Measuring Diversity and Inclusion in Academic Medicine: The Diversity Engagement Survey

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Abstract

Purpose
To produce a physician and scientific workforce that advances high-quality research and culturally competent care, academic medical centers (AMCs) must assess their capacity for diversity and inclusion and leverage opportunities for improvement. The Diversity Engagement Survey (DES) is presented as a diagnostic and benchmarking tool.

Method
The 22-item DES consists of eight factors that connect engagement theory to inclusion and diversity constructs. It was piloted at 1 AMC and then administered at 13 additional U.S. AMCs in 2011–2012. Face and content validity were assessed through a review panel. Cronbach alpha was used to assess internal consistency. Confirmatory factor analysis (CFA) was used to establish construct validity. Cluster analysis was conducted to establish ability of the DES to distinguish between institutions' degrees of engagement and inclusion. Criterion validity was established using observed differences in scores for demographic groups as suggested by the literature.

Results
The sample included 13,694 respondents across 14 AMCs. Cronbach alphas for the engagement and inclusion factors (range: 0.68–0.85), CFA fit indices, and item correlations with latent constructs indicated an acceptable model fit and that items measured the intended concepts. Cluster analysis of DES scores distinguished institutions with higher, middle, and lower degrees of engagement and inclusion by their respondents. Consistent with the literature, black, Hispanic/Latino, female, and LGBTQ (lesbian, gay, bisexual, transgender, queer) respondents reported lower degrees of engagement than their counterparts.

Conclusions
The DES is a reliable and valid instrument for assessment, evaluation, and external benchmarking of institutional engagement and inclusion.

Persistent health disparities,[1] changing population demographics,[2] and growing numbers of insured patients following the enactment of the Affordable Care Act[3] make graduating a diverse physician and scientific workforce prepared to advance high-quality, culturally competent health care and research increasingly challenging for U.S. academic medical centers. Therefore, it is imperative for institutions to assess their organizational capacity for diversity and inclusion and respond effectively to insights gained.[4] Diversity scholars and practitioners have made strides in creating tactical metrics related to diversity and inclusion interventions such as pipeline and mentoring programs, internships, equal opportunity plans, diversity councils, and affinity networks. Institutions have administered climate and culture surveys to identify differences in workplace perceptions between various demographic groups. However, beyond these tactical metrics, we lack an overall measure of an institution's capacity to fully include and engage all of its members.

We created the Diversity Engagement Survey (DES) to measure how well academic medical centers are responding to the diversity of their community members (i.e., their faculty, staff, and students). By measuring the academic medicine environment through the lens of diversity and inclusion, the DES provides institutions with data on the level of active engagement by their members, their inclusive characteristics, and the degree to which their diverse groups experience inclusion.

In this article, we discuss the development and psychometric properties of the DES, which we propose as a tool for an institution's diagnosis of engagement and inclusion efforts, for guiding improvement toward achieving diversity goals, and for benchmarking of academic medical centers' progress toward engagement and inclusion.

Method

Background

The factors that undergird the DES emerged from years of study of the diversity, inclusion, and engagement literature and applied diversity management experience. Previous iterations of the instrument were used with 12 organizations (6 corporations, 4 hospital systems, 1 government agency, and 1 social service organization). These previous iterations were useful in evaluating perspectives about diversity among individuals at the participating institutions. However, they were not as effective in providing diagnostic data and strategic direction for future interventions. To improve the effectiveness of the instrument, we recognized the need to focus on how the cultural conditions of an institution are influenced by the interplay of engagement and inclusion.

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Conceptual underpinnings of the DES

Unlike culture, climate, or general purpose engagement surveys—which are widely used in academic medical settings for assessing individuals' perceptions of their own psychosocial experiences within an institution—the DES is designed to reveal the aspects of institutional culture and social dynamics related to engagement and inclusion that have been shown to be the most strongly related to productivity and employee retention.[5,6]

Within the DES framework (described below), *diversity* is conceptualized as encompassing all aspects of human differences and is viewed as a core value that embodies inclusiveness, mutual respect, and awareness of multiple perspectives.[7] *Inclusion* is conceptualized as a set of social processes that influence an individual's access to information and sense of belonging, job security, and social support received from others.[8,9] Without an institutional culture that supports the inclusion of the differences in perspectives, life experiences, and knowledge that individuals bring to the institution, the full potential of diversity cannot be realized.[4]

