AERA Open
January-December 2024, Vol. 10, No. 1, pp. 1–20
DOI: 10.1177/23328584241290741
Article reuse guidelines: sagepub.com/journals-permissions

Workplace Inclusion in Academia: The Relationship between Diversity Climate and Engineering Faculty Turnover Intentions

Henry Tran
Spencer Platt
Ruiqin Gao
Jungsun Go
University of South Carolina

The purpose of this study is to examine the relationship between engineering faculties' perception of the diversity climate and their turnover intentions at R1 (Research 1) universities across the U.S. We sampled 1,101 tenure-track engineering faculty for this purpose. Data analysis showed that an engineering faculty's demographic characteristics (i.e., sex, race/ethnicity, professor rank, age, engineering areas, marriage status, and tenure-track status) are associated with their perceptions of the diversity climate. Furthermore, results from structural equation modeling analyses show that faculty with higher perceptions of organizational fairness and inclusion reported a lower desire to turn over. Implications for the results are discussed.

Keywords: *Colleges, diversity, diversity climate, diversity climate survey, engineering education, engineering faculty, equity, faculty careers, faculty of color, higher education, structural equation modeling, survey research, underrepresented minority engineering faculty, White male faculty, women faculty, workplace inclusion*

Background

In the aftermath of the highly publicized public murder of George Floyd and the subsequent societal racial unrest, institutions of higher education (IHE) primarily responded by releasing statements espousing institutional commitment to diversity and inclusion (Melaku & Beeman, 2020). Although IHEs employ a highly educated populace who are often perceived to be progressive thinkers, scholars argue that people from marginalized backgrounds face continued underrepresentation and exclusion due to the structures and culture, that ultimately shape the climate of higher education (Corneille et al., 2019; Figueroa et al., 2016). Indeed, with its focus on selectivity, the field is widely known for its "exclusionary nature" (Gonzales et al., 2024, p. 3), and its institutional structures, policies, and collegial interactions differentially shape the experiences of faculty from different backgrounds (Griffin, 2019). This paper examines the relationship between tenure-track engineering faculty's perception of their institutional diversity climate and their turnover intentions at R1 IHEs. This study focuses on faculty (both graduate and undergraduate) at R1 IHEs because those institutions are most likely to employ tenure-track engineering professors, the focal population of our study. Further, because faculty workload is influenced by institutional type (O'Meara et al., 2019), focusing on a single type of institution can better help mitigate institutional influence on that relationship.

Mor Barak et al. (1998) defined the diversity climate as "employee behaviors and attitudes that are grounded in perceptions of the organizational context related to women and minorities" (p. 83) based on factors such as fair practices and treatment. These groups are important to emphasize given the potential difference in their perception of the climate relative to their counterparts. As a result, this paper also seeks to illuminate how engineering faculties' racial backgrounds relate to their perceptions of their employer's diversity climate.

It is important to distinguish climate from culture, as the two terms are not interchangeable. Glisson (2015) defines organizational culture as the "behavioral norms and expectations that characterize a work environment. These norms and expectations direct the way employees in a particular work environment approach their work, specify priorities, and shape the way work is done," while organizational climate is "created by employees' shared perceptions of the psychological impact of their work environment on their well-being and functioning" (p. 246). In short, culture shapes the lived experiences of workers, which results in the cultivation of climate perceptions.

Hiring and especially retaining underrepresented minority faculty in Science Technology Engineering and

Mathematics (STEM) fields like engineering has proven to be particularly elusive for many predominantly White institutions (PWIs) of higher education (Jackson, 2004; Tran et al., 2020). This is partly because such fields are associated with "the illusion of being neutral and culture-free" (Frank et al., 2021, p. 8), despite many arguing to the contrary (Arnold et al., 2016; Ezell, 2021; Yosso et al., 2009). Several theories seek to explain the challenge of recruiting and retaining racially underrepresented engineering faculty, emphasizing the influence of the market, the academic pipeline, and the exclusionary working environment. The market explanation suggests that there are better-paying opportunities that redirect potential underrepresented minority engineering faculty with doctoral degrees away from academia. Conversely, the pipeline explanation argues that there is a lack of qualified racial minority candidates in the pool in the first place (Griffin, 2019). Of the STEM doctoral degrees conferred to US citizens and nonresident individuals in 2014–15, 73.6% were conferred to Whites, 4.6% to Blacks, 6.6% to Hispanics, and 12.3% to Asian/Pacific Islanders (National Center for Educational Statistics [NCES], 2021). The pipeline explanation outlines a critical issue, but the exclusionary work environment explanation further illuminates how the workplace climate itself prevents employment interest from marginalized engineering faculty and may be influencing the lack of a pipeline in the first place (Griffin, 2019).

