

# Psychometric Properties of the DEOMI Organizational Climate Survey



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# **Deployment and Its Relationship to Equal Opportunity and Organizational Effectiveness**

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## **Abstract**

The Defense Equal Opportunity Management Institute (DEOMI) has recently included an item addressing participants' deployment status on the DEOMI Organizational Climate Survey (DEOCS). There were 322,408 military personnel who completed the DEOCS during October 2009 to March 2010. They were categorized into six different deployment statuses. Deployment status was significant related to the equal opportunity and organizational effectiveness scales on the DEOCS, although it accounted for three percent of the variance on these scales at most. Nevertheless on many of the scales there was a pattern in which: 1) those who had returned from deployment more than six months previously or were never deployed rated these scales most favorably; 2) those deployed in the United States rated these scales somewhat less favorably; and 3) those currently deployed in a combat zone rated these scales least favorably. The implications of these findings on reenlistment rates and suggestions for further study are also discussed.

## **Introduction**

The Defense Equal Opportunity Management Institute (DEOMI) has been in charge of the development and testing of the Military Equal Opportunity Climate Survey (MEOCS; Landis, Dansby, & Faley, 1993). This project has included revising the MEOCS and keeping it up to date. Shortening the MEOCS and making its items more neutral have resulted in new survey called the DEOMI Organizational Climate Survey (DEOCS). The DEOCS measures aspects of organizational climate, including equal opportunity (EO) and organizational effectiveness (OE), in military units and civilian sectors in the Department of Defense. The DEOCS has met and surpassed its predecessor in psychometric qualities (Truhon, 2003).

American psychology's involvement with the military can be traced to World War I. But

the study of deployment and its effect on military personnel has been limited. Because of concern about mental health problems many military personnel who were deployed to Iraq and Afghanistan experienced, the Center for Deployment Psychology (CDP) was established (Munsey, 2007). CDP (n.d.) provides training programs in four areas: 1) the experience of deployment including reintegration with family after deployment; 2) the treatment of posttraumatic stress disorder and traumatic brain injury 3) the training of behavioral health care specialists in caring for those with serious medical injuries; and 4) the effects of deployment on families, especially children.

Research in deployment psychology has included such topics as readiness for deployment (Wilmoth, De Scisciolo, Gilcrest, & Dmochowski, 2007), the effects of deployment on families (Di Nola, 2008), and reintegration after deployment (Doyle & Peterson, 2005). For soldiers there has been little research on their experiences during deployment. An exception has been the work Bartone and his colleagues. They (Bartone, 1996; Bartone, Adler, & Vaitkus, 1998, Bartone, Britt, & Adler, 1996) have found that the stressors of soldiers experienced varied by the deployment phase they were experiencing. Bartone and Adler (1999) found that cohesion followed an inverted-U pattern from early deployment to late deployment.

A recent version of the DEOCS has included a measure of deployment status. This is an exploratory study of the relationship between deployment status and the DEOCS' EO and OE scales.

## **Method**

### **Participants**

The sample consists of 322,408 active duty personnel with the United States Department

of Defense and Department of Homeland Security. These personnel included members of all services, Army, Air Force, Coast Guard, Marines, and Navy, as well as civilian workers at the Department of Defense. They responded between October 2009 and March 2010. Demographic data on these personnel are presented in Table 1. As can be seen the modal characteristics of the personnel were White, non-Hispanic, male, between 22 and 30 years old, and in the Army.

## **Materials**

The current revised version of the DEOCS consists of 66 items, 13 of which provide demographic information (including deployment status). The EO section of the DEOCS consists of 23 items comprising seven scales. These scales (Sexual Harassment and Discrimination, Differential Command Behavior toward Women and Minorities, Positive EO Behavior, Racist Behavior, Age Discrimination, Religious Discrimination, and Disability Discrimination) were developed from earlier versions of the MEOCS. The 25 items in five scales (Organizational Climate, Trust in the Organization, Work Group Effectiveness, Work Group Cohesion, Leadership Cohesion, and Job Satisfaction) of the OE section were similarly developed. There are also four items that deal with personal experiences with discrimination and harassment.

