

**Mental Health Advisory Team (MHAT) V  
Operation Iraqi Freedom 06-08: Iraq  
Operation Enduring Freedom 8: Afghanistan**

14 February 2008

Office of the Surgeon  
Multi-National Force-Iraq

and

Office of the Command Surgeon

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and

Office of The Surgeon General  
United States Army Medical Command

The results and opinions presented in this report are those of the Mental Health Advisory Team V members and do not necessarily represent the official policy or position of the Department of Defense, the United States Army, or the Office of The Surgeon General.

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# 1. OVERVIEW

## 1.1 Introduction

The fifth Mental Health Advisory Team (MHAT) V was established by the Office of the U.S. Army Surgeon General. Historically, teams have been formed to support requests from the Commanding General, Multi-National Force-Iraq (MNF-I); however, for MHAT V the request from MNFI-I was augmented by a request from the Service Chief, Army Central Command (ARCENT) to examine Soldiers in Afghanistan and Kuwait. Therefore, unlike previous years, the current MHAT report contains two separate reports – one for Operation Iraqi Freedom (OIF) which includes a section on Soldiers in Kuwait, and one for Operation Enduring Freedom (OEF).

The OIF and OEF reports are independent and designed to be stand-alone documents. At the same time, there was close coordination between the OIF and OEF teams. Both teams were staffed primarily with personnel from the Walter Reed Army Institute of Research (WRAIR) and its subordinate unit, the US Army Medical Research Unit – Europe (USAMRU-E). Both teams used virtually identical assessment tools; similar analytic strategies, and collaborated in the writing. For these reasons, there is also a great deal of similarity in the two reports.

One key outcome of the coordination between teams was that the OEF report uses OIF data to help interpret and draw inferences from the data collected in Afghanistan. This was done because OEF had only one previous MHAT data collection (in 2005), and many of the responses on the surveys need to be interpreted in a broader context – comparing OEF to OIF provided this context. Readers of both reports may occasionally note small discrepancies in the values reported for OIF 2007 between the OIF and OEF reports. These differences reflect the fact that it was often necessary to adjust values for demographic and other sample differences in order to clearly delineate findings. For example, Soldiers in the OEF sample had deployed an average of 7.7 months while Soldiers in the OIF sample had deployed an average of 9.4 months. To help compare combat experiences in the two theaters, it was therefore necessary to normalize time and provide adjusted values as though both groups had comparable deployment lengths (9 months).

To illustrate how the adjustments may have changed values, note that in the OIF report the raw value for receiving small arms fire was 57.7% (Appendix C: OIF Report) while the adjusted rate in the OIF report was 59.3% (Table 5: OIF Report). In contrast, the adjusted rate in the OEF report for OIF Soldiers receiving small arms fire was 59.7% (Table 8: OEF Report). The differences in adjusted OIF rates in the two reports (59.3% versus 59.7%) reflect that the adjustments were based on different samples – the OIF report adjusted OIF 2007 relative to the 2006 OIF data, and the OEF report adjusted OIF 2007 relative to the OEF 2007 data. As authors, we felt that the potential confusion of reporting values with minor differences (e.g., 59.3% versus 59.7%) was offset by being able to adjust for demographic differences in the samples that could otherwise obscure substantive differences. Readers should note that great care was taken to provide accurate numbers. Specifically, all reported values in both reports were run in the statistical language R (R Core Development Team, 2007), and replicated by a second member of the research team using the Statistical Package for the Social Sciences (SPSS).

## 1.2 Combined Findings and Recommendations

Both of the reports have executive summaries providing key findings and recommendations specific to OIF and OEF. Many of the theater-specific recommendations were immediately implemented based on in-theater outbriefs to the medical and operational leaders. For instance, in OEF the distribution of Behavioral Health assets was completely changed based on recommendations from the OEF team. The following summary provides key background, findings and non-theater specific recommendations from the larger reports.

### 1.2.1 *Background*

During October and November of 2007, MHAT personnel deployed to Iraq and Afghanistan to assess the mental health status of Soldiers. Recommendations are based on:

- 2,295 Soldier well-being surveys from Operation Iraqi Freedom (OIF)
- 699 Soldier well-being surveys from Operation Enduring Freedom (OEF)
- Focus group interviews with Soldiers
- Surveys and interviews with behavioral health, primary care and unit ministry team personnel.

### 1.2.2 *Central Findings from OIF*

a. **Mental Health and Morale.** The percent of Soldiers screening positive for mental health problems is similar to previous years (17.9% for a combined measure of acute stress, depression or anxiety). Reports of unit morale showed a significant increase from 2006.

b. **Combat Exposure.** Reported levels of combat exposure varied significantly among units; however, there was an overall decline in reports of combat. The decline was most pronounced among Soldiers deployed 6 months or less.

c. **Behavioral Health Care Delivery.** Compared to 2006, Soldiers reported more difficulty accessing behavioral health services, but lower stigma associated with seeking care. Behavioral health personnel reported a shortage of behavioral health assets and higher burnout.

d. **Role of Behavioral Health Officers.** Behavioral health personnel reported significant increases in advising commanders about Soldier mental health issues.

e. **Deployment Length.** Reports of work-related problems due to stress, mental health problems and marital separations generally increased with each subsequent month of the deployment. Reports of mental health problems declined in the last third of the deployment likely due to redeployment optimism.

f. **Multiple Deployers.** Soldiers on their third or fourth deployment were at significantly higher risk than Soldiers on their first or second deployment for mental health problems and work-related problems.

g. **Concussions.** In all, 11.2% of Soldiers met the screening criteria for mild traumatic brain injuries. Less than half of these (45.9%) reported being evaluated for a concussion.

h. **Battlemind Training.** Soldiers who received pre-deployment Battlemind training reported fewer mental health problems.

i. Suicide. Suicide rates continue to be elevated relative to historic Army rates. Most suicides involve failed relationships with spouses or intimate partners.

