fear, N.T., Browne, T., Horn, O., Iversen, A., et al. (2006). The health of UK military personnel who deployed to the 2003 Iraq war: A cohort study. *Lancet, 367*, 1731-1741.
- Jenkins, R., Meltzer, H., Bebbington, P., Brugha, T., Farrell, M., McManus, S., & Singleton, N. (2009). The British Mental Health Survey Programme: Achievements and latest findings. *Social Psychiatry and Epidemiology, 44*, 899-904.
- Jones, N., Fear, N.T., Jones, M., Wessely, S., & Greenberg, N. (2010). Long-term military work outcomes in soldiers who become mental health casualties when deployed on operations. *Psychiatry, 73*(4), 352-364.
- King, A. (2006). The word of command. *Armed Forces and Society, 32*, 493-512.
- Lazarus, R. (1991). Psychological stress in the workplace. In P.L. Perrewe (Ed.), *Handbook on job stress* (pp. 1-13). Corte Madera, CA: Select Press.
- McLay, R., Deal, W., Murphy, J., Center, K., Kolkow, T., & Grieger, T. (2008). On-the-record screenings versus anonymous surveys in

- reporting PTSD. *American Journal of Psychiatry*, 165, 775.
- McManus, S., Meltzer, H., Brugha, T., Bebbington, P., & Jenkins, R. (2009). Adult psychiatric morbidity in England, 2007: Results of a household survey. Leeds: NHS Information Centre for health and social care, 2009. Retrieved November 8, 2010 from <http://signposting.ic.nhs.uk/?k=Adult+psychiatric+morbidity+in+England%2C+2007%3A+results+of+a+household+survey>
- Mental Stress Training Is Planned for U.S. Soldiers. (2009, August 18). *New York Times*, p. A1.
- Mulligan, K., Fear, N.T., Jones, N., Wessely, S., & Greenberg, N. (2010). Psycho-educational interventions designed to prevent deployment-related psychological ill health in Armed Forces personnel: A review. *Psychological Medicine*, 41, 673-686.
- Mulligan, K., Jones, N., Woodhead, C., Davies, M., Wessely, S., & Greenberg, N. (2010). Mental health of UK military personnel while on deployment in Iraq: The Operational Mental Health Needs Evaluation (OMHNE). *British Journal of Psychiatry*, 197, 405-410.
- Office of the Command Surgeon US Forces Afghanistan (USFOR-A) and Office of the Surgeon General United States Army Medical Command. (2009). A report detailing the findings and recommendations of the Mental Health Advisory Team (MHAT) 6. Operation Enduring Freedom 2009 Afghanistan. Retrieved November 8, 2010 from http://www.armymedicine.army.mil/reports/mhat/mhat_vi/MHAT_VI-OEF_EXSUM.pdf.
- Pietrzak, R.H., Johnson, D.C., Goldstein, M.B., Malley, J.C., & Southwick, S.M. (2009). Psychological resilience and postdeployment social support protect against traumatic stress and depressive symptoms in soldiers returning from operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety*, 26(8), 745-751.
- Sharpley, J.G., Fear, N.T., Greenberg, N., Jones, M., & Wessely, S. (2008). Pre-deployment stress briefing: Does it have an effect? *Occupational Medicine*, 58, 30-34.
- Sijbrandij, M., Olff, M., Reitsma, J.B., Carlier, I.V.E., & Gersons, B.P.R. (2006). Emotional or educational debriefing after psychological trauma: Randomised controlled trial. *British Journal of Psychiatry*, 189, 150-155.
- Updegraff, J., Silver, R., & Holman, A. (2008). Searching for and finding meaning in collective trauma: Results from a national longitudinal study from 9/11 terrorist attacks. *Journal of Personality and Social Psychology*, 95, 709-722.
- Weathers, F., Litz, B., Herman, D., Huska, J., & Keane, T. (1994). The PTSD checklist – civilian version (PCL-C). Boston: National Center for PTSD.