All EO scales use a Likert-type rating scale (1= “very high chance that the action occurred,” 2= “reasonably high chance that the action occurred,” 3= “moderate chance that the action occurred,” 4= “small chance that the action occurred”, and 5= “almost no chance that the action occurred”). All of the OE scales except the Job Satisfaction use a different Likert-type scale (1= “totally agree with the statement,” 2= “moderately agree with the statement,” 3= “neither agree nor disagree with the statement,” 4= “moderately disagree with the statement”, and 5= “totally disagree with the statement”). The rating scale of the Job Scale is 1= “very

satisfied,” 2= “moderately satisfied,” 3= “neither satisfied nor dissatisfied,” 4= “moderately dissatisfied,” and 5= “very dissatisfied.” All responses to items were coded so that higher scores indicated better equal opportunity environment or better organizational effectiveness.

The deployment status item included six categories: 1) not currently deployed, but it has been more than six months since the last deployment. or never deployed; 2) not currently deployed, but last deployment was in a combat zone within the past six months; 3) not currently deployed, but last deployment was in a non-combat zone with the past six months; 4) currently deployed in the continental United States (CONUS); 5) currently deployed outside CONUS (OCONUS) in a combat zone; and 6) currently deployed OCONUS in a non-combat zone.

### **Procedure**

All participants completed the DEOMI Organizational Climate Survey (DEOCS). The DEOCS is deployed annually at the request of a military unit commander and is similar to an annual employee survey. The DEOCS is administered and received by DEOMI. It is available in both paper-and-pencil and web-based versions. All personnel are provided with either a paper copy of the survey and an answer sheet or a confidential online code to complete the survey online. Participants are then able to complete the survey at their own discretion. Survey responses are completely confidential, and although the DEOCS is deployed at the request of a military unit commander, the commander does not receive specific details about individual respondents in terms participation or outcomes on the survey.

### **Results**

When those who did not provide information about their deployment status were removed, there were 318,093 responses remaining. As can be seen in Figure 1, roughly two

thirds of the respondents either had returned from deployment more than six months before or had never been deployed.

Summary statistics of the DEOCS scales for each of the deployment statuses are presented in Table 2. Most means for EO scales are toward the high end of the scale (around 4.0), while means for the OE scales are somewhat lower (around 3.5).

Multivariate analyses of variance (MANOVA) were performed for the EO scales together and for the OE scales together<sup>1</sup>. With the size of the sample it is not surprising that there was a significant effect for deployment status (EO scales:  $F= 709263.971$ ,  $df= 7, 318081$ ,  $p< .001$ ,  $\eta^2= .005$ ; OE scales  $F= 600517.819$ ,  $df= 6, 318082$ ,  $p< .001$ ,  $\eta^2= .009$ ). The univariate analyses for the EO scales and OE scales are presented in Tables 2 and 3. Although all univariate Fs reach significance ( $p's< .001$ ), the proportions of variance accounted for ( $\eta^2$ ) are low.

Post-hoc tests using Tukey Honestly Significant Difference (HSD) Test showed a pattern where usually the most favorable perceptions of EO and OE were held by those who had returned from deployment more than six months before or had never been deployed. Next best perceptions were held by those deployed within the CONUS. The least favorable perceptions were held by those deployed OCONUS in a combat zone. This pattern can be seen by a re-examination of Table 1.

There are noteworthy exceptions to this pattern. Perceptions of Differential Command Behavior toward Minorities and Women and Disability Discrimination were relatively high for those OCONUS in a combat zone. Perceptions of Positive EO Behavior were highest for those

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<sup>1</sup> MANOVAs were also calculated using race, gender and rank as covariates. The results did not change appreciably.

OCONUS in a combat zone. Perceptions of the Work Group (Effectiveness and Cohesion) were also relatively high for this group.