The present study focuses on gaining a better understanding of the exclusionary work environment explanation, to examine the relationship between tenure track engineering faculties' perception of their institution's diversity climate and their turnover intentions at R1 universities. We also examine how faculty demographics (e.g., gender, race/ethnicity, rank, age, tenure, marital status, and engineering area) are related to their perceptions of the institutions' diversity climate, especially since research has suggested they can predict perceptions of faculty working conditions (Guarino & Borden, 2017; O'Meara et al., 2019).

Research Questions

Data from the National Center of Education Statistics (n.d.) have shown that nearly three in five new underrepresented racial minority faculty were hired as replacements for underrepresented minority faculty who had previously left the institution (Moreno et al., 2006; Whittaker et al., 2015). In certain disciplines, the discrepancy is more severe. For instance, engineering departments have often found slimmer or even zero numbers of underrepresented minority faculty members (Nelson & Brammer, 2010). Critical scholars maintain that non-inclusive diversity climates influence faculty in a way that spurs higher rates of attrition for marginalized faculty (Jackson, 2004; Tierney & Rhoads, 1993). To investigate this argument, we seek to address the following research questions:

1) How are engineering faculty demographic characteristics (e.g., underrepresented race/ethnicity and sex groups) associated with their perception of the diversity climate in their institutions?
2) How are the engineering faculty's perceptions of the diversity climate associated with their turnover intentions?

Relevant Literature

The Need to Focus on Faculty's Turnover Intention

A complicating factor in efforts to diversify faculty ranks is the fact that nearly 60% of new underrepresented faculty of color are hired as replacements for other exiting underrepresented faculty of color (Moreno et al., 2006; Whittaker et al., 2015). This highlights that in many instances focusing solely on hiring underrepresented faculty members of color does not increase the unit's diversity representation because the hire merely replaces a departure. Therefore, retention of faculty of color is at least as important as recruitment, if not more so (Whittaker et al., 2015).[1] Research on faculty retention in the science and engineering field reported that the chance faculty members would remain over time is less than 50% (Kaminski & Geisler, 2012).

Given the importance of turnover, it is important to address faculty's feelings of turnover before they result in actual departure. While turnover intention is not synonymous with turnover (i.e., not everyone who wants to leave will leave), intention to leave still nonetheless communicates an important sentiment among faculty concerning their dissatisfaction or disengagement with the organization and understanding how diversity climate may influence those sentiments are important (Lewis et al., 2022). Consequently, this paper focuses on the relationship between diversity climate and faculty turnover intention.

Contextual Factors that Shape the Employee Experience of Engineering Faculty

Diversity Climate and Turnover Intention. There is a body of research that links employees' perceptions of the diversity climate to their turnover intentions. For example, Stewart et al. (2011) conducted a hierarchical moderated multiple regression analysis of survey responses from 348 warehouse employees and found that their perception of ethical climate moderated the relationship between their perception of the diversity climate and their turnover attentions. This finding suggests those who perceived a positive diversity and ethical climate at work least wanted to leave their positions. Jolly and Self (2020) argue that the diversity climate represents a

valuable resource for employees, and if employees gain this resource through their employment, they will be less likely to intend to leave their employer.[2]

More recent work in diversity climate and turnover intention has employed Structural Equation Modeling (SEM), a sophisticated analytic technique to better ascertain the relationship between the two constructs. For example, in a study of 901 employees in more than 50 companies, Lee et al. (2021) found that the perception of a company's diversity climate was linked to turnover intentions through the mediators of employee's personal diversity value and affective commitment. Similarly, Kaur et al. (2022) analyzed survey responses from 302 workers from the information technology field and found that the diversity climate is inversely related to turnover intention, mediated through employee perception of inclusion and job satisfaction. The current study continues the trend of these more recent studies to employ SEM to examine the relationship between the diversity climate and turnover intentions but in the academic engineering context. Furthermore, because past research has found that the correlation between the diversity climate perceptions and turnover intentions varies by race, with the relationship being strongest for Black workers (McKay et al., 2007), the present study accounts for participant demographics in our model examining the relationship between race/ethnicity and faculty's perception of the diversity climate, before assessing the relationship between diversity climate and turnover intentions.

Diversity Climate and Turnover Intentions and Turnover in Higher Education. There has been little research conducted in the higher education space concerning working conditions and the perception of inequity (O'Meara et al., 2019), especially with regard to examining the link between diversity climate and faculty turnover sentiment. Of the work that has been conducted, Ryan et al. (2012) found that being in a "hard-applied" field (e.g., engineering), not having a spouse or being married, perceived lack of fit, family stress, and dissatisfaction with certain aspects of the faculty life (i.e., teaching load, autonomy, opportunities for advancement, pay) were key predictors of leaving the institution and academia altogether. While they provide a broad view of faculty turnover intention in academe, the authors do not give substantial examination to racial/ethnic minorities and do not explore the impact of the diversity climate on turnover intention.