### 1.2.3 Central Findings from OEF

a. Mental Health. Soldiers in OEF reported rates of mental health problems (acute stress, depression, anxiety) similar to rates observed in OIF MHAT missions.

b. Combat Exposure. Brigade Combat Team (BCT) Soldiers in OEF reported levels of combat exposure similar to or higher than levels reported by BCTs in Iraq.

c. Barriers to Care. Soldiers reported significant barriers to mental health care, and behavioral health personnel reported difficulties getting to Soldiers.

d. Role of Leadership. Soldiers who report high combat experiences and poor leadership report very high levels of mental health problems. Findings replicate using OIF data.

e. Suicide. Suicide rates were elevated relative to historic Army rates.

### 1.2.4 Key Recommendations (non-theater specific)

#### Increase in-theater behavioral health assets

- Develop a mechanism to allow GS or contracted psychiatrists, psychologists, and social workers to fill select behavioral health positions in theater to augment military personnel.
- Create and fill Behavioral Health Officer and NCO positions in Aviation Brigades.
- Mandate all combat medics receive Battlemind Warrior Resiliency (formerly Battlemind First Aid) Training before deploying OEF or OIF to augment behavioral health personnel.

#### Change the mTOE to maximize the impact of organic behavioral health assets.

- Move Division Psychiatrist position from Sustainment Brigade to Division Surgeon cell.
- Move Brigade Behavioral Health Officer and NCO positions from Brigade Support Battalions (BSB) to the Brigade Surgeon cell.

#### Mitigate multiple deployment effects

- Provide Soldiers who have deployed multiple times priority for TDA assignments.
- Ensure adequate dwell-time between deployments.

#### Strategies to reduce suicide risk

- Amend TRICARE rules to cover marital and family counseling as a medical benefit.
- Tailor suicide prevention training packages to focus on phase of deployment and aimed at building psychological resiliency.

## Training

- Continue emphasis on Battlemind Training for Soldiers and Families.
- Enhance training for NCOs at Warrior Leader Course, BNCOC and ANCOC on their role in maintaining Soldier resiliency through counseling & mentorship training.
- Develop and implement senior leader Battlemind training.
- Continued emphasis on ethics training.

## Concussion

- Develop consistent policies for evaluating Soldiers after a concussive event.

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## 2. EXECUTIVE SUMMARY

### 2.1 Introduction

The Mental Health Advisory Team (MHAT) V was established by the Office of the U.S. Army Surgeon General at the request of the Commanding General, Multi-National Force-Iraq (MNF-I). The mission of MHAT V was to:

1. Assess Soldier mental health and well-being
2. Examine the delivery of behavioral health care in Operation Iraqi Freedom (OIF)
3. Provide recommendations for sustainment and improvement to command.

In the period of 2 SEP to 23 OCT, 2,279 OIF Soldiers completed an anonymous survey. In addition, 350 anonymous surveys were completed by behavioral health, primary care and unit ministry team members.

During the period of 15 OCT to 15 NOV the MHAT V team (a) processed and analyzed survey data, (b) examined secondary data sources, and (c) conducted focus group interviews with Soldiers, behavioral health personnel, and medical personnel. The MHAT V team report and recommendations are based on these data sources.

### 2.2 Central Findings: Soldiers

Findings are listed in terms of outcomes, risk factors, and protective factors.

#### *2.2.1 Morale, Mental Health, Performance and Ethical Behavior Outcomes*

1. The percent of Soldiers who reported high or very high unit morale was significantly higher in 2007 than 2006.
2. The percentage of Soldiers screening positive for mental health problems was similar to 2006 and other years.
3. Soldiers' reports of the degree to which their work performance was impaired by stress or emotional problems were significantly lower in 2007 than in 2006.
4. 11.2% of Soldiers met the screening criteria for concussion (also called mild Traumatic Brain Injury – mTBI). Less than half of these were evaluated by a medical professional.
5. Soldiers' reports of engaging in unethical behaviors were largely unchanged relative to 2006; however, they did report a significant decline in "modifying" the rules of engagement.
6. Soldiers who screened positive for mental health problems were significantly more likely to report engaging in unethical behaviors.

### *2.2.2 Risk Factors: Soldiers*

1. Normalizing data for months deployed, Soldiers reported a significant decline in exposure to a wide range of combat experiences relative to 2006. The decline was particularly pronounced for Soldiers in theater for six months or less.
2. On an unadjusted basis, Soldiers reported high exposure to a variety of intense combat events. In particular, 72.1% of Soldiers reporting knowing someone seriously injured or killed.
3. There was considerable variability across units in terms of combat exposure.
4. On a normalized basis, relative to 2006 Soldiers reported a significant decline in deployment concerns such as being separated from family. On an unadjusted basis, Soldiers' top concerns were deployment length and being separated from family.
5. Deployment length was a risk factor for most outcomes. A number of outcomes (morale, mental health, alcohol use, and unethical behaviors) show improvements in the last 4 months of the deployment.
6. Even with an improvement in reports of mental health in the last months of the deployment, nearly three times as many Soldiers would be expected to report mental health problems at month 15 than would be expected to report problems at month one.
7. Soldiers on multiple deployments report low morale, more mental health problems, and more stress-related work problems. Soldiers on their third/fourth deployment are at particular risk of reporting mental health problems.
8. Soldiers reported an average of 5.6 hours of sleep per day which is significantly less than what is needed to maintain optimal performance. Reports of sleep deprivation are a significant risk factor for reporting mental health problem and work-related problems.
9. Officers appeared to underestimate the degree to which sleep deprivation negatively impacts performance.