Engagement of every member of the institution is the foundation on which a truly inclusive academic medical center is built. Successful employee *engagement* is derived from meeting the basic intellectual and emotional needs of workers.[10–14] Engagement results from cultural conditions that foster a shared sense of the *vision and purpose* of the organization as well as *camaraderie* and *appreciation* of employees' contributions to the institution. A sense of vision and purpose provides employees with a compelling reason to contribute to the organization's mission. Camaraderie gives employees a sense of belonging and provides them with opportunities to reach out and personally connect with those around them. Appreciation recognizes individuals' contributions and values what each person brings to the organization. These are conditions for building inclusion within a diverse workforce as well as encouraging people to bring their full creative and innovative talents into the workplace.[12,15,16]

The DES framework

We identified eight engagement and inclusion factors, which formed our framework for developing the DES:

1. *Common purpose:* Individuals experience a connection to the mission, vision, and values of the organization.
2. *Trust:* Individuals have confidence that the policies, practices, and procedures of the organization will allow them to bring their best and full self to work.
3. *Appreciation of individual attributes:* Individuals perceive that they are valued and can successfully navigate the organizational structure in their expressed group identity.
4. *Sense of belonging:* Individuals experience their social group identity as being connected with and accepted in the organization.
5. *Access to opportunity:* Individuals perceive that they are able to find and utilize support for their professional development and advancement.
6. *Equitable reward and recognition:* Individuals perceive the organization as having equitable compensation practices and nonfinancial incentives.
7. *Cultural competence:* Individuals believe the institution has the capacity to make creative use of its diverse workforce in a way that meets business goals and enhances performance.
8. *Respect:* Individuals experience a culture of civility and positive regard for diverse perspectives and ways of knowing.

The DES instrument

We proposed survey items derived from a review of literature and our own experience in the field relative to the framework's factors. The final DES consisted of 22 items chosen to reflect the eight engagement and inclusion factors (see Table 1). Each item was created to capture the essence of the relationship between the institution and its members, not individuals' perceptions about how they, and those who share a group identity with them, perceive or experience institutional practices. All items were written in the first person and phrased positively. We also included a final open-ended question ("If you wish, please provide additional comments on the diversity and inclusion efforts") to provide the respondents the opportunity to express any concerns, insights, or experiences related to their institutional context.

All responses on the 22-item instrument were scored on a 5-point Likert scale (5 = strongly agree to 1 = strongly disagree). Respondents could indicate if they were unable to evaluate an item. Items that respondents were unable to evaluate were scored as 3 (neither agree nor disagree) in our analysis. Because of the small number of items, any significant concerns about participant acquiescence bias were dismissed.

In addition, the DES collected data on the characteristics of the respondents and their environment that may be useful in interpreting findings about diversity and inclusion:

- internal dimensions: race, ethnicity, age, gender, sexual orientation, and physical ability;
- external dimensions: religion, work experience, and languages spoken; and
- organizational dimensions: management status, functional level/classification, division/department, unit/group, work location, and seniority.

Pilot testing and survey implementation

Face and content validity of the survey were assessed and improved through a review panel consisting of representative respondents at the home medical institution of one of the authors. The same survey was piloted at an academic medical center in March 2011. After the pilot, an invitation to participate in the survey benchmarking process was sent through the Association of American Medical Colleges (AAMC) and the Group on Diversity and Inclusion to all AAMC member institutions. The survey was subsequently administered to 13 additional U.S. academic medical centers from March 2011 through April 2012. The participating academic medical centers were offered the instrument at no cost to their institution and were provided access to their survey results in aggregate form with the understanding that their results would be used to validate the instrument and create benchmark data. Data were collected, compiled, and provided to our research team by an external provider of survey management services.