Daly and Dee (2006) found that four structural variables—autonomy, communication openness, role conflict, and distributive justice—had significant effects on faculty's intent to stay. Perceptions of distributive justice, i.e., equity in rewards, were important in generating positive regard for the institution and enhanced intent to stay. However, if reward outcomes appear unjust, then turnover intention is likely to increase. Buttner and Lowe (2017) extend that work by employing correlational, factor, and hierarchical regression analyses on survey results from a sample of faculty of color from U.S. business schools to examine how the relationship between the diversity climate and turnover intention might be influenced by pay equity. They found that pay equity interacted with the diversity climate to affect turnover intentions and that the presence of pay equity could mitigate the potential negative effects of the diversity climate on turnover intention. Indeed, those who were most likely to intend to leave reported a lack of pay equity and poor diversity climates in their work environment. Although these findings are undoubtedly important, they do not address turnover intention in STEM fields where the faculty turnover issue is more acute. The present study addresses this void.

Diversity and Faculty Retention. The importance of diversity for faculty retention has been suggested by prior research. Examining retention, Price-Haywood et al. (2005) conducted a qualitative study on the role of the cultural diversity climate on the recruitment, retention, and promotion of faculty in medical schools. In their work, they emphasized the visible and non-visible dimensions of diversity, arguing that those who have visible dimensions of diversity (e.g., physical attributes such as skin color) noted that they have been subjected to bias and stereotypes. These participants also expressed experiencing microaggressions, limited opportunities, difficulty gaining access to informal/social relationships/networks and mentoring, and poor retention efforts to support them, resulting in structural barriers that negatively influenced their perception of the diversity climate and contributing to the existing disparities in staffing.

Griffith and Dasgupta's (2018) study of STEM faculty in public research universities in the northeastern United States (N = 383) found that unfavorable departmental diversity climates predicted turnover risks for women, but this was not the case in departments approaching gender parity in representation. The authors further found that women, regardless of their own racial identity, perceived that White faculty received preferential treatment. Men, however, did not perceive racial inequality. Similarly, O'Meara et al. (2019) found that intention to leave was strongest among faculty of color.

Xu's (2008) analysis of a national pre-existing dataset (National Study of Postsecondary Faculty: 1999) and Riffle et al.'s (2013) analysis of STEM faculty responses from four diverse IHEs revealed that women faculty in STEM were more likely to report turnover intentions than men and this was related to this dissatisfaction with opportunities for research and advancement, as well as their perception of the climate from their experiences with discrimination. Adding to this, scholars have found that faculty women of color have been denied tenure or experienced turbulent work environments and faced gendered stereotypes and accusations of being noncollegial (Ward et al., 2024). Taylor et al. (2017)

found that an intervention designed to improve work climate and staffing for female faculty in STEM fields improved job satisfaction and retention for female full professors across a large university system, including those in engineering, suggesting the importance of the diversity climate for engineering faculty's turnover intentions. Importantly, these findings point to work-related inequities rooted in workplace climate and culture, rather than personal factors such as family and responsibilities. These studies also highlight the importance of accounting for the demographics of responding faculty in the assessment of their perceptions of the diversity climate, a key feature of our study.

Our work advances the scholarship in several ways, such as producing a large-scale quantitative analysis to advance the largely qualitative body of research, assessing the utility of an instrument designed to specifically measure the engineering academic diversity climate, and working with an original and recent national dataset of engineering faculty at R1 IHEs. While we predict that diversity climate will be related to turnover intentions for the overall sample of engineering faculty (suggesting the value of the diversity climate for all employees), consistent with the literature (McKay et al., 2007; Taylor et al., 2017), we theorize that faculty demographic backgrounds may influence perception of the diversity climate (O'Meara et al., 2019). For example, the relationship between the perception of the diversity climate from Black engineering faculty is predicted to be more strongly related to their turnover intentions relative to White faculty because Black faculty are expected to place more importance on the diversity climate given their marginalized status in engineering academia (Kaur et al., 2022; Tran & Platt, 2022).

Theoretical Framework

Social Identity Theory and Intergroup Relations Theory

Social Identity Theory (Tajfel & Turner, 1979) suggests that people sort themselves into identity groups such as race and attach meaning to them. Dominant groups might find it relatively easy to have themselves validated and affirmed in many workplaces or other settings that are familiar with their expectations and experiences, whereas underrepresented racial groups might find racial/ethnic perpetuation of negative stereotypes, poor representation in the media, and workplace hostility as challenges for the maintenance of positive self-concepts and positive social identity maintenance.