### *2.2.3 Protective Factors: Soldiers*

1. Soldiers' ratings of their social climate (leadership, cohesion and readiness) were significantly higher in 2007 than 2006.
2. Soldiers perceptions of the stigma associated with mental health care were significantly lower in 2007 than 2006.
3. In contrast to stigma, Soldiers' perceptions of several barriers to care increased. Increases were likely driven by Soldiers at command outposts who had trouble accessing mental health.
4. Soldiers' perceptions of their marital quality did not change from 2006.

5. Soldiers reported either no change or a decrease in their willingness to report a unit member for engaging in unethical behaviors relative to 2006.
6. Soldiers reported significant increases in training adequacy for managing the stress of deployments and for identifying Soldiers at risk for suicide.
7. Soldiers who received pre-deployment Battlemind training reported lower mental health problems.
8. Soldiers reported a significant increase in the adequacy of ethics training.

## 2.3 Summary of Behavioral Health Personnel Findings

1. Behavioral Health personnel in 2007 are conducting significantly more command consultations than personnel in 2006.
2. Behavioral Health personnel report significantly more shortages in personnel than did Behavioral Health personnel in 2006.
3. Behavioral Health personnel in 2007 report significantly more burnout than personnel in 2006.
4. The ratio of Behavioral Health personnel to total Army strength is 1:734. This ratio is the highest since OIF 1 where it was 1:836.

## 2.4 Summary of Primary Care Personnel Findings

1. Primary Care personnel in 2007 report significant increases in helping Service Members with mental health problems and referring Service Members to mental health services relative to 2006.
2. Primary Care personnel report significant increases in the number of medications prescribed for sleep, depression, and anxiety relative to 2006.

## 2.5 Summary of Unit Ministry Team Personnel Findings

1. Unit Ministry Team members in 2007 report talking more to commanders and with unit medical personnel than members in 2006.

## 2.6 Summary of Suicide Assessment

Since the beginning of OIF (March 2003), there have been 113 confirmed Army suicides in Iraq. The MNF-I has an active Suicide Prevention Committee, chaired by the Chief of Clinical Operations for the Command Surgeon. This has recently been augmented by an MNCI-I Suicide Prevention Board Chaired by the Corps Chief of Staff. The current suicide training program is being revamped into a more robust program, which will require further review once established to gauge effectiveness. The Automated Suicide Event Report (ASER) is being widely used in the theater by behavioral health care providers, but only for suicides/suicidal gestures by Army personnel. Although there are numerous service-specific mental health tracking systems, there is no single, joint tracking system capable of monitoring suicides, mental

health evacuations, and use of mental health/combat stress control services in a combat environment.

## 2.7 Key Recommendations

### 2.7.1 *Sustainment of Soldier Resilience*

1. Continue emphasis on Battlemind training across the deployment cycle.
2. Continue targeting behavioral health based on time in theater
  - a. Time-driven Battlemind debriefing after 6 months in theater for high combat exposure units.
  - b. Unit Behavioral Health Needs Assessments after 6 months in theater.
3. Provide NCOs who have deployed multiple times priority for TDA assignments.
4. Provide adequate dwell-time for Soldiers. Research indicates that one-year may not be sufficient time to reset mental health.

### 2.7.2 *Leaders*

1. Develop and monitor work cycle programs that provide adequate sleep time using the Combined Arms Doctrine Directorate (CADD) on Sleep Management and encourage Soldiers to seek treatment for sleep problems.
2. Encourage BN and CO leaders to read material such as the NATO leader's guide to "A Leader's Guide to Psychological Support Across the Deployment Cycle."

### 2.7.3 *Training*

1. Enhance training for NCOs at Warrior Leader Course, BNCOC and ANCOC on their role in reducing Soldier Stigma through counseling & mentorship training.
2. Enhance and validate ethics training.

### 2.7.4 *Suicide Prevention*

1. Synchronize Behavioral Health with Deployment Cycle Support System
2. Tailor suicide prevention training packages focused on phase of deployment and aimed at building psychological resiliency.

### 2.7.5 *Strengthen Families*

1. Amend TRICARE rules to cover Marital and Family Counseling as a medical benefit under TRICARE Prime.
2. Increase the number of Family Life providers in CONUS to work with Spouses and Families.

### *2.7.6 Delivery of Behavioral Health Care in Theater*

1. Ensure the Theater Behavioral Health Consultant and senior Mental Health NCOIC are assigned to the MNC/F -I Surgeon's office to have theater oversight.
2. Appoint a Behavioral Health Consultant within each MND to work with the theater Behavioral Health consultant.

### *2.7.7 Increase the Number of Behavioral Health Personnel*

1. Place Behavioral Health Officer and Behavioral Health NCO in Aviation Brigades.
2. Develop mechanism to fill CSC teams with GS or contracted psychologists or social workers.
3. Cross-train select 68W to allow them to augment 68X using training such as Battlemind First-Aid.

