Organizational Commitment DEOCS 4.1
Construct Validity Summary

DEFENSE EQUAL OPPORTUNITY MANAGEMENT INSTITUTE
DIRECTORATE OF RESEARCH DEVELOPMENT AND STRATEGIC INITIATIVES

Directed by Dr. Daniel P. McDonald, Executive Director
366 Tuskegee Airmen Drive Patrick AFB, FL 32925
321-494-2747

Prepared by
Dr. Mary Margaret Garza
DEOMI J-9 Research Directorate

DEOMI PRESS

Technical Report #08-18

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Background

In 2014, DEOMI released DEOCS 4.0 for Department of Defense military and civilian members. DEOMI initiated development of DEOCS 4.1 in May 2016. This effort includes various updates to improve climate factors and individual items on the DEOCS. The following details the work done to update the factor of organizational commitment to a commitment construct that targets more specifically on the workgroup frame of reference. Included is a review of the 4.0 description and items, followed by the proposed modifications to the factor.

The DEOCS 4.0 description provided for organizational commitment is "members' dedication to the organization's mission success." This factor in DEOCS 4.0 consists of three items (Table 1). Revising the organizational commitment factor involved (1) reviewing the organizational commitment literature and military literature, (2) revising the definition and frame of reference to focus in affective commitment to the workgroup (rather than the organization), (3) identifying items that research and theory support, (4) piloting items on the DEOCS, (5) examining variance and descriptive statistics, and (6) selecting items that demonstrate the strongest scale properties.

Table 1.
DEOCS 4.0 Organizational Commitment Items

DEOCS 4.0
1. I feel motivated to give my best efforts to the mission of my organization.
2. I am proud to tell others that I belong to this organization.
3. I feel a strong sense of belonging to this organization.

Literature Review

Meyer and Allen (1991) provide the Three Component Model (TCM) as a framework of organizational commitment that consists of (1) affective commitment, (2) continuance commitment, and (3) normative commitment. TCM is a well-established approach in the literature (e.g., Allen & Meyer, 1990; Mathieu & Zajac, 1990; Meyer & Allen, 1991 Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Meyer, Becker, & Vandenberghe, 2004), and will therefore provide a foundation for deriving a definition of commitment in DEOCS 4.1. Affective commitment refers to the strength of an individual's identification with and involvement in an organization, or emotional attachment to an organization's goals and values (Mowday, Steers, & Porter, 1979). Affective commitment is the most widely studied and applicable component of organizational commitment (e.g., Mowday et al., 1979; Porter, Crampton, & Smith, 1976; Porter, Steers, Mowday, & Boulian, 1974). For instance, affective commitment is more predictive of performance and health and well-being than continuance commitment and normative commitment (Meyer, et al. 2002). Additionally, affective commitment may be the most theoretically relevant factor of commitment to the military setting, due to the nature of entry into the organization. Continuance commitment refers to the profit associated with remaining in an organization outweighing the cost associated with leaving the organization (Allen & Meyer, 1990). Continuance commitment is commonly studied in industrial/organizational psychology literature; however, this facet often displays small

relationships or negative relationships with organizational outcomes (Meyer et al., 2002). Additionally, this facet may be less applicable in the unique military environment, where members may only evaluate costs and benefits of remaining in the military during punctuated moments of their careers (e.g., re-enlisting). Finally, normative commitment refers to an individual's personal feeling of responsibility to the organization (Allen & Meyer, 1990). Normative commitment is less commonly studied and is considered a weaker predictor of organizational outcomes than affective commitment (Meyer et al., 2002). Additionally, similar to continuance commitment, enlisted members overtly experience obligation to continue serving when they join the military and each time they re-enlist.

Gade (2003) provides a review of organizational commitment in the military context. This overview of military research provides support for the use of affective commitment in the military context. Based on the notion that affective commitment is the most predictive form of commitment as well as the research that supports measuring it in a military context (Gade, 2003), we will utilize affective commitment to capture organizational commitment on the DEOCS. Therefore, the DEOCS 4.1 will define Affective Workgroup Commitment (referred to simply as Commitment in the DEOCS) as: Member's emotional attachment to his/her workgroup, characterized by a strong desire to maintain membership in the workgroup.

Heffner and Gade (2003) and Gade, Tiggle, and Schumm (2003) examined organizational commitment in a military setting and found supportive evidence for the use of a commitment scale. Therefore, items from these studies were identified for inclusion in the organizational commitment pilot. Because Meyer and Allen (1990) developed the TCM as well as the most studied commitment scale, items from their affective commitment scale were also included within the pilot. Table 2 displays the piloted items and descriptive statistics.