Prior scholarship has suggested that the perceptions of the diversity climate can vary according to personal social identity demographics (Kossek & Zonia, 1993; Settles et al., 2021). Organizations are composed of people who identify with many different groups, and these social identities can influence their interactions with other members and work environment perceptions (Alderfer & Smith, 1982; Mor Barak et al, 1998). For example, Mor Barak et al. (1998) employed Social Identity Theory and Intergroup Relations Theory (which suggests that the way we perceive our social reality is influenced by our interactions with other groups) (Alderfer & Smith, 1982; Tajfel & Turner, 1986) to examine racial and sex differences in diversity perceptions, as well as the interactions between the two demographics (Mor Barak et al., 1998). They found that White men perceived their organizations to be fairer and more inclusive than their counterparts (i.e., people of color and White women), and not surprisingly, their counterparts felt more comfortable with diversity and expressed more value for it than they did. Mor Barak et al., explain this by suggesting that White women's stances are usually more aligned with the perspectives of racial minorities as they are often more attuned to issues of exclusion, more underrepresented, and may have experiences with discrimination. Many of the theories from the private sector concerning racial differences in perceptions of the diversity climate are likely still applicable in higher education, particularly in a less diverse field like engineering. When it comes to engineering, Cech and Sherick (2015) argue that professional socialization teaches students that to be "good engineers," they must embrace ideologies of meritocracy and depoliticization that frame social issues as unimportant to their roles and identities as engineers. Because diverse and community-minded faculty and students often desire to address social issues through their work, this pushes their interests, concerns, and lived experiences to the margins of the field (Cech, 2013). Perhaps institutions with more inclusive diversity climates are perceived to be more welcoming and less rigid about who can be a "good engineer" and what work is valued within the realm of engineering and as a result are more likely to have less faculty (especially from underrepresented backgrounds) who desire to turnover; however, this theory has not been tested. Therefore, this study will empirically test the theory in the academic engineering setting. This scholarship is important in helping us understand how social identity groups can shape perceptions of the academic workplace, and how the workplace can be more attuned to the differentiated needs of diverse groups of people.

Theory of Racialized Organizations

The personal and interpersonal level theories that we selected could further be enhanced by an examination of systemic and organizational racial issues through the theoretical framework of the Theory of Racialized Organizations (Ray, 2019), given the R1 institutional focus of our study. While many mainstream organizational scholars frame organizations as race-neutral bureaucracies, Victor Ray argues that organizations are instead racialized entities that connect rules to material resources. Ray's Theory of Racialized Organizations offers four tenets. They are:

(1) racialized organizations enhance or diminish the agency of racial groups; (2) racialized organizations legitimate the unequal distribution of resources; (3) Whiteness is a credential; and (4) the decoupling of formal rules from organizational practice is often racialized.

Individual racial biases are empowered by organizational resources thereby extending their reach. As a result, the reproduction of the status quo racial order is accomplished through multiple mechanisms within organizations (Ray & Seamster, 2016).

In alignment with Ray's theory of the perpetuation and sustenance of racialized organizations, Liera (2023) explains how faculty often use hiring as a "mechanism to protect White supremacy when they normalize Whiteness through their biases" (p. 766) and that efforts to diversify the faculty fail not because administrators possess insufficient knowledge on how to do so but because faculty often resist because they lack understanding of its necessity. A growing body of research indicates that efforts to diversify faculty ranks are actively being undercut by faculty through a racialized process that privileges Whites and disadvantages racially minoritized people (e.g., valuing Eurocentric norms over others) (Liera, 2020; Liera & Hernandez, 2021; Villalpondo & Delgado Bernal, 2002). In Gonzales et al.'s (2020) study findings about tenure-seeking female faculty, they surmised that "while all participants and facilitators spoke easily about the importance of diversifying STEM, the majority of participants and the facilitators were hesitant to foster conversations that could advance inclusion" (p. 456). That suggests how racism can remain the status quo even in an environment where it appears publicly criticized. Taken together, this body of research indicates that diversity climates are heavily intertwined and shaped by the influences of race and racism on college campuses.

Mapping the Theory of Racialized Organization to the Diversity Climate Scale

The Theory of Racialized Organizations is important to the framing of this paper because it provides an understanding of how diversity climate is crucial for engineering faculty turnover intentions (particularly those from racially underrepresented backgrounds). Ray (2019) argued that the traditional primary focus of race theory has been focused on the state (Feagin & Elias, 2013), individual animus, and ideology (Bonilla-Silva, 1997) as the primary loci of racial processes, downplaying the role that organizations occupy in the social construction of race. Organizations are often significant drivers in reinforcing racial hierarchy. As a result, we focus specifically on IHEs, to determine how they maintain the racial status quo, which we argue occurs partially through the impact of its diversity climate on faculty.