## 3. BACKGROUND AND LIMITATIONS

### 3.1 Background

This report presents findings from the fifth annual Mental Health Advisory Team (MHAT V). The MHAT deployed to Iraq in support of Operation Iraqi Freedom (OIF) in October and November of 2007. The mission and scope of activities of the MHAT V were approved by the Commanding General (CG), Multi-National Forces – Iraq (MNF-I) (see Appendix A for an unclassified version of the MHAT V Fragmentary Order – FRAGO). The MHAT V members were assigned to the MNF-I and worked directly under the supervision and control of the Command Surgeon, MNF-I who also serviced as the Command Surgeon, MNC-I.

#### 3.1.1 MHAT Mission

The MHAT mission is to assess Soldier mental health and well-being; examine the delivery of behavioral health care in OIF, and provide recommendations for sustainment and improvement to command.

#### 3.1.2 MHAT Scope of Activities

The MHAT is designed to:

1. Assess the mental health and well-being of the deployed force, and identify trends by comparing findings to previous MHAT data.
2. Reassess ethical issues faced by Soldiers to enhance future battlefield ethics training. This activity was included in the previous MHAT (MHAT IV) at the specific request of the CG, MNF-I.
3. Review behavioral health policies, programs, and structure to ensure optimal integration/utilization.
4. Review suicide prevention efforts.
5. Review the status of the implementation of recommendations of previous MHATs.

### 3.2 Limitations

MHAT recommendations are based upon many sources of information to include survey data from Soldiers and providers, records review and focus groups. One of the primary sources of data, however, comes from the anonymous Soldier Well-Being surveys collected as part of the effort. Soldier survey data are valuable because they provide a way to summarize responses from a large number of Soldiers and examine trends and patterns that would otherwise be impossible to detect. Despite these strengths, there are two limitations associated with the Soldier survey data that need to be highlighted – issues related to the validity of certain scales and the sampling scheme used to collect the data.

#### 3.2.1 Scale Validity

Many of the constructs assessed in the survey are measured using validated scales. For instance, the items used to assess Post-Traumatic Stress Disorder (PTSD) are widely used in civilian and veteran settings and have been subsequently validated in active-duty Army

populations (Bliese, Wright, Adler, Cabrera, Hoge & Castro, in press). Validated scales have established norms that make it possible to state with some degree of certainty that a specific score (e.g., a score of 50 on the Post-Traumatic Stress Disorder Check List -- PCL) is an indicator of the clinical condition being measured (e.g., PTSD). In the current survey, however, validated measures were not available for all constructs. For instance, the measures of ethical issues developed for the previous MHAT have not been validated. The use of un-validated scales provides flexibility in assessing battlefield conditions; nonetheless, in cases where un-validated scales without established norms are used, the interpretation of the data is more subjective than in cases where validated norms exist.

### 3.2.2 *Sampling Scheme*

A second limitation with the survey data is that respondents were not sampled using a random sampling design. A commonly used sampling design is a stratified random sample where relevant sub-populations are identified (e.g., type of unit, gender or rank), and individuals are randomly selected from these sub-populations. While this design has many statistical advantages, it was considered logistically unfeasible to implement in a combat environment. In addition, this sampling design which would require access to personally identifying information among deployed Soldiers was not permitted under the current MHAT human use protocol because it would raise concerns about confidentiality.

Cluster sampling is an alternative random sampling design that is less precise but potentially feasible in a deployed setting. In this sampling strategy, all members of randomly selected groups provide data. The sampling scheme used in MHAT IV and MHAT V had elements of a cluster sample because it primarily targeted line companies within Brigade Combat Teams (BCTs). Specifically in MHAT V, eight BCTs were tasked to select eight line companies and two support companies (10 companies total per BCT) and survey 25 Soldiers from each of these companies. The specific companies and individuals within the companies, however, were selected by the local medical representatives and operational leaders based on mission considerations rather than by a predetermined random process; consequently, the sampling scheme cannot be considered random.

There are two implications associated with not having a random sampling scheme. First, there is a possibility that the individuals who selected the specific Soldiers to complete surveys introduced bias by selecting either highly symptomatic or highly non-symptomatic Soldiers. While possible, the MHAT team has no reason to believe that Soldiers were systematically picked in any way that would bias the results. It is common, for instance, to select individuals to complete surveys based on which specific platoon or platoons have down-time the day the survey administration is scheduled. The second implication is that because the sampling plan was based on Soldiers in line units (BCTs) the results from this MHAT report are not representative of the approximately 138,000 Army Soldiers in Iraq at the time of the MHAT V data collection. This decision to focus on line Soldiers is based on the recognition that line Soldiers are at high risk of experiencing potentially traumatic events, and that exposure to these types of events is a key predictor of many behavioral health problems.

## 3.3 Mitigating the Limitations

### 3.3.1 *Current Report*

To mitigate the limitations associated with both un-validated scales and non-random sampling, the MHAT V report relies heavily on statistical modeling to draw inferences. That is, rather than estimate absolute prevalence rates of variables such as mental health problems or ethical

issues in the population (since prevalence can only be answered with a random sampling design), the analyses focus on whether responses to variables of interest are related to factors such as time in theater, the number of previous deployments, or combat frequency and intensity.

The use of statistical modeling has two additional advantages. First, it provides a way to compare responses over time while adjusting for sample differences. Specifically, the current report compares responses on MHAT V with those from MHAT IV. Both MHAT V and MHAT IV used virtually identical sampling designs, so it is reasonable to conclude that sampling bias (if it exists) would be comparable across years. In making comparisons across years, the analyses adjust for demographic sample differences in (1) gender, (2) rank, and (3) months deployed. This helps ensure that observed differences are not merely due to demographic differences in the two samples.