Data Analysis

Sample Description

This section contains the demographic characteristics of the current sample (n = 3,227), collected from 5 July 2016 through 9 July 2016. The variables are displayed according to the individual respondents' selections (with the exception of branch of service, which is reported by the survey requester). The personnel classifications of this sample are as follows: 38.5% Army (n = 1,244), 31.7% Navy (n = 1,024), 15.9% Marine Corps (n = 514), 5.2% Air Force (n = 167), .2% Coast Guard (n = 7), and 4.9% National Guard (n = 157). The majority of respondents within this sample are male (n = 2,524; 78%). For further information regarding the composition of the sample, refer to Table 2.

Table 2.
Sample Demographics of Commitment Items Piloted on DEOCS

	n	%
Branch of Service		
Army	1,244	38.5%
Navy	1,024	31.7%
Marine Corps	514	15.9%
Air Force	167	5.2%
Coast Guard	7	<1.0%
National Guard	157	4.9%
Component		

	n	%
Active Duty	2,223	94.8%
Reserve	121	5.2%
Gender		
Male	2,518	78%
Female	709	22%
Seniority		
Junior Enlisted (E1 – E3)	579	22.9%
Non-Commissioned Officer (E4 – E6)	1,378	54.4%
Senior Non-Commissioned Officer (E7 – E9)	256	10.1%
Junior Officer (O1 – O3)	195	7.7%
Senior Officer (O4 and above)	125	4.9%
Employment Type		
Military	2,533	80%
Civilians	650	20%

Item Descriptive Statistics and Reliability

This section displays descriptive statistics for the Heffner and Gade (2003); Gade, et al. (2003) and Meyer and Allen (1990) affective commitment items. All items were measured on a seven-point scale from *strongly disagree* to *strongly agree*. All scales had a range between 1 and 7. Reliability analyses were conducted using Cronbach's Alpha. The reliability coefficients for both scales were adequate, with α = .95 and α =.85 for Heffner and Gade (2003); Gade et al. (2003) and Meyer and Allen (1990), respectively. For more information on the items descriptive statistics or the reliability refer to Table 3 and Table 4.

Table 3.
Descriptive Statistics of Prospective Commitment Items Piloted on DEOCS

Item	Mean	SD	Skewness	Kurtosis
Heffner & Gade(2003); Gade, Tiggle, & Schumm (2003)				
I feel like "part of the family" in this workgroup.	5.00	1.89	-.82	-.45
This workgroup has a great deal of personal meaning to me.	5.01	1.80	-.80	-.34
I feel a strong sense of belonging to this workgroup.	4.99	1.84	-.79	-.45
I feel "emotionally attached" to this workgroup.	4.60	1.87	-.51	-.79
Meyer & Allen (1990)				
I would be very happy to spend the rest of my career with this workgroup.	4.29	2.08	-.29	-1.21
I enjoy discussing my workgroup with people outside it.	4.51	1.87	-.44	-.82
I really feel as if this workgroup's problems are my own.	4.61	1.86	-.54	-.73

Note: n = 3,227. The Std. Error for Skewness is .04 and Kurtosis is .09 for both scales.

Table 4.
Reliability Analysis of Prospective Commitment Items Piloted on DEOCS

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Heffner & Gade(2003); Gade, Tiggle, & Schumm (2003)				
I feel like "part of the family" in this workgroup.	14.60	27.33	.86	.94

This workgroup has a great deal of personal meaning to me.	14.59	27.75	.90	.93
I feel a strong sense of belonging to this workgroup.	14.61	26.86	.93	.92
I feel "emotionally attached" to this workgroup.	15.00	27.76	.85	.95
Meyer & Allen (1990)				
I would be very happy to spend the rest of my career with this workgroup.	9.12	11.43	.74	.78
I enjoy discussing my workgroup with people outside it.	8.90	12.50	.77	.76
I really feel as if this workgroup's problems are my own.	8.80	13.49	.68	.84

Note: Heffner & Gade (2003); Gade et al. (2003) α = .95; Meyer & Allen (1990) α = .85

Principle Components Analysis

After examining the descriptive statistics and reliability analyses on all commitment items, the Heffner and Gade (2003); Gade et al. (2003) scale was selected for additional exploratory analysis. Additionally, one item was removed (I feel "emotionally attached" to this workgroup) for all future analyses. This item was removed to make the scale more parsimonious.