The organizational focus of our study does not specifically examine what Ray (2019) refers to as the Institutional (Macro) forces that shape the racial environments such as state resources or national exclusions, but rather targets the organizational (Meso) and individual (Micro)-level of analysis. Specifically, the Meso-level of analysis refers to individual workplaces like universities, while the Micro-level refers to sentiments at the person level including prejudice, racial attitudes, and implicit bias. By interpreting Ray's theory of racialized organization alongside the diversity climate scale, we can see that the organizational dimensions (i.e., Organizational Inclusion, Organizational Fairness) of Mor Barak et al.'s (1998) diversity climate scale examines perspectives align with Ray's organizational Meso-level, with the personal dimension (i.e., personal value, personal comfort) being linked to the individual Micro-level. Moreover, turnover intention would represent a Micro-level reaction to Meso-level influences. Interpreting the relationship between diversity climate and turnover intentions through Ray's (2019) theory of racialized organization helps us understand how racism might manifest in and affect academia.

Method

The Survey Research Design

Like the studies that examined diversity climate and turnover intentions before, this study employs a survey research design. We surveyed all R1 institutions that employ engineering faculty. Survey participants were identified through faculty rosters posted on college/departmental websites and by contacting the department chair and/or dean's offices. We achieved our sample of engineering undergraduate and graduate faculty from 118 (out of the 130 total) R1 institutions in the fall of 2020 and the spring of 2021.[3]

Our survey was emailed nationwide to all engineering professors at the selected 118 R1 IHEs. Of the 15,009 engineering faculty who were eligible to participate in the study, 1,223 opened the survey email. Of that 1,223 faculty, 1101 completed the survey, producing a 90% response rate for those who opened the email. The sample size is adequate based on the suggested sample size range from 300 to 460 cases if researchers consider the number of indicators and factors, the magnitude of factor loadings, path coefficients, and the amount of missing data (Wolf et al., 2013). Table 1 provides demographic information about the participants.[4]

Instruments

Two scales (i.e., the Diversity Climate Scale and Turnover Intention Scale) were used in the current study. These instruments were selected because they are used mainly in business workplace settings, so the determination of their application in higher education represents an interdisciplinary expansion

TABLE 1
Demographic Characteristics of the Sample.

Variables	N	Percent
Sex		
Female	218	20.3
Male	801	74.7
Other	12	1.1
Missing	41	3.8
Ethnicity		
Black	22	2.1
Asian	180	16.8
Hispanic or Latino	52	4.9
White	748	69.8
Other	19	1.8
Missing	51	4.8
Age		
18–28	6	0.6
29–38	146	13.6
39–48	308	28.7
49–58	270	25.2
59+	314	29.3
Missing	28	2.6
Sexual Orientation		
Straight	987	92.1
Other	32	3.0
Missing	53	4.9
Marital Status		
Married	898	83.8
Unmarried	127	11.8
Missing	47	4.4
Rank as a professor		
Full professor	647	60.4
Associate professor	293	27.3
Assistant professor	121	11.3
Other	11	1.0
Tenure Status		
Tenured	933	87.0
On tenure track	139	13.0
Engineering Area		
Engineering Education Plus	42	3.9
Bioengineering	102	9.5
Chemical and material plus	185	17.3
Mechanical and aerospace plus	213	19.9
Civil and environmental plus	234	21.8
Electrical and computer engineering	296	27.6
	N	**Mean**
Years worked on the tenure track	1,067	18.6
Years worked on the tenure track in current institution	1,051	15.9
Number of dependents	971	1.45

Note. Percentages do not add to 100% because of missing data or participants' stated preference not to answer the question (e.g., race or whether they are married).

of utility for the tools. In addition, they have been predictively validated in the field with faculty samples (Bothma & Roodt, 2013; Buttner et al., 2012). We revised the scales to fit the context of R1 IHEs. Experts in scale development (i.e., psychometricians) reviewed the scale to support the face and content validity of the scales. The review activities included assessing the simplicity and clarity of language, statements' interpretation, scale range, statements' completeness, relevancy of items, language bias, and item wording, as suggested by Bandalos's (2018).[5]

Furthermore, pilot surveys and interviews were conducted with six engineering faculty before the actual survey deployment to examine the appropriateness of questions to the target population (engineering faculty at R1 institutions), the correctness of the instructions, the content validity of the instrument, and whether the survey is effective at responding to the purpose of the study.[6]