Second, by using statistical modeling, adjusted mean values can be used in figures to illustrate differences or similarities across years. The use of adjusted means effectively equalizes the MHAT IV and MHAT V samples on key demographic variables. In reporting adjusted means, we provide estimated values for a standardized group with high representation in the population which is generally the group of (1) male, (2) junior enlisted Soldier deployed for (3) nine months. Because of this strategy, the adjusted MHAT IV values reported in the current report will not necessarily coincide with the values provided in previous MHAT IV reports.

Adjusted means were estimated from either a logistic regression model or a linear regression model depending upon nature of the dependent variable. Key results were also confirmed using generalized linear mixed effects models (GLMMs) to control for hierarchical nesting of the data. These additional analyses were conducted to ensure that parameter estimates and standard error values were not biased by the nested nature of the data (Bliese & Hanges, 2004; Pinheiro & Bates, 2000). GLMMs were not used throughout because a fairly large percentage of Soldiers failed to provide their complete unit information and thus GLMM models had to be run on a sub-sample of those who provided complete unit information.

In the MHAT V report, all analyses were run in the statistical language R (R Core Development Team, 2007), and replicated by a second member of the research team using the Statistical Package for the Social Sciences program (SPSS).

### 3.3.2 *Future MHAT Missions*

Future MHAT missions should consider implementing a cluster sampling design. One way to do this would be to require all platoon members from 2 randomly selected platoons within each selected company to complete the survey (a census sample of randomly selected platoons). Using this alternative will eliminate the possibility of bias.

## 3.4 Data Handling Procedures

All surveys were distributed and collected through the medical chain of custody. Respondents returned surveys in sealed envelopes. Procedures were put into place to ensure that datasets were adequately de-identified and that surveys were properly destroyed. A neutral third-party observed the survey handling and database creation process (Appendix B). All Soldier well-being data was handled according to an Institutional Review Board (IRB) approved WRAIR research protocol.

## 4. OVERVIEW OF SOLDIER WELL-BEING

The MHAT V Soldier Well-Being survey contains the same core survey measures used in all previous MHATs. MHAT surveys are adapted from the Land Combat Study conducted at the Walter Reed Army Institute of Research (Hoge, Castro, Messer et al., 2004; Hoge, Terhakopian, Castro et al., 2007).

### 4.1 Soldier Combat & Well-Being Model

The MHAT V survey covers: (1) Risk Factors, such as combat and deployment experiences; (2) Protective Factors, such as training and willingness to seek care; and (3) Behavioral Health Status and Performance Indices (see Figure 1).

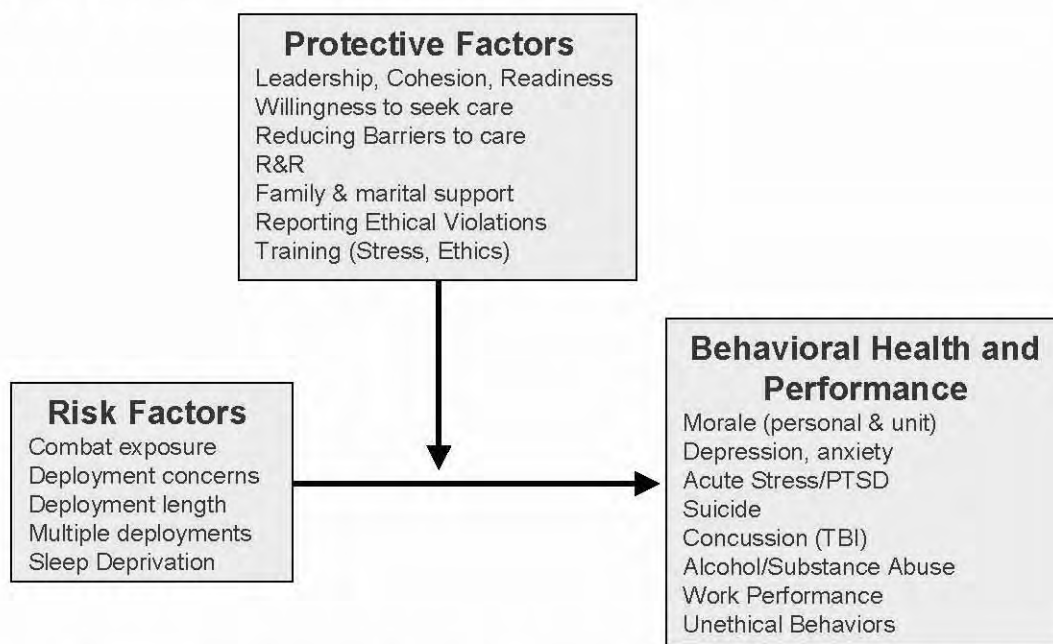


Figure 1. Soldier Combat & Well-Being Model (Adapted from Bliese & Castro, 2003).

#### 4.1.1 Risk Factors

The model assumes that the behavioral health and performance of Soldiers is influenced by both environmental (e.g., exposure) and individual-level risk factors (e.g., sleep quality). One goal of the annual MHAT reports is to systematically evaluate changes in risk factors. A second goal is to determine whether new risk factors have emerged. In this regard, the current MHAT report will specifically examine:

1. Whether exposure to combat-related risk factors have significantly increased or decreased in comparison to 2006.
2. Whether deployment concerns have changed significantly in comparison to 2006.
3. Whether the length of deployment (in particular the period beyond 12 months) represents a new risk factor.