Factor analysis was conducted on the 3 items from the Heffner & Gade (2003); Gade, et al. (2003) measure. These items were chosen for further analyses based on the initial preference for the scale, given its use in the military context, as well as the high reliability of the measure. The Bartlett Test of Sphericity (BTS) and the Kaiser Meyer-Olkin (KMO) measures were examined to assess the fit between the data and the factor. The BTS hypothesizes that the correlation matrix is an identity matrix. The obtained value of this test statistic for sphericity was large, and the associated significance level was small (BTS = 9695.14; p <.00). This allows us to reject the null hypothesis that the correlation matrix is an identity and to conclude that the factor analysis is an appropriate method to utilize for this data (Norusis, 1993). The KMO measure of sampling adequacy was also employed to compare the sum of the squared correlation coefficients and the squared partial correlation coefficients. The obtained statistic was .75. This indicates a very good fit and suggests that a factor analysis is an appropriate statistical method to utilize for analyzing this data.

The principle components analysis yielded a one factor solution which supports the theoretical definition of affective workgroup commitment, as a single construct. Refer to Table 5 for more information.

Table 5.
Principal Component Analysis Pattern Matrix of Commitment Items

	Component
Items	**1**
I feel like "part of the family" in this workgroup.	.94
This workgroup has a great deal of personal meaning to me.	.94
I feel a strong sense of belonging to this workgroup.	.97

Note. All items loaded on to one factor.

Aggregation Statistics of Final Commitment Items

This section will describe analysis to determine whether it is appropriate to aggregate this construct with DEOCS data. Surveys, including climate surveys, often measure a construct by obtaining multiple ratings from individuals and aggregating that data to the group-level. The construct of interest is then able to be interpreted at the group-level; this allows for interpretation of the results to shift from saying that Person A and Person B differ on a specific construct to being able to say that Organization A and Organization B differ on a specific construct. The interpretation of the same construct differs at the individual-level versus at the group-level. For instance, displaying a climate factor mean across all individuals within the DoD provides a snapshot of a larger DoD climate, and can provide insight into demographic subgroup differences. Alternatively, these individuals could be considered dependent data points, as they are all observations within units. Therefore, aggregating individuals into unit level means provides insight into the favorability of the unit climates across the DoD.

Some researchers believe the assessment of agreement is a prerequisite for arguing that a higher-level construct can be operationalized from individual-level data; other researchers believe that the variance of within- group agreement is of theoretical importance and should be studied (see Burke, Borucki & Kaufman, 2002). For exploratory purposes, the aggregation statistics for the Commitment Scale was examined.

Additional unit-level analyses will be conducted after the survey is released. With a more robust dataset, different levels of analysis (e.g., based on sub-UICs or 'breakouts'/departments) will be explored.[1] The remainder of this section will discuss the aggregation statistics for the Commitment Scale by providing (1) Sample Description, (2) Within-Group Agreement statistics, and (3) Between-Group Agreement Statistics.

Sample Description

This section contains the demographic characteristics of the sample of individuals used for the aggregation statistics. The aggregated dataset contains 39 units with 16 or more individuals, to include 974 individuals total. The variables are displayed according to the survey requester's selections. The personnel classifications of this sample are as follows: 27.2% Army (n = 264), 29.2% Navy (n = 284), 40.6% Marine Corps (n = 394), and 3.0% Joint Command (n = 29). The majority of respondents within this sample are male (n = 783; 80.6%).

Within-Group Agreement

The within-group agreement for the Commitment Scale was explored. Within-group agreement indices help determine if the construct that is supposed to be shared at the group-level

[1] There are two important caveats specific to the DEOCS methodology and this particular data collection: (1) The DEOCS typically remains open for 21 to 30 days – this data collection is representative of individuals who completed the research blocks of the DEOCS between 23 August 2016 and 30 August 2016; therefore, the sample reflects partial units/organizations. (2) Respondents are aggregated to the unit-level through a grouping variable that can identify who belongs to which unit. These units vary in size. For example, Commanders in the Air Force requesting the DEOCS may oversee a single Squadron, Group, or Wing. Therefore, a unit may comprise multiple commands. Due to these limitations, the fidelity of the aggregation statistics presented in the current paper may attenuate aggregation statistics (Ehrhart, Schneider, & Macey, 2014).

actually demonstrate agreement among respondents within the same group. Several within-group agreement indices were explored, including: r_{wg}, AD_M, *ICC(1)*, *ICC*(*2*).