The institutional review board of the University of Massachusetts Medical

Table 1

Diversity Engagement Survey (DES) Items Mapped to Engagement and Inclusion Factors, With Confirmatory Factor Loadings and Cronbach Alphas[a]

Factor	Item no.	Item	Confirmatory factor loading	Cronbach alpha
Common purpose	4	I feel that my work or studies contribute to the mission of the institution.	0.57	0.68
	17	I feel connected to the vision, mission and values of this institution.	0.76	
Access to opportunity	5	This last year, I have had opportunities at work/school to develop professionally.	0.71	0.77
	9	There is someone at work/school who encourages my development.	0.76	
Equitable reward and recognition	10	I receive recognition and praise for my good work similar to others who do good work at this institution.	0.79	0.77
	16	In my institution, I am confident that my accomplishments are compensated similar to others who have achieved their goals.	0.74	
Cultural competence	7	In this institution, I have opportunities to work successfully in settings with diverse colleagues.	0.7	0.81
	11	I believe my institution manages diversity effectively.	0.76	
	15	In my institution, I receive support for working with diverse groups and working in cross-cultural situations.	0.74	
	20	In this institution, there are opportunities for me to engage in service and community outreach.	0.64	
Trust	1	I trust my institution to be fair to all employees and students.	0.76	0.85
	13	If I raised a concern about discrimination, I am confident my institution would do what is right.	0.81	
	19	I believe that in my institution harassment is not tolerated.	0.75	
Sense of belonging	6	At work/school, my opinions matter.	0.75	0.70
	14	I consider at least one of my co-workers or fellow students to be a trusted friend.	0.45	
	21	I feel that I am an integral part of my department or school.	0.68	
Appreciation of individual attributes	3	I am valued as an individual by my institution.	0.81	0.81
	8	Someone at work/school seems to care about me as an individual.	0.66	
	22	The culture of my institution is accepting of people with different ideas.	0.8	
Respect	2	The leadership of my institution is committed to treating people respectfully.	0.81	0.83
	12	In my institution, I experience respect among individuals and groups with various cultural differences.	0.73	
	18	I believe that my institution reflects a culture of civility.	0.82	
Overall				0.96

[a]The Diversity Engagement Survey was administered in 2011–2012 to 14 U.S. academic medical centers with a total of 13,694 respondents.

School provided an exemption waiver for the study in February 2011. The survey was implemented in a voluntary, anonymous manner to all participating institutions' employees, including faculty, staff, and administrators, as well as students. Completion of the survey constituted consent. No incentives were provided for participation.

Statistical analysis

Quantitative analyses were performed using SAS 9.3 (SAS Institute Inc., Cary, North Carolina) and Stata 12 (StataCorp LP, College Station, Texas). Demographic characteristics of the respondents were summarized. Based on the development process described above, face and content validity of the instrument were established prior to pilot testing of the instrument.

Internal consistency. Internal consistency reliability, a commonly used tool in psychometric evaluation, is an indicator of how well different items measure the same concept.[17] We measured the internal consistency of the eight engagement and inclusion factors by calculating Cronbach alphas. Traditionally, Cronbach alpha values greater than or equal to 0.70 are deemed acceptable.

Construct validity. Construct validity is a measure of how meaningful an instrument is in actual use.[17] More specifically, construct validity is conveyed when a measure captures what it is intended to represent. In other words, a measure with high construct validity will behave according to a specified conceptual model. Based on the expected mapping of survey items to engagement and inclusion factors, we performed confirmatory factor analysis (CFA) via structural equation modeling to investigate construct validity and to examine the dimensionality of the DES. We examined item correlations and selected two representative fit indices—comparative fit index (CFI)[18] and the standardized root mean square residual (SRMR)[19]—to assess model fit. CFI is an index that ranges from 0 to 1; values greater than 0.90 are considered an indicator of a good fitting model.[18] The SRMR is an absolute measure of fit and is defined as the standardized difference between the observed and predicted correlation; models with an SRMR value less than or equal to 0.08 are considered good.[19]

We also examined the ability of the DES to distinguish between institutions with higher and lower degrees of engagement and inclusion of their respondents. First, we calculated a mean score for each factor by institution and a separate grand mean DES score for each institution (where a higher score represents a more positive response and thus a greater degree of engagement). Next, we created a graphic display for each factor that arrayed mean institutional scores in ascending order. This display provided a visual method to examine the ability of the DES to distinguish between institutions with higher and lower degrees of engagement and inclusion. Then, we conducted a cluster analysis based on the grand mean DES score for each institution to determine whether patterns, observed graphically, resulted in different statistical clusters of institutions. Cluster analysis is a set of techniques designed to place objects into groups, suggested by the data, such that an object in a given cluster is more like other objects in that same cluster than objects in another cluster.[20] We examined tree plots to determine the appropriate number of clusters. Using a complete linkage approach, we determined each institution's cluster membership based on its grand mean DES score.