Diversity Climate Scale

The Diversity Climate Scale (DCS) was revised from the original questionnaire developed by Mor Barak et al. (1998) in our study to measure engineering faculties' perception of the diversity climate of the institutions where they work. The scale consisted of 23 items, and respondents were given six options for each item: strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree. Our scale comprises four subscales: Organizational Fairness (e.g., "Administrators here give evaluation fairly, regardless of the employee's ethnicity, gender, age, or social background"), Organizational Inclusion (e.g., "There is a mentoring program in use that identifies and prepares all underrepresented tenure-track faculty of color for promotion at the college of engineering"), Personal Value of Diversity (e.g., "I believe diversity is an important issue for the college of engineering"), and Diversity and Institutional Embracement of Inclusion (e.g., a reverse coding of "The old boy network is alive and well here"). We reverse-coded all the negatively worded items so that all the items were in the same direction. Based on social identity theory, we predict that group identity (e.g., race), will influence the engineering faculty's perception of their diversity climate. Intergroup relations theory suggests that White male engineering faculty will likely perceive the institution to be fairer relative to their counterparts given that they constitute the dominant racial and gender group in the field, and as a result the norms of the field are shaped based on that social positioning.

Turnover Intentions Scale

The Turnover Intentions Scale (TIS) was revised from the original scale developed by Roodt (2004) to a five-point Likert scale composed of 5 items used to measure engineering faculties' intention of leaving the institution (1 = never to 5 = always). The scale covered items such as "How often are

you frustrated when not given the opportunity at work to achieve your personal work-related goals?" Higher scores imply a stronger intention to leave the current institution. Because we sought to capture faculty's current perspective on their institution's diversity climate (which meant that they had to still be employed with the institution), the outcome of focus in our study is the turnover intention as opposed to actual turnover. While turnover and turnover intention are not synonymous given the variety of distinct reasons why someone may want to leave their employer that do not lead to actual turnover, turnover intention is on its own important to understand because it suggests that a psychological dissociation takes place before institutional departure (Griffin et al., 2011). Indeed, turnover intention has been linked with worker disengagement (Johnson, 2021), which is a critical outcome of workplace exclusion. Most importantly, turnover intention, as measured by the TIS, is a significant predictor of voluntary actual turnover (r = .45) (Griffeth et al., 2000), establishing its criterion-predictive validity (Bothma & Roodt, 2013) even if it does not completely explain turnover. The TIS has been rigorously validated in numerous studies across different contexts (Bothma & Roodt, 2013; Dwivedi, 2015; Su, 2021). Given this, we relied on the use of the TIS.

The theories of social identity, intergroup relations, and racialized organization provide a useful framework for understanding perceptions of the diversity climate across race, gender, and other salient identities because they allow for analysis across individuals (self), as well as self-categorized groups (race/ethnicity, and gender) concerning the diversity climate and turnover intention. For example, the theories suggest that racially underrepresented faculty may feel invalidated and disaffirmed in their work environment that was not designed with their inclusion in mind. In this situation, faculty from the dominant group (e.g., White males) may feel the diversity climate to be acceptable and their counterparts may consider leaving due to the "disharmony" and tension felt between their inner self and their external work environment (Zakiryanova & Redkina, 2020). Our study will test this.

Consequently, our survey enquires about participants' sex, age, sexual orientation, race/ethnicity, marital status, number of dependents, professor rank, tenure status and number of years as a tenure-track professor (overall and in the current institution respectively).[7]

Data Analysis

We conducted all analyses with MPLUS 8.4 software (Muthén & Muthén, 2012). The default estimation method—weighted least squares with mean and variance adjusted (WLSMV)—was used to accommodate the categorical nature of the data and account for non-normality in the data (Finney & DiStefano, 2013). To provide more accurate standard errors of parameter estimates, nesting of data (i.e., faculty nested within the institution) was addressed with a design effect (Stapleton & Kang, 2018). Listwise deletion, the default missing data dealing method when fitting a model with a WLSMV estimator, was used.

As the scales adopted in this study were originally used in business settings, we conducted exploratory factor analysis (EFA) to explore the factor structure of DCS and TIS when used in R1 institution settings. We randomized the sample into two halves. Sample 1 (n = 550) was used for EFA analysis. We use the oblique (Geomin) rotation method which allows for the correlations between factors (Costello & Osborne, 2005). The following criteria were used for identifying the optimal solution of the factor structure. First, factor loadings higher than .30 were used (Costello & Osborne, 2005). Second, the simplicity of the structure was considered (i.e., most items have factor loadings higher than .5 on one factor but lower values for other factors). Third, the optimal model should be theoretically supported (Osborne et al., 2008). Sample 2 (n = 551) was used for conducting Confirmatory factor analysis (CFA) to examine whether the factor structure identified from EFA analysis can be confirmed. We allowed the variable for each factor to correlate freely except for the reference variable for each factor. To set the CFA scale, the reference variable's loading value was fixed to 1.0 so that other parameters could be freely estimated.