4. Whether being deployed three or four times to Iraq represents a new risk factor over being on the first deployment or being deployed twice.
5. The degree to which reports of sleep deprivation are related to behavioral health and reports of sleep-related accidents and mistakes.

#### *4.1.2 Protective Factors*

Based on the framework of the conceptual model in Figure 1, behavioral health and performance can be improved either by (a) reducing or eliminating factors that put Soldiers at risk or (b) by strengthening protective factors so Soldiers are better able to cope when exposed to factors that put them at risk.

In combat environments, many risk factors are either unavoidable (e.g., exposure to potentially traumatic combat events) or they are the direct product of National policy decisions (e.g., the size of the military requires deploying Soldiers multiple times). For these reasons, many behavioral health interventions focus on developing and enhancing programs designed to help Soldiers cope with known risk factors (protective factors). The current MHAT report examines:

1. Whether there are systematic changes in protective unit variables such as perceptions of positive leadership, readiness and cohesion.
2. Whether willingness to seek care and access to care has changed, and how Soldiers might be encouraged to seek care.
3. Whether systematic changes in family support are evident across years or as a function of deployment length.
4. Whether training (pre-deployment Battlemind, suicide prevention, and ethics) can be shown to have beneficial effect.

#### *4.1.3 Behavioral Health and Performance*

Across the five years of the MHAT, a consistent set of behavioral health status variables have been assessed. These include:

1. Individual and Unit Morale
2. Acute Stress (PTSD), Depression and Anxiety
3. Suicides and Suicidal Ideation

In addition to evaluating the indicators listed above, the current MHAT report also evaluates a series of variables related to either various aspects of well-being or performance to include:

1. Self ratings of the degree to which stress and emotional problems have impacted performance.
2. Rates of reported concussions (also referred to as mild Traumatic Brain Injuries or mTBIs).

3. Use of alcohol and substance abuse to include inhalants in theater.
4. Soldiers reports of unethical behaviors towards non-combatants

Overall, these indicators provide a comprehensive assessment of the behavioral health status and performance of Soldiers deployed to Iraq.

## 4.2 MHAT V Soldier Sample and Methods

Units represented in the MHAT V assessment are listed in Table 1. These units had Soldiers complete the Soldier Well-Being survey or the units provided individuals to complete the behavior health (BH), primary care (PC) or unit ministry team (UMT) surveys. In addition, selected units also provided Soldiers for focus group interviews.

The MHAT V assessment of Soldiers focused primarily on Soldiers from brigade combat teams (BCTs) although a small sample of Soldiers in units at the corps level were also assessed along with Transition Team members. All regions within the Iraqi Theater of Operations (ITO) with significant numbers of U.S. Army Soldiers were surveyed.

*Table 1. Brigades surveyed in MND region.*

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## 4.3 Demographics and Comparison with MHAT IV

In the analyses detailed in the report, Soldier responses to the 2007 MHAT V survey are compared to responses to the 2006 MHAT IV survey. In both years, the sampling strategy was virtually identical; nonetheless, there were a number of demographic differences in the samples across the years. Many of these differences likely reflect changes in the proportion of the population from reserve component units. Table 2 provides details on selected demographic variables. In both samples data from Transition Teams are excluded (resulting in a final sample size of 1,368 for MHAT IV and 2,195 for MHAT V). Key differences between years include:

1. A significantly larger percentage of females in 2006 than 2007.
2. Significant rank differences. In 2007 a higher percentage of E1-E4 Soldiers and officers were surveyed. In addition, changes to the survey resulted in fewer unknown rank responses.
3. Significantly longer deployment lengths at the time of survey administration for Soldiers in 2007. In terms of means, Soldiers in 2006 had deployed an average of 8 months, while those in the 2007 sample had deployed an average of 9.5 months.

This is a direct result of the surge in which a number of units were extended beyond 12 months.

The 2007 sample also contains significantly more active component Soldiers; however, analyses across all five years of MHAT data finds no evidence of systematic differences in outcomes such as morale or mental health as a function of active versus reserve component, so this variable is not included as a control.

As previously discussed in Section 3.3.1, when drawing comparisons across the 2006 and 2007 samples, the demographic variables of gender, rank, and months in theater are statistically controlled to ensure that observed differences are not merely caused by demographic differences in the samples. For instance, when comparing combat experiences across samples, it is important to normalize the length of time Soldiers have deployed to determine whether there has been either a decline or escalation in combat intensity. Also as previously noted, adjusted values are typically provided for male, E1-E4, Soldiers in theater for nine months.

