

**Unlawful Discrimination DEOCS 4.1
Construct Validity Summary**



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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 factors dealing with Discrimination. Included is a review of the 4.0 description and items, followed by the proposed modifications to the factor.

The current DEOCS (4.0) contains multiple factors that address discrimination. Military and civilian members respond to a differing number of discrimination items based on differences in protected categories (for more information see DoDD 1020.02E, June 8, 2015). After review of current discrimination items, it was noted that some items were highly similar and could be collapsed to reduce the number of items. The expectation was that this reduction would still capture the appropriate data and reduce survey fatigue. Each discrimination area presently consists of three items, presented below in Table 1.

Table 1.
DEOCS 4.0 items for Discrimination Factors

1. Qualified members of both genders can expect the same training opportunities.
 2. Qualified members of both genders can expect similar job assignments.
 3. Qualified members of both genders can expect to be treated with the same level of professionalism.
 4. Qualified personnel of all races/ethnicities can expect the same training opportunities.
 5. Qualified personnel of all races/ethnicities can expect similar job assignments.
 6. People of all races/ethnicities can expect to be treated with the same level of professionalism.
 7. Qualified personnel of all religions can expect the same training opportunities.
 8. Qualified personnel of all religions can expect similar job assignments.
 9. Leaders do not publicly endorse a particular religion.
 10. Qualified personnel over 40 years old can expect the same training opportunities as younger personnel.
 11. Qualified personnel over 40 years old can expect similar job assignments as younger personnel.
 12. Qualified personnel over 40 years old can expect the same career enhancing opportunities as younger personnel.
 13. Qualified personnel who are disabled can expect the same training opportunities as non-disabled personnel.
 14. Qualified personnel who are disabled can expect similar job assignments as non-disabled personnel.
 15. Qualified personnel who are disabled can expect the same career enhancing opportunities as non-disabled personnel.
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Based on a review of the items above, it was determined that a revised format consisting of one anchor item (see Table 2) would be a more succinct method for measuring our original discrimination items, now referred to as Unlawful Discrimination. A comprehensive literature review was not completed for DEOCS 4.1 as new items for the Unlawful Discrimination factor were not generated. Please refer to the literature review of the Discrimination factors for DEOCS 4.0 for further information. The remaining 4.1 discrimination items were pulled in from behavioral components of DEOCS 4.0. These items were tested together to examine the feasibility of one factor.

Table 2.

Revised Unlawful Discrimination Items

1. Discrimination based on _____ does **not** occur in my workplace.
 - a. Race/Color/National Origin
 - b. Religion
 - c. Sex
 - d. Sexual Orientation
 - e. Age (Civilian Only)
 - f. Disability (Civilian Only)
 - g. Equal Pay (Civilian Only)
 - h. Genetic Information (Civilian Only)
 - i. Pregnancy (Civilian Only)
 2. I believe I can use my chain of command to address concerns about discrimination without fear of negative personnel actions.
 3. Racial slurs, comments, and/or jokes are used in my workplace.
 4. Sexist slurs, comments, and/or jokes are used in my workplace.
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Data Analysis

Sample

This section contains the demographic participants' characteristics that completed new unlawful discrimination items. Items were tested on a seven-point scale ($n = 5,111$), conducted on October 22 – 26, 2016. These new items were tested on a recent sample of individuals following their participation on the DEOCS. The variables are displayed according to the individual respondents' selections (except for branch of service, which is reported by the survey requestor). For further information regarding the composition of the sample, refer to Table 3.