We also sought to demonstrate the instrument's usefulness in understanding specific disparities within a given institution by distinguishing between the experiences of different demographic groups. As one example of this type of analysis, first, we calculated differences in mean item scores for black respondents and white respondents within each institution. Next, for each item we ranked each academic medical center separately on the black respondent mean scores (ordered from highest to lowest) and the observed disparity (white respondent mean score − black respondent mean score) (ordered from lowest to highest) and calculated a Spearman correlation for the two rankings. We performed a separate analysis for each item. We repeated this graphical and statistical analysis using the grand mean of all DES items for black respondents and for white respondents at each institution.

Criterion validity. As a final step in assessing the utility of the DES, we examined criterion validity, which is a measure of how well a construct predicts an outcome based on information from other variables.[17] Here, we examined differences in DES factor mean scores based on key respondent characteristics suggested by the literature, such as race/ethnicity, gender, and sexual orientation. Respondents had the opportunity to self-identify as lesbian, gay, bisexual, transgender, queer, questioning, asexual, or other. For purposes of analysis and reporting we collapsed these responses into one category labeled LGBTQ.

Results

Broad representation across each region of the United States was obtained through the 13,694 respondents to the DES. The average response rate across the 14 participating institutions was 26.7% (SD = 9.5), and institutional response rates ranged from 11% to 46%. (One institution did not provide the total number of possible respondents.) Approximately 66% (n = 8,435) of the respondents were female, and most were white (75%; n = 9,496). Most respondents reported heterosexual orientation (87%; n = 11,847). Duration of employment was equally distributed between respondents who reported less than five years (50%; n = 6,338) and those who reported five years or more (50%; n = 6,364) at their current institution.

Internal consistency

The Cronbach alphas for the eight engagement and inclusion factors of the DES ranged from 0.68 to 0.85 (Table 1), with an overall Cronbach alpha of 0.96. The factors demonstrated acceptable levels of internal consistency reliability, with the exception of one factor which was marginal (common purpose: Cronbach alpha = 0.68).

Construct validity

CFA resulted in a CFI of 0.917 and an SRMR of 0.038. Both indices indicate an acceptable model fit and support our mapping of items to engagement and inclusion factors. An examination of item correlations with the latent constructs from CFA indicated that in general all items correlated well with the constructs they were intended to measure, with only three items (items 4, 14, and 20) having slightly lower correlations than desired (Figure 1). CFA results also revealed satisfactory loadings for all the items (Table 1). Similar to the results found in the item correlations and latent constructs, items 4 and 14 had slightly lower factor loadings than the other items; however, they were still within the threshold of acceptability (loading scores > 0.4).

The graphical displays of institutions' mean engagement and inclusion factor scores clearly delineated institutions with higher, middle, and lower degrees of engagement and inclusion by their respondents (Figure 2). The formal cluster