*Table 2: Demographic Comparison MHAT IV (2006) and MHAT V (2007).*

Demographic Variable	MHAT IV		MHAT V	
	n	Percent	n	Percent
Gender				
Male	1165	85.2%	1983	90.3%
Female	189	13.8%	206	9.4%
Unknown	14	1.0%	6	0.3%
Age				
18-19	43	3.1%	87	4.0%
20-24	662	48.4%	1102	50.2%
25-29	332	24.3%	539	24.6%
30-39	261	19.1%	378	17.2%
40+	68	5.0%	86	3.9%
Unknown	2	0.1%	3	0.1%
Rank				
E1-E4	741	54.2%	1315	59.9%
NCO	485	35.5%	720	32.8%
Officer / WO	61	4.5%	150	6.8%
Unknown	81	5.9%	10	0.5%
Component				
Active	1041	76.1%	2091	95.3%
Reserve	91	6.7%	49	2.2%
National Guard	205	15.0%	44	2.0%
Unknown/Other	31	2.3%	11	0.5%
Marital Status				
Single	578	42.3%	924	42.1%
Married	688	50.3%	1076	49.0%
Divorced	80	5.8%	132	6.0%
Unknown/Widowed	22	1.6%	63	2.9%
Time in Theater				
6 Months or Less	501	36.6%	456	20.8%
6 to 12 Months	643	47.0%	1318	60.0%
Over 12 Months	NA	NA	255	11.6%
Unknown	171	12.5%	166	7.6%

## 5. SOLDIER BEHAVIORAL HEALTH AND PERFORMANCE INDICES

In the conceptual model in Figure 1, Soldier behavioral health and performance are viewed as outcomes determined by risk factors and protective factors. This report begins by examining these outcomes, and uses subsequent chapters on risk factors and protective factors to interpret behavioral health and performance results. In most cases, health and performance indices are examined relative to MHAT IV data from 2006. In some cases, though, MHAT V indices are interpreted within the context of data from all previous MHAT missions. Finally, this section of the report examines several factors unique to MHAT V to include rates at which Soldiers report being evaluated for concussions, and the use of inhalants as a form of substance abuse.

### 5.1 Individual and Unit Morale

#### 5.1.1 Morale: MHAT IV and MHAT V

Soldiers ratings of unit morale were significantly higher in 2007 than in 2006 after controlling for sample differences of (1) gender, (2) rank, and (3) months in theater. Figure 2 shows the raw percentages (top graph) and adjusted percents (bottom graph). Notice in the bottom graph that the adjusted percent of Soldiers who rate unit morale high or very high in 2007 is close to double the estimate from 2006.

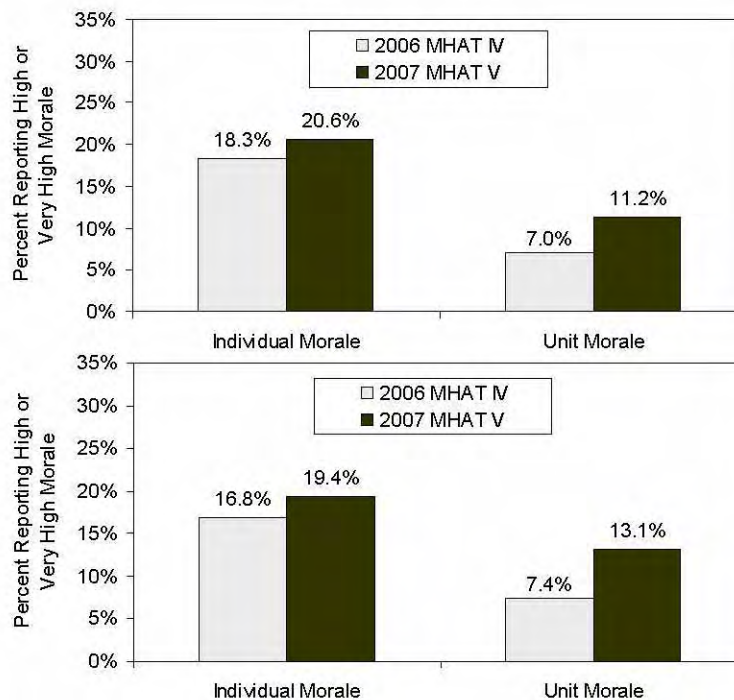


Figure 2: Unadjusted Percents (Top) and Adjusted Percents for Male, E1-E4 BCT Soldiers in Theater 9 Months (Bottom)

Figure 2 illustrates that adjusted rates are similar to raw rates; nonetheless there are clear advantages to interpreting adjusted percents when drawing comparisons across years. Specifically, ratings of unit morale are influenced by gender (males report higher unit morale than females); rank (NCOs rate unit morale lower than the E1-E4 group, and Officers rate unit morale higher than the E1-E4 group) and months in theater (a detailed analysis is provided in section 6.3.1). Each of these variables, however, differs from 2006 to 2007 (see Table 2). Therefore, to determine whether BCT Soldiers report changes in unit morale it is necessary to normalize the data on these key variables.

### 5.1.2 Morale Compared to Other MHAT Data

Given the large increase in unit morale, it is useful to interpret data from 2007 in the context of data from other years. Figure 3 provides both raw and adjusted percents across each year of OIF for unit morale. The adjusted values for years 2006 and 2007 in Figure 3 are not identical to the values in Figure 2 because the combined sample of (6,859) contains more information about the effects of rank and gender and uses this information to refine the adjusted means. Furthermore, the comparisons across years do not normalize percents for the number of months in theater in part because in early OIF samples there was little variability in months deployed. Despite these caveats, the results indicate that levels of unit morale in 2007 are significantly higher than 2006 ( $p < .001$ ) and 2003 ( $p < .001$ ).

In Figure 3, the adjusted values based on the E1-E4 population are higher than the unadjusted numbers. This occurs because E1-E4 Soldiers tend to rate unit morale higher than the NCOs – a relationship that is particularly evident in latter years of MHAT potentially due in part to the effects of multiple deployments on NCOs (see section 6.4.1).