Table 3.
Sample Demographics of Unlawful Discrimination Items Piloted on DEOCS

	<i>n</i>	%
Branch of Service		
Army	1,878	38.8%
Navy	1,283	32%
Marine Corps	243	14.8%
Air Force	1,478	5.6%
Coast Guard	237	1.1%
National Guard	990	7.7%
Component		
Active Duty	3,112	77.5%
Reserve	906	22.5%
Gender		
Male	4,870	77.5%
Female	1,417	22.5%
Seniority		
Junior Enlisted (E1 – E3)	795	22.8%
Non-Commissioned Officer (E4 – E6)	2,728	51.3%
Senior Non-Commissioned Officer (E7 – E9)	586	10.8%
Junior Officer (O1 – O3)	474	9%
Senior Officer (O4 and above)	391	6.1%

Descriptive Statistics and Reliability

This section displays descriptive statistics for the items on the Unlawful Discrimination scale. All items had a range from 1 to 7 (*strongly disagree to strongly agree*). All reliability analyses were conducted using Cronbach's Alpha. The reliability coefficients for the scale was adequate ($\alpha = .92$). See Table 4 for more information regarding the reliability of the items.

Table 4.
Cronbach's Alpha if item deleted

	Scale <i>M</i> if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Discrimination based on _____ does not occur in my workplace.				
Race/Color/National Origin	62.83	178.317	.767	.910
Religion	62.66	180.705	.798	.909

Sex	62.86	176.476	.823	.908
Sexual Orientation	62.81	177.652	.835	.908
Age	62.84	178.129	.808	.908
Disability	62.78	179.144	.813	.909
Equal Pay	62.81	178.912	.800	.909
Genetic Information	62.75	180.320	.815	.909
Pregnancy	62.83	180.184	.769	.910
Racial slurs, comments, and/or jokes are used in my workplace.	63.62	192.999	.281	.935
Sexist slurs, comments, and/or jokes are used in my workplace.	63.60	192.203	.304	.934
I believe I can use my chain of command to address concerns about discrimination without fear of negative personnel actions.	63.06	181.410	.627	.916

Table 5.
Item statistics for Unlawful Discrimination

Item: Discrimination based on _____ does not occur in my workplace.	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
• Race/Color/National Origin.	5.85	1.627	-1.655	1.875
• Religion	6.01	1.466	-1.942	3.336
• Sex	5.82	1.611	-1.592	1.706
• Sexual Orientation	5.86	1.540	-1.602	1.886
• Age	5.84	1.563	-1.594	1.812
• Disability	5.89	1.510	-1.655	2.176
• Equal Pay	5.87	1.542	-1.591	1.891
• Genetic Information	5.93	1.456	-1.607	2.165
• Pregnancy	5.84	1.537	-1.543	1.745
Racial slurs, comments, and/or jokes are used in my workplace.	5.05	2.143	-.734	-.984
Sexist slurs, comments, and/or jokes are used in my workplace.	5.08	2.101	-.754	-.917
I believe I can use my chain of command to address concerns about discrimination without fear of negative personnel actions.	5.62	1.762	-1.372	.836

Principal Components Analysis

Two measures to test fit between the data and the factor analysis were utilized. The Bartlett Test of Sphericity (BTS) examines the hypothesis 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 ($BTS = 72,761.72; p < .01$). 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 Kaiser Meyer-Olkin (KMO) measure of sampling adequacy was also utilized to compare the sum of the squared correlation coefficients and the squared partial correlation coefficients. The obtained statistic was .94. This indicates a very good fit and suggests that a factor analysis is an appropriate statistical method to utilize for analyzing this data.

Unexpectedly, the principle components analysis yielded a two factor solution. Refer to Table 6 for more information. It is important to note that the two items that loaded onto a second factor are behavioral measures of unlawful discrimination. This is in contrast to the other items that were examined under the unlawful discrimination heading, and could explain the different loadings. Due to the fact that these two items do address discrimination, yet tap the construct in a different manner, it was determined that a behavioral subcomponent of unlawful discrimination be introduced to differentiate the items.