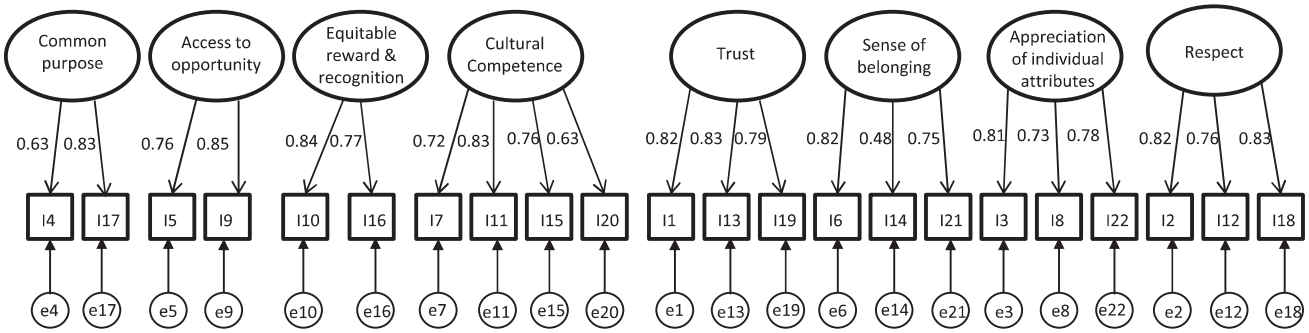

Figure 1 Confirmatory factor analysis for the Diversity Engagement Survey (DES). Comparative fit index = 0.917. Standardized root mean squared residual = 0.038. All coefficients significant at $P < .001$. In this figure, the top row illustrates the eight engagement and inclusion factors of the DES as latent constructs. The second row presents the item correlations with latent constructs for each item (I) included in the third row. The fourth row illustrates the error (e) terms fit in the confirmatory factor analysis. See Table 1 for the full text of the DES items.