After the factor structure was confirmed, the Multiple Indicators Multiple Causes (MIMIC) model was constructed with the whole sample (n = 1,101). The MIMIC model allows the examination of observed variables as predictors of latent variables (Kline, 2010). In addition, it also allows researchers to examine the impact of multiple covariates on multiple latent variables within the same model (DiStefano et al., 2017). Seven demographic characteristics of faculty—age, sex, race/ethnicity, marital status, professor rank, tenure status, and engineering area (subfield)—were included as covariates in the model to determine the association of engineering faculty demographic factors on the latent variables as measured by the DCS.[8] We also examined how the interaction between race and sex affected engineering faculty members' perceptions of the diversity climate in their institution.[9] Unstandardized path coefficient values were reported as they are the preferred reporting method for categorical covariates (Kline, 2010). SEM was conducted with the whole sample (n = 1,101) to measure and analyze the relationship between observed and latent variables (Beran & Violato, 2010). It consists of two main parts. The measurement model represents a set of observable variables as indicators of a smaller set of latent variables and the path model describes the relationship between the latent variables (McDonald & Ho, 2002). We used SEM to examine how engineering faculty perceptions of the diversity climate were associated with their turnover intention.

TABLE 2
Fit statistics for EFA, CFA, MIMIC, and SEM models.

Model	$\chi^2(df)$	RMSEA[90%]	CFI	TLI	SRMR
DCS: EFA-one factor	3567.000(230)	0.167[0.162-0.172]	0.861	0.847	0.327
DCS: EFA-two factors	1600.962(208)	0.113[0.108-0.119]	0.942	0.929	0.163
DCS: EFA-three factors	799.465(187)	0.079[0.074-0.085]	0.974	0.965	0.075
DCS: EFA-four factors	525.836(167)	0.064[0.058-0.070]	0.985	0.977	0.054
DCS: EFA-five factors	388.970(148)	0.056[0.049-0.063]	0.990	0.983	0.042
DCS: CFA model1	983.432(184)	0.092[0.086-0.097]	0.963	0.958	0.079
DCS: CFA model2	606.457(146)	0.078[0.072-0.085]	0.979	0.975	0.061
TIS: EFA-one factor	50.429(5)	0.134[0.102-0.169]	0.991	0.982	0.041
TIS: CFA model1	24.097(5)	0.086[0.054-0.122]	0.997	0.994	0.015
TIS: CFA model2	6.541(3)	0.048[0.000-0.099]	0.999	0.998	0.007
MIMIC model	1126.820(401)	0.043[0.040-0.046]	0.975	0.969	0.054
SEM model	1309.825(240)	0.066[0.062-0.069]	0.979	0.976	0.058

Note. χ^2 = chi-square test of model fit; RMSEA = root-mean-square error of approximation; CI = confidence interval; CFI = comparative fit index; TLI = Tucker-Lewis Index; SRMR = standardized root mean square residual; DCS = Diversity Climate Scale; TIS = Turnover Intention Scale.

EFA, CFA, MIMIC, and SEM models were evaluated with the following model fit information: chi-square statistics, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean squared error of approximation (RMSEA), and standardized root mean square residual (SRMR). CFI and TLI $\geq .90$, RMSEA $\leq .08$, and SRMR $\leq .10$ indicate an acceptable model fit. CFI and TLI $\geq .95$, SRMR $\leq .08$, and RMSEA $\leq .05$ imply a good model fit (Hu & Bentler, 1999). Modification indices indicating the amount of overall chi-square value that will be reduced by adding paths were also examined.

Results

Exploratory Factor Analysis

We requested factor solutions ranging from one to five for DCS. The three-factor, four-factor, and five-factor structures demonstrated acceptable model fit (Table 2). Although the five-factor solution showed the best model fit, the factor loadings of the items on one factor of the five-factor solution were all below the cutoff value of .30. We rejected this solution. Relative to the three-factor solution, the four-factor solution showed a better model fit, a simpler model structure, and a more theoretically interpretable structure. Therefore, we treated this four-factor structure as the optimal solution for DCS. The final four-factor structure included the following factors: *Organizational Fairness*, *Organizational Inclusion*, *Personal Diversity Value*, and *Institutional Embracement of Inclusion*.[10] Table 3 provides the factor loadings for the optimal solution.