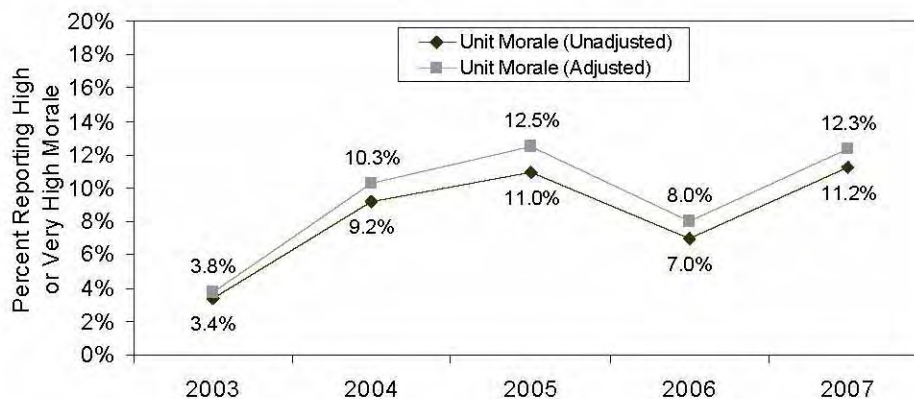


Figure 3: Unit Morale Over Time  
Adjusted Percents are for Male, E1-E4 BCT Soldiers

### 5.1.3 Morale: Medium, High or Very High

An alternative way to look at morale is to examine the percent of Soldiers who rate morale as being medium, high or very high. Using this breakdown, both individual and unit morale significantly increase from 2006. Specifically, the adjusted percents show that 51.2% of male, E1-E4 Soldiers in theater 9 months had medium, high or very high morale in 2006 compared to 55.4% in 2007. Similarly, 44.3% of male, E1-E4 Soldiers in theater nine months reported medium, high or very high morale in 2006 compared to 52.6% in 2007.

## 5.2 Behavioral Health: Acute Stress (PTSD), Depression and Anxiety

Soldiers' ratings of depression, generalized anxiety and acute stress (i.e., PTSD) were assessed using standardized, validated scales (Spitzer, Kroenke, & Williams, 1999; Weathers, Litz, Herman, Huska, & Keane, 1993). The scales were identical to the measures used in previous MHAT surveys, and have formed the basis of peer-reviewed publications from WRAIR (e.g., Bliese, et al., 2007; Hoge et al., 2004; Hoge, et al., 2007). Details on scoring specific scales are available in previous MHAT reports.

### 5.2.1 Behavioral Health: MHAT IV and MHAT V

Figure 4 shows both the overall unadjusted percents (top) and the percents adjusted for sample differences (bottom). There was a tendency for Soldiers in 2007 to report lower values; however, using a conventional criterion of  $p < .05$ , none of the differences were statistically significant.

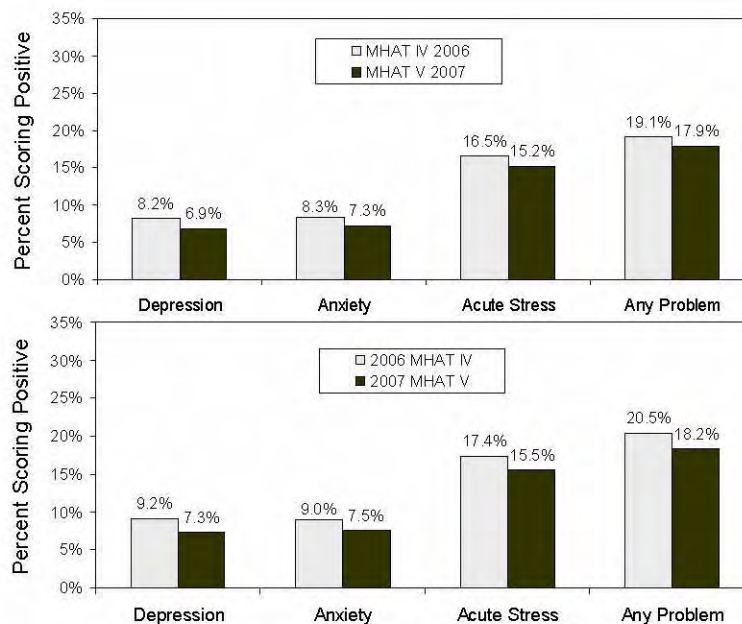


Figure 4: Unadjusted Percents (Top) and Adjusted Percents for Male, E1-E4 BCT Soldiers in Theater 9 Months (Bottom)

### 5.2.2 Behavioral Health Compared to Other MHAT Data

Reported values for 2007 are within expected ranges from other MHAT data and from other studies (e.g., Hoge et al., 2004). Figure 5 presents both adjusted and unadjusted values across all previous MHAT missions. In the comparison, 2007 significantly differs only from 2004. The adjusted percents for E1-E4 Soldiers are consistently higher than values for the entire sample because junior enlisted are more likely to score positive on measures of mental health problems.



























































































































































































































































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Brigade Combat Teams and Task Forces represented in the assessment are listed in Table 1. These units had Soldiers complete the Soldier Well-Being survey and provided individuals to complete the behavior health (BH), primary care (PC) or unit ministry team (UMT) surveys. In addition, selected units also provided Soldiers for focus group interviews.

(b)(2)

Table 1. Task Forces in OEF

### 27.3 Demographics and Comparison with MHAT OEF 2005 and OIF 2007

In the analyses detailed in this report, Soldier responses to the OEF 2007 survey (n=699) are compared to responses to the OEF 2005 survey (n=610) and the OIF 2007 survey (n=2195). For each of these assessments, the sampling strategy was virtually identical; nonetheless, there













































































































