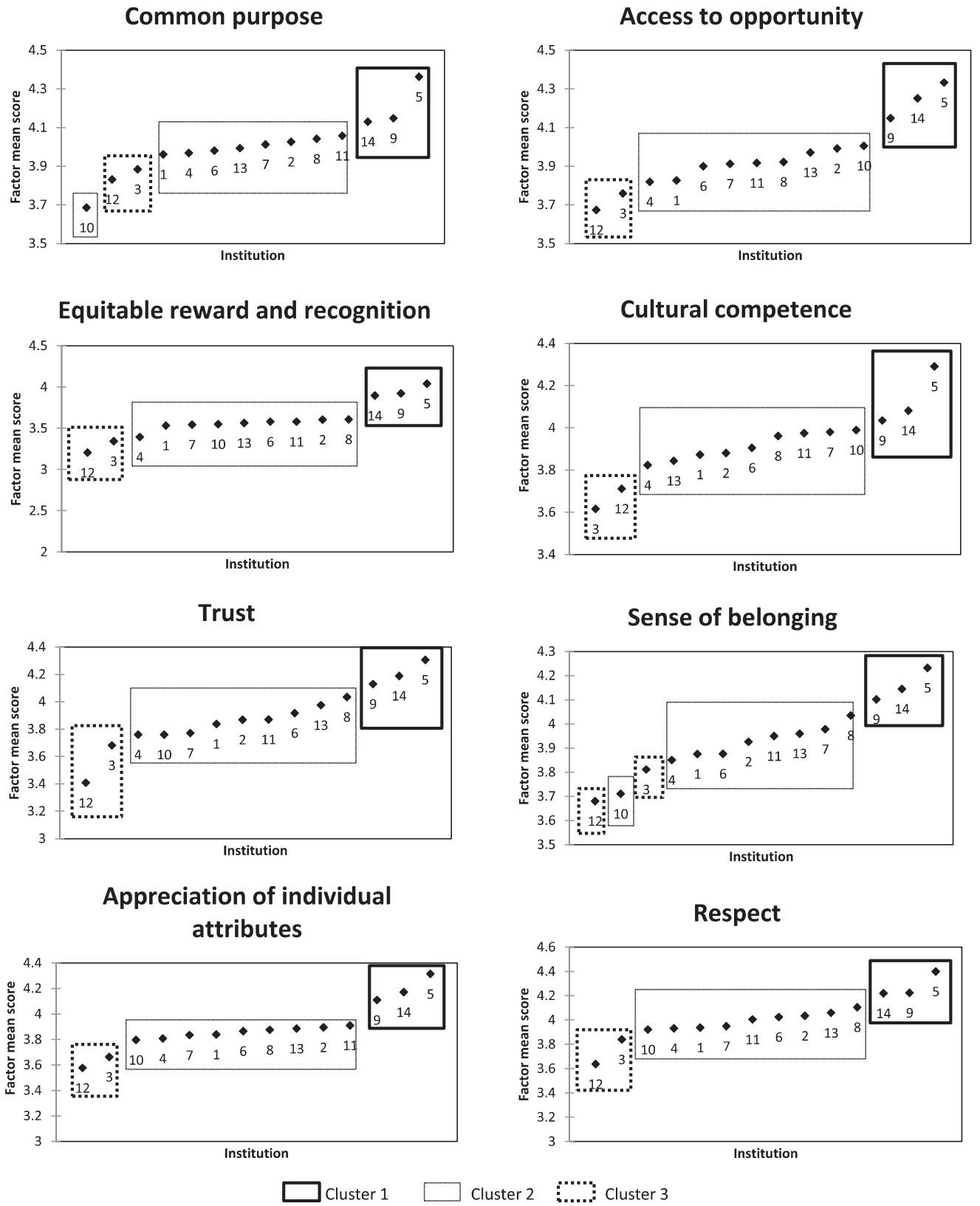

Figure 2 Mean factor scores and institution cluster membership by engagement and inclusion factor for 14 U.S. academic medical centers, Diversity Engagement Survey (DES), 2011–2012. Each point represents a single institution; that institution's study-assigned ID number appears below the point. Cluster analysis was based on each institution's grand mean DES score for all 22 survey items. Clusters 1, 2, and 3 refer to statistical groupings of institutions with higher, middle, and lower degrees of engagement and inclusion by their respondents, respectively. For DES items by factor, see Table 1.

analysis based on institutions' grand mean DES scores similarly yielded three distinct clusters of institutions, which accounted for 98% of the variation in the eigenvalues. Figure 2 illustrates the high degree of correspondence between the formal cluster analysis based on the grand mean DES and the graphical rankings of institutional performance on each factor.

We also found that greater disparity between black and white respondents at the institutional level was strongly correlated with lower black respondent scores. Spearman correlations for institutional rankings based on disparities and institutional rankings based on black respondent mean item scores ranged from 0.70 to 0.95 and were statistically significant for all items except 4 and 14 (see Supplemental Digital Table 1 at http://links.lww.com/ACADMED/A303). Similar findings based on the analysis for the grand mean of all items are illustrated in Figure 3. This figure also shows that there was great variability in both observed disparities and grand mean DES scores for black respondents. For only two institutions, the disparities favored black respondents (i.e., black respondents had higher grand mean DES scores than white respondents).

Criterion validity

Analysis of the responses by demographic group revealed that black respondents and Hispanic/Latino respondents had lower mean factor scores than white respondents. Female respondents had lower mean factor scores than male respondents (Table 2). Respondents who reported their orientation as LGBTQ had lower mean factor scores than those who reported heterosexual orientation. This pattern persisted when analyses were restricted to respondents from institutions belonging to the highest cluster of engagement according to cluster analysis (results not shown).

Discussion

Our findings suggest that the DES produces useful, reliable, and valid measurements of key phenomena essential to conditions that support diversity, engagement, and inclusion in academic medical centers. Additionally, the DES lends itself to both composite and subgroup analyses, which serve complementary yet distinct functions. The overall institutional scores support ranking and benchmarking, whereas subgroup analysis allows focused investigation about root causes that may be used in developing improvement plans. For example, if both an institution's overall and subgroup scores for a given factor or item are equally low, changes in organization-wide policy may be needed. On the other hand, if the overall score is high but a subgroup score is low, a policy targeting the subgroup may be appropriate.

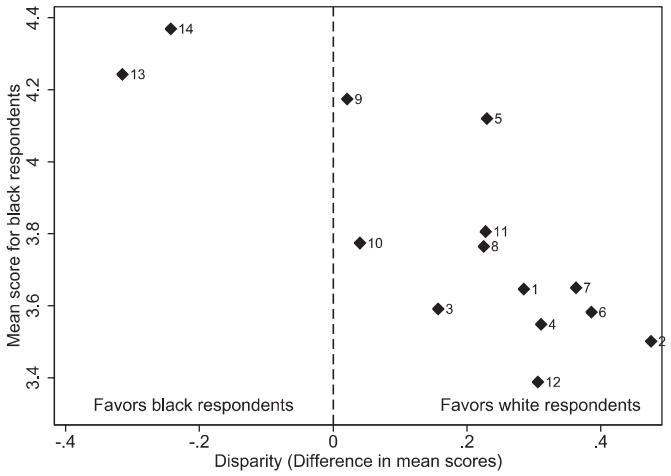

Figure 3 Institution-level analysis of the relation of the observed disparity between black and white respondents' grand mean Diversity Engagement Survey (DES) scores to the grand mean DES score for black respondents. Each point represents 1 of the 14 participating U.S. academic medical centers; that institution's study-assigned ID number appears below the point. Pearson $\rho = 0.80$. "Favors blacks respondents" indicates that the black respondents at the institution had a higher grand mean DES score than the white respondents. "Favors whites respondents" indicates that white respondents at the institution had a higher grand mean DES score than the black respondents.