### **Discussion**

This study provides a first look at both EO and OE within units at various phases of deployment. The quasi-experimental nature of the study and the small effect sizes lead to cautious interpretations. It seems unlikely that there are differences between those who are currently deployed and those not deployed that existed prior the determination of their status. Nor does it seem likely that military personnel's perception of EO and OE would partly determine their deployment status.

One possible explanation for the less favorable perceptions of EO and OE by those OCONUS in a combat zone may be related to the stress of combat. The stress of combat can have a negative effect on relationships with fellow military personnel, including EO behaviors (Walsh, Matthews, Tuller, Parks, & McDonald, 2010) and OE. This would be consistent with Bartone's (1999; Britt, Adler, & Bartone, 2001) findings that hardiness can protect against combat stress. An alternative view is that lower levels of EO behaviors and OE can be one more factor that contributes to the stress of combat.

The proportion of variance accounted for by deployment in the EO scales was very small. For only Sexual Harassment and Discrimination and Racist behavior did the  $R^2$  exceed 1%. Still it is encouraging to find that perceptions of Positive EO Behaviors were most favorable for those OCONUS in a combat zone.

The proportion of variance accounted for by deployment in the OE scales was slightly higher. For only Organizational Commitment and Trust in the Organization did the  $R^2$  exceed

2%. For these scales those OCONUS in a combat zone had the least favorable perceptions.

Although reenlistment rates have remained stable, there has been concern that longer and more frequent deployments to Iraq and Afghanistan will have a negative effect on these rates (Hosek & Martorelli, 2009).

Those OCONUS in a combat zone had a very favorable view of their work groups (both effectiveness and cohesion). These findings are consistent with Bartone and Adler's (1999) study that found cohesion was higher during deployment than it was before or after deployment. The relatively favorable by these personnel of leadership cohesion provides further support.

### **Future Directions**

Unfortunately the current categorization combines those whose deployment ended than six months ago with those never deployed. If these two groups could be distinguished, it would possible to examine trends further. It seems reasonable that those never deployed have more favorable perceptions of EO and OE. Do we see more favorable views from those whose deployment ended more than six months ago than those whose deployment ended more recently? Within those whose deployment ended six months ago do differences exist between those who were deployed in a combat zone and a non-combat zone? Further differentiation of deployment statuses would be useful.

Longitudinal work in this area would be helpful. The armed services test their personnel prior to and after deployment. It would be interesting to include some items on EO and OE in both phases to compare the personnel's responses. Addition of testing during deployment would be even more interesting.

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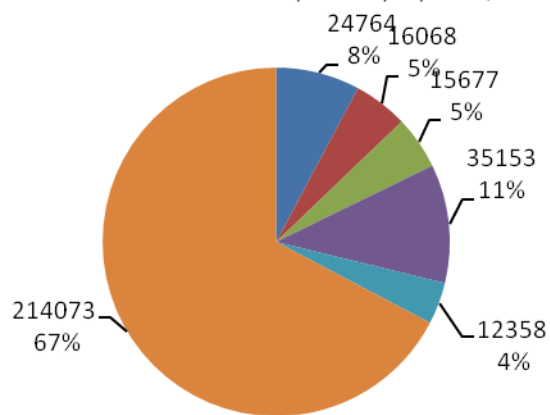
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**Figure 1**  
**Deployment Status of Respondents to the DEOCS**

- No, but I returned from combat zone deployment within the past 6 months
- No, but I returned from non-combat zone deployment within the past 6 months
- Yes (OCONUS, in a non-combat zone)
- Yes (OCONUS, in a combat zone)
- Yes (CONUS)
- No, it has been more than 6 months since my last deployment, or I have never deployed