Table 6.
Principal Component Analysis Pattern Matrix of Unlawful Discrimination Items

Items	Component 1	Component 2
Discrimination based on Race/Color/National Origin does not occur in my workplace.	.83	.03
Discrimination based on Religion does not occur in my workplace.	.88	-.02
Discrimination based on Sex does not occur in my workplace.	.88	.03
Discrimination based on Sexual Orientation does not occur in my workplace.	.89	.02
Discrimination based on Age does not occur in my workplace.	.89	-.01
Discrimination based on Disability does not occur in my workplace.	.89	-.02
Discrimination based on Equal Pay does not occur in my workplace.	.89	-.03
Discrimination based on Genetic Information does not occur in my workplace.	.90	-.04
Discrimination based on Pregnancy does not occur in my workplace.	.85	-.02
Racial slurs, comments, and/or jokes are used in my workplace.	-.01	.97
Sexist slurs, comments, and/or jokes are used in my workplace.	.01	.97
I believe I can use my chain of command to address concerns about discrimination without fear of negative personnel actions.	.69	.05

Note. All items loaded on to two factors.

ICC

This section contains the demographic characteristics of the sample of individuals used for the aggregation statistics. These individuals come from 53 units containing 16 or more individuals. The variables are displayed according to the survey requestor's selections. The personnel classifications of this sample are as follows: 37% Army ($n = 519$), 23% Navy ($n = 328$), 2% Marine Corps ($n = 34$), 9% Air Force ($n = 131$), and 25% National Guard ($n = 355$). The majority of respondents within this sample are male ($n = 1,123$; 80%).

The within-group agreement for the Unlawful Discrimination scale was explored. Within-group agreement indices help determine if the construct that is supposed to be shared at the group-level actually demonstrates 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). LeBreton 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*. Averaged $r_{wg(j)}$ results indicate weak agreement for the unlawful discrimination climate ($r^-_{wg(j)} = .38$). However, these results should be interpreted with caution because the $r^-_{wg(j)}$ coefficient

was used on the sample as a whole rather than for each group separately. Additionally, while .70 is viewed as the rule-of-thumb cut-off, .38 in this instance may be acceptable, as the .70 value is viewed as an arbitrary cut-off point (Harvey & Hollander, 2004). One limitation of the $rwg(j)$ index is that if the null distribution does not reflect random responses, the index loses strength of interpretability. Because of this limitation, we examined additional interrater agreement indices, including AD_M , $ICC(1)$, and $ICC(K)$ (Agle et al., 2006).

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 of 1.2 represent satisfactory group agreement. The mean AD_M for each item, were close to the critical value of 1.2 (Burke & Dunlap, 2002). Additionally, the average of the AD_M indices suggests within-group agreement ($AD_{M(J)}= 1.29$).

Intraclass correlations were conducted to determine the amount of variance that can be explained by the unit (LeBreton & Senter, 2008). In other words, $ICC(1)$ explains the total variance that can be explained by group membership. Thus, an $ICC(1)$ of .10 can be interpreted as 10% of the variability in individual's responses is explained by group membership (Bliese, 2000). $ICC(1)$ 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 to medium effect was found for Unlawful Discrimination, 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 (Bliese, 2000). 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. Therefore, the $ICC(2)$ score was approaching significance at .50.

The discriminant power of the unlawful discrimination scale was assessed with one-way Analysis of Variance (ANOVA) procedures. 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 Unlawful discrimination across units was greater than one, $F(56, 1344) = 1.96, p < .00$.

Thus, taken together, the pattern of the interrater agreement indices 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 results from the above analyses suggest that the items are considered to be a reliable scale measuring the factor of unlawful discrimination and a behavioral subcomponent of unlawful discrimination. This factor and sub-factor can be aggregated to the unit level. The final unlawful discrimination items are located in Table 7. Future analyses will be conducted to establish correlations with theoretically related items to establish convergent and discriminant validity.

Table 7.

DEOCS 4.1 items for Unlawful Discrimination

1. Discrimination based on _____ does not occur in my workplace.
• Race/Color/National Origin
• Religion
• Sex
• Sexual Orientation
• Age
• Disability
• Equal Pay
• Genetic Information
• Pregnancy
2. I believe I can use my chain of command to address concerns about discrimination without fear of negative personnel actions.*
Behavioral Sub-factor
3. Racial slurs, comments, and/or jokes are used in my workplace.
4. Sexist slurs, comments, and/or jokes are used in my workplace.

* This item was modified to provide additional clarity regarding tnegative personnel actions in the final survey.

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