Overall, the Cronbach alpha results indicate that the DES is a reliable instrument. One possible explanation for the marginally low Cronbach alpha of the common purpose factor may be violation of the essential tau equivalence assumption,[21] which is suggested because the observed variances of the two items comprising this factor were significantly different (data not shown). However, violation of this assumption usually leads to underestimation of the alpha coefficient, so it is reasonable to assume that the reported coefficient represents a lower bound for the true value. Because the entire DES has face validity based on existing literature and vetting with the review panel, we have chosen to retain the common purpose factor in the survey. Nonetheless, we will continue to monitor this factor closely as the DES is rolled out to more academic medical centers.

Additionally, we have demonstrated both construct and criterion validity. Fit indices from the CFA were acceptable, indicating appropriate model fit. Consistent with the literature,[22–26] we found that black, Hispanic/Latino, female, and LGBTQ respondents had lower degrees of engagement than their counterpart respondents. We also found that the DES consistently separated participating institutions into three distinct clusters based on the grand mean DES score, supporting the instrument's promise as a benchmarking tool to measure the progress of diversity interventions among academic medicine institutions.

The within-institution analysis revealed large variation in disparities for black and white respondents, suggesting the importance of future studies to determine how institutional characteristics, culture, and programming are related to observed disparities. The results of the within-institution analysis also suggest that when there is a disparity between black and white respondents, the difference occurs because black individuals are reporting lower degrees of engagement and inclusion than white individuals We also found that institutions with the highest levels of engagement generally had higher engagement scores for black respondents and lower observed disparities between black and white respondents, compared with institutions with the lowest levels of engagement.

Table 2

Diversity Engagement Survey (DES) Mean Engagement and Inclusion Factor Scores by Selected Respondent Characteristics[a]

Characteristic	Common purpose		Access to opportunity	
	Mean (SD)[b]	Significant group differences[c]	Mean (SD)[b]	Significant group differences[c]
Gender				
A. Female	3.98 (0.81)	A vs B	3.88 (0.97)	A vs B
B. Male	4.08 (0.84)		3.97 (0.97)	
Race/ethnicity				
A. Asian	4.09 (0.79)	A vs (B, C, D, E)	4.06 (0.86)	A vs (B, C, D, E)
B. Black/African American	3.89 (0.88)	B vs E	3.75 (1.06)	B vs E
C. Hispanic/Latino	3.95 (0.90)	C vs E	3.79 (1.03)	C vs E
D. Other	3.86 (0.90)	D vs E	3.72 (1.14)	D vs E
E. White	4.03 (0.80)		3.93 (0.95)	
Sexual orientation				
A. LGBTQ	3.83 (0.92)	A vs B	3.81 (0.98)	A vs (B, C)
B. Heterosexual	4.03 (0.81)	B vs C	3.93 (0.97)	B vs C
C. Missing/refused to answer	3.80 (1.09)		3.54 (1.22)	

Characteristic	Equitable reward and recognition		Cultural competence	
	Mean (SD)[b]	Significant group differences[c]	Mean (SD)[b]	Significant group differences[c]
Gender				
A. Female	3.47 (1.05)	A vs B	3.86 (0.73)	A vs B
B. Male	3.67 (1.08)		3.97 (0.76)	
Race/ethnicity				
A. Asian	3.79 (1.02)	A vs (B, C, D, E);	4.01 (0.75)	A vs (B, C, D, E);
B. Black/African American	3.34 (1.11)	B vs E;	3.67 (0.83)	B vs (C, E);
C. Hispanic/Latino	3.43 (1.13)	C vs (D, E);	3.79 (0.85)	C vs E;
D. Other	3.30 (1.22)	D vs E	3.71 (0.87)	D vs E
E. White	3.55 (1.04)		3.93 (0.71)	
Sexual orientation				
A. LGBTQ	3.35 (1.12)	A vs B;	3.71 (0.81)	A vs B;
B. Heterosexual	3.56 (1.06)	B vs C	3.92 (0.73)	B vs C
C. Missing/refused to answer	3.25 (1.19)		3.68 (0.99)	