**Table 1****Demographic Characteristics of the Respondents to the DEOCS**

<b>Category</b>	<b>Frequency</b>	<b>Percentage<sup>2</sup></b>
<b>Race</b>		
American Indian or Alaskan Native	5,260	1.8%
Asian	14,768	5.1%
Black or African American	50,305	17.5%
Hawaii'an or Pacific Islander	4,322	1.5%
White	202,864	70.7%
Mixed Race	9,509	3.3%
<b>Ethnicity</b>		
Hispanic	45,870	14.3%
Non-Hispanic	274,890	85.7%
<b>Gender</b>		
Female	56,876	17.7%
Male	264,711	82.3%
<b>Age</b>		
18 to 21	46,972	14.6%
22 to 30	132,271	41.2%
31 to 40	77,763	24.1%
41 to 50	42,238	13.2%
51 and Older	21,282	6.6%
<b>Service</b>		
Air Force	9,431	3.4%
Army	123,964	45.2%
Coast Guard	13,103	4.8%
Marine Corps	46,394	14.4%
Navy	80,950	29.5%
Non-military	217	0.1%
<b>Type of Employee</b>		
Military Officer	30,141	9.4%
Warrant Officer	4,498	1.4%
Enlisted Member	242,024	75.1%
Federal DoD Civilian Employee	32,634	10.2%
Federal non-DoD Civilian Employee	2,555	0.8%
Other	9,035	2.8%
<b>Rank</b>		
O1 to O3	16,357	6.0%
W1 to W3	2,627	1.0%
E1 to E3	54,344	20.1%
O4 to O6	11,411	4.2%
W4 to W5	1,115	0.4%
E4 to E6	151,446	55.9%
O7 to O8	278	0.1%
E7 to E8	28,892	10.7%
O9 to O10	328	0.1%

<sup>2</sup> Percentages were calculated after removing missing data.

E9	2,393	0.9%
O11 to O13	837	0.3%
O14 to O15	662	0.2%

**Table 2**

**Summary Statistics for DEOCS Scales by Deployment Status**

		No, it has been more than 6 months since my last deployment, or I have never deployed	No, but I returned from combat zone deployment within the past 6 months	No, but I returned from non- combat zone deployment within the past 6 months	Yes (CONUS)	Yes (OCONUS, in a combat zone)	Yes (OCONUS, in a non- combat zone)
Sexual Harassment and Discrimination	Mean	4.1862 <sup>a</sup>	3.9815 <sup>c</sup>	3.9294 <sup>d</sup>	4.0758 <sup>b</sup>	3.9111 <sup>d</sup>	3.9645 <sup>c</sup>
	Std. Deviation	.9302	1.0364	1.0378	.9845	1.0374	1.0004
Differential Command Behavior towards Minorities and Women	Mean	4.5369 <sup>a</sup>	4.3769 <sup>b</sup>	4.3478 <sup>c</sup>	4.3480 <sup>c,d</sup>	4.3715 <sup>b,c</sup>	4.3372 <sup>d</sup>
	Std. Deviation	.8566	.9800	.9974	.9615	.9460	.9296
Positive Equal Opportunity Behavior	Mean	4.0351 <sup>a</sup>	3.9624 <sup>b,c</sup>	3.9769 <sup>b</sup>	3.8666 <sup>d</sup>	4.0522 <sup>a</sup>	3.9413 <sup>c</sup>
	Std. Deviation	1.0296	1.0431	1.0600	1.0925	1.0379	1.0942
Racist Behavior	Mean	4.0531 <sup>a</sup>	3.7702 <sup>c,d</sup>	3.7516 <sup>d,e</sup>	3.9299 <sup>b</sup>	3.7373 <sup>e</sup>	3.7847 <sup>c</sup>
	Std. Deviation	.9655	1.0703	1.0518	1.0013	1.0608	1.0324
Age Discrimination	Mean	4.3307 <sup>a</sup>	4.2003 <sup>b</sup>	4.1571 <sup>c</sup>	4.1752 <sup>b,c</sup>	4.1762 <sup>b,c</sup>	4.1173 <sup>d</sup>
	Std. Deviation	.9802	1.0612	1.0658	1.0550	1.0697	1.1183
Religious Discrimination	Mean	4.4603 <sup>a</sup>	4.2827 <sup>c,d</sup>	4.2653 <sup>d,e</sup>	4.3426 <sup>b</sup>	4.2950 <sup>c</sup>	4.2420 <sup>e</sup>
	Std. Deviation	.8687	.9898	1.0021	.9490	.9649	1.0922
Disability Discrimination	Mean	4.4297 <sup>a</sup>	4.2583 <sup>d</sup>	4.2439 <sup>d</sup>	4.3034 <sup>b,c</sup>	4.3194 <sup>b</sup>	4.2873 <sup>c</sup>
	Std. Deviation	.9145	1.0300	1.0235	.9869	.9863	.9645
Organizational Commitment	Mean	3.5849 <sup>a</sup>	3.3065 <sup>d</sup>	3.3655 <sup>c</sup>	3.4642 <sup>b</sup>	3.0473 <sup>f</sup>	3.2122 <sup>e</sup>
	Std. Deviation	.9567	.9754	.9461	.9372	1.0276	.9669
Trust in the	Mean	3.5996 <sup>a</sup>	3.3997 <sup>b</sup>	3.4256 <sup>b</sup>	3.4217 <sup>b</sup>	3.1284 <sup>d</sup>	3.2898 <sup>c</sup>