The r_{wg} compares the observed within-group variances to an expected variance from random responding. This is a consensus measure or index of agreement within-group(s). LeBrenton and Senter (2008) suggest interpreting r_{wg} on a continuum of agreement, with values between .00 and .30 indicating a *lack of agreement*, .31 to .50 as *weak agreement*, .51 to .70 as *moderate agreement*, .71 to .90 as *strong agreement*, and .91 to 1.00 as *very strong agreement*. The averaged $r_{wg(j)}$ results for the Commitment Scale was .20 suggesting lack of agreement.

The mean average deviation (AD_M) can be interpreted such that 0 indicates complete agreement. Using the seven point response scale, an upper limit cut-off of 1.2 was utilized to determine within-group agreement (Burke & Dunlap, 2002), thus scores that fall under an AD_M value 1.2 represent satisfactory group agreement. The AD_M indices for the Commitment Scale suggest weak within-group agreement, falling slightly above the 1.2 cut-off ($AD_{M\,(J)=}$ 1.48).

Intraclass correlations were conducted to determine the amount of variance that can be explained by the unit (LeBreton & Senter, 2008). The *ICC(1)* explains the total variance that can be explained by group membership. Specifically, an *ICC(1)* of .10 can be interpreted as 10% of the variability in individual's responses is explained by group membership (Bliese, 2000). Additionally, *ICC(1)* can be interpreted similarly to effect size, with a value of .01 considered a "small" effect, a value of .10 considered a "medium" effect and a value of .25 considered a "large" effect (LeBreton & Senter, 2008). A small effect was found for the Commitment Scale, suggesting that 5% of an individual's responses can be attributed to unit membership.

ICC(2) is an estimate of the reliability of the group means. Thus, an *ICC(2)* indicates whether groups can be reliably differentiated based on the group mean. Although there are no strict standards of acceptability for *ICC(2)* values, Glick (1985) recommended an *ICC(2)* cutoff of .60. The *ICC(2)* score is approaching the cut-off (*ICC(2)* = .59)

The within-group agreement statistics show initial moderate support for aggregation. We believe that future data samples that include a larger number of completed units will provide stronger evidence to support within-group agreement for aggregation.

Between-Group Differentiation

The between-group differentiation for the Commitment Scale was explored. Between-group analyses help determine if the groups that are expected to differ actually differ. A one-way analysis of variance (ANOVA) was performed to determine if minimal evidence exists for difference across groups.

The discriminant power was assessed for the Commitment Scale to determine if differences across groups exist. The discriminant power was assessed with the one-way Analysis of Variance (ANOVA) procedure. Hays (1981) suggests that an *F* ratio > 1.00 provides the minimal evidence for differences across groups. Within the current sample, the *F* ratio for the Commitment Scale was greater than one across units, suggesting differences across groups. Within the current sample, the F ratio for commitment across units was greater than one, F (38, 935) = 2.21, $p < .01$.

Taken together, the aggregation statistics and the one-way ANOVA provide initial support for aggregating this data to the unit level. Aggregation statistics will be further explored once we have data for complete units.

Conclusion

The revised organizational commitment factor will now be titled "Commitment" and refers to members' emotional attachment to, identification with, and involvement with their workgroups and is characterized by a strong desire to maintain membership in the workgroup. The results from the previous analyses support a three item factor for commitment. These items are considered to be one factor and can be aggregated to examine commitment at the unit level. The final three items selected are presented in Table 6 and Table 7. Future analysis will be conducted to establish correlations with theoretically related items to establish convergent and discriminant validity.

Table 6.

Descriptive Statistics of Final Commitment Items

Item	Mean	SD	Skewness	Kurtosis
I feel like "part of the family" in this workgroup.	5.00	1.89	-.82	-.45
This workgroup has a great deal of personal meaning to me.	5.01	1.80	-.80	-.34
I feel a strong sense of belonging to this workgroup.	4.99	1.84	-.79	-.45

Note: n = 3,227. The Std. Error for Skewness is .04 and Kurtosis is .09.

Table 7.

Reliability Analysis of Final Commitment Items

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I feel like "part of the family" in this workgroup.	10.00	12.49	.87	.94
This workgroup has a great deal of personal meaning to me.	9.99	13.09	.88	.94
I feel a strong sense of belonging to this workgroup.	10.01	12.39	.92	.90

Note: α = .95

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