Characteristic	Trust		Sense of belonging	
	Mean (SD)[b]	Significant group differences[c]	Mean (SD)[b]	Significant group differences[c]
Gender				
A. Female	3.77 (0.90)	A vs B	3.88 (0.76)	A vs B
B. Male	4.00 (0.88)		3.99 (0.80)	
Race/ethnicity				
A. Asian	4.05 (0.79)	A vs (B, C, D, E)	4.00 (0.72)	A vs (B, C, D, E)
B. Black/African American	3.57 (0.95)	B vs (C, E)	3.77 (0.78)	B vs E
C. Hispanic/Latino	3.68 (1.00)	C vs E	3.80 (0.83)	C vs E
D. Other	3.58 (1.07)	D vs E	3.73 (0.91)	D vs E
E. White	3.88 (0.87)		3.94 (0.76)	
Sexual orientation				
A. LGBTQ	3.60 (1.01)	A vs B	3.75 (0.84)	A vs B
B. Heterosexual	3.87 (0.88)	B vs C	3.94 (0.77)	B vs C
C. Missing/refused to answer	3.65 (1.14)		3.72 (1.02)	

(*Table continues*)

Table 2
(Continued)

Characteristic	Appreciation of individual attributes		Respect	
	Mean (SD)[b]	Significant group differences[c]	Mean (SD)[b]	Significant group differences[c]
Gender				
A. Female	3.83 (0.82)	A vs B	3.93 (0.77)	A vs B
B. Male	3.94 (0.87)		4.09 (0.78)	
Race/ethnicity				
A. Asian	4.02 (0.78)	A vs (B, C, D, E)	4.12 (0.73)	A vs (B, C, D, E)
B. Black/African American	3.73 (0.87)	B vs E	3.75 (0.82)	B vs (C, E)
C. Hispanic/Latino	3.76 (0.92)	C vs (D, E)	3.88 (0.86)	C vs (D, E)
D. Other	3.65 (1.00)	D vs E	3.74 (0.95)	D vs E
E. White	3.88 (0.82)		4.01 (0.74)	
Sexual orientation				
A. LGBTQ	3.67 (0.92)	A vs B	3.76 (0.89)	A vs B
B. Heterosexual	3.89 (0.83)	B vs C	4.00 (0.76)	B vs C
C. Missing/refused to answer	3.64 (1.06)		3.74 (1.07)	

Abbreviation: LGBTQ indicates lesbian, gay, bisexual, transgender, queer.
[a]The Diversity Engagement Survey was administered in 2011–2012 to 14 U.S. academic medical centers with a total of 13,694 respondents.
[b]Mean scores could range from 1 to 5, with higher scores indicating greater feelings of engagement and inclusion among respondents. For items that are included in each factor, see Table 1.
[c]For each factor, the *P* value from ANOVA is statistically significant at the $P < .001$ level, indicating that there is at least one difference between groups. Group difference significance was estimated using least squares means and adjusted for multiple testing. All listed differences are significant at least at the $P < .05$ level. As an example of interpretation: For race/ethnicity, A vs (B, C, D, E) indicates that respondents who self-identified as Asian have a significantly different mean factor score than those of respondents who self-identified as black/African American, Hispanic/Latino, other, or white.

It should be noted that our sample of 14 institutions is not necessarily representative of the entire population of academic medical centers in the United States. For example, institutions that are experiencing diversity challenges or those that have been particularly active in promoting and integrating diversity may have selected to participate. However, concern about selection bias is somewhat mitigated because a significant number of institutions clustered in the middle range of scores. Nonetheless, because of concern about selection bias, we did not examine the relation between grand mean DES scores and institutional characteristics. Such studies will be appropriate as larger, representative samples of institutions become available. In addition, in-depth case studies of selected higher- and lower-performing institutions may yield findings to inform future interventions.

Conclusion

To build institutional capacity for diversity, institutions must start with an understanding of the extent to which their various groups feel included and engaged.[25] This study shows that the DES provides a way of measuring the conditions through which the institutional culture fosters engagement and inclusion. As a diagnostic tool, it allows institutions to assess their engagement and inclusion efforts and helps them develop a strategy for achieving their diversity goals. As a benchmarking tool, the DES distinguishes institutions in their progress toward engagement and inclusion. Overall, the DES can support academic medical centers in assessing and building their institutional capacity to adapt and innovate during this time of transformation across all domains of health care and academic medicine in the United States.

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