Organization	Std.						
	Deviation	1.0374	1.0774	1.0515	1.0729	1.0986	1.0748
Work Group Effectiveness	Mean	4.1615 <sup>a</sup>	3.9867 <sup>e</sup>	4.0246 <sup>d</sup>	4.0913 <sup>b</sup>	4.0625 <sup>c</sup>	4.0269 <sup>d</sup>
	Std.						
Work Group Cohesion	Deviation	.8539	.9257	.9127	.9172	.9117	.9202
	Mean	4.0979 <sup>a</sup>	3.9398 <sup>c</sup>	3.9392 <sup>c</sup>	3.9954 <sup>b</sup>	3.9227 <sup>c</sup>	3.8747 <sup>d</sup>
Leadership Cohesion	Std.						
	Deviation	.9269	.9678	.9746	10.0000	1.0211	1.0109
Job Satisfaction	Mean	3.7018 <sup>a</sup>	3.5509 <sup>b</sup>	3.5507 <sup>b</sup>	3.5452 <sup>b</sup>	3.3186 <sup>d</sup>	3.4121 <sup>c</sup>
	Std.						
Job Satisfaction	Deviation	.9986	1.0309	1.0091	1.0371	1.0664	1.0527
	Mean	3.8959 <sup>a</sup>	3.7430 <sup>d</sup>	3.7744 <sup>c</sup>	3.8062 <sup>b</sup>	3.6898 <sup>f</sup>	3.7182 <sup>e</sup>
Job Satisfaction	Std.						
	Deviation	.81497	.86824	.84542	.84824	.84148	.85645

Different letters indicate a significant difference ( $p < .05$ ) by Tukey's HSD test.

**Table 2****Univariate ANOVAs for EO Scales by Deployment Status**

Dependent Variable	Sum of Squares	Degrees of Freedom	Mean Square	F Value	Partial $\eta^2$
Sexual Harassment and Discrimination	3911.963	5	782.393	844.702	.013
Differential Command Behavior towards Minorities and Women	2186.750	5	437.350	549.288	.009
Positive Equal Opportunity Behavior	582.548	5	116.510	107.952	.002
Racist Behavior	5676.105	5	1135.221	1148.709	.018
Age Discrimination	1878.110	5	375.622	367.200	.006
Religious Discrimination	2227.308	5	445.622	535.740	.008
Disability Discrimination	1525.967	5	305.193	343.099	.005

**Table 3****Univariate ANOVAs for OE Scales by Deployment Status**

Dependent Variable	Sum of Squares	Degrees of Freedom	Mean Square	F Value	Partial $\eta^2$
Organizational Commitment	10985.964	5	2197.193	2357.202	.036
Trust in the Organization	8083.857	5	1616.771	1462.413	.022
Work Group Effectiveness	1216.607	5	243.321	317.761	.005
Work Group Cohesion	2062.499	5	412.500	457.039	.007
Leadership Cohesion	5566.887	5	1113.377	1083.751	.017
Job Satisfaction	2007.884	5	401.577	586.992	.009