We requested one and two-factor solutions for TIS. The two-factor model did not converge. One-factor model showed an acceptable model fit (Table 2). Therefore, we treated the one-factor solution as the optimal solution for TIS. Factor loadings for the one-factor solution are presented in Table 3.

Confirmatory Factor Analysis

DCSCFA model 1 examined the four-factor structure of DCS identified by EFA. All the model fit indices except RMSEA were within the recommended cut-offs (Table 2). After examining the modification indices, we conducted DCSCFA model 2. In *this model*, we removed Item 22 ("I am afraid to disagree with members of other groups for fear of being prejudiced") and Item 23 ("The lack of diversity keeps some faculty/ staff teams from performing to their maximum effectiveness") and allowed the error terms of one pair of items to be correlated (Item 10 and Item 13). Figure 1 illustrates the four-factor structure of DCS.

One-factor structure of TIS identified with EFA was examined with CFA (i.e., TISCFA model 1). The model fit indices for RMSEA and SRMR were outside of the recommended cut-offs. The modification indices indicated that the model fit could be significantly improved by allowing the error terms of two pairs of items to be correlated (Item 1 and Item 3; Item 3 and Item 4). TICFA model 2 showed good model fit (Table 2). Figure 2 presents the four-factor structure of TIS.

Faculty Demographic Characteristics and Their Perception of Diversity Climate (RQ1). A MIMIC Model explored how engineering faculty' demographic information, as well as the interaction between gender and race, is associated with the four latent variables underlying the DCS (i.e., *Organizational Fairness*, *Organizational Inclusion*, *Personal Diversity Value*, *Institutional Embracement of Inclusion*). This model showed adequate fit (Table 2). Figure 3 presents the structure of the MIMIC model.

TABLE 3

EFA Factor Loadings of the Diversity Climate Scale and Turnover Intention Scale.

Scale	Item	Subscales			
		Organizational Fairness	Organizational Inclusion	Personal Diversity Value	Institutional Embracement of Inclusion
DCS	1. I feel I have been treated differently here because of my race, sex, religion, or age.	**.70**	−.07	−.33	.06
	2. Administrators have a track record of hiring and promoting employees objectively, regardless of their race, sex, religion, or age.	**.86**	−.04	.01	0
	3. Administrators here give evaluation process fairly, regardless of the employee's ethnicity, gender, age, or social background.	**.97**	−.03	.043	.02
	4. Administrators here make tenure and promotion decisions fairly, regardless of factors such as employee's race, sex, age, or social background.	**.85**	.02	.04	−.03
	5. Administrators interpret human resource policies (such as performance evaluation) fairly for all faculties.	**.86**	.10	−.01	.01
	6. Administrators here assign teaching and service load fairly.	**.60**	.15	−.04	.06
	7. Administration encourages the formation of faculty support groups.	.26	**.53**	.11	0
	8. There is a mentoring program in use that identifies and prepares all underrepresented tenure-track faculty of color for promotion at the *university*.	−.04	**.90**	−.07	−.11
	9. There is a mentoring program in use that identifies and prepares all underrepresented tenure-track faculty of color for promotion at the *college of engineering*.	−.03	**.93**	−.11	.11
	10. There is a mentoring program in use that identifies and prepares all underrepresented tenure-track faculty of color for promotion in my *department*.	0	**.78**	−.09	.42
	11. There is a mentoring program in use that identifies and prepares all female tenure-track faculty for promotion *at the university*.	.02	**.93**	.11	−.23
	12. There is a mentoring program in use that identifies and prepares all female tenure-track faculty for promotion *at the college of engineering*.	.02	**.96**	.09	−.02
	13. There is a mentoring program in use that identifies and prepares all female tenure-track faculty for promotion *in my department*.	.03	**.84**	0	.29
	14. The "old boys' network" (i.e., an exclusive informal system of connections through which those within the group use their positions of influence by providing favors and information to help other group members) is alive and well here.	**.53**	.14	−.46	.01
	15. The university invests insufficient resources (i.e., people and money) on diversity awareness and related training.	.18	.13	−.43	.04
	16. Knowing more about cultural norms of diverse groups would help me be more effective in my job.	−.06	.07	**.73**	.05
	17. I think that diverse viewpoints add value.	.18	−.01	**.71**	−.24
	18. I believe diversity is an important issue for the *university*.	−.01	−.02	.54	**.76**
	19. I believe diversity is an important issue for - the *college of engineering*.	.02	.01	.49	**.84**
	20. I believe diversity is an important issue for my *department*.	.07	.02	.45	**.78**
	21. I feel at ease with people from different backgrounds other than my own.	.26	.14	.01	−.38
	22. I am afraid to disagree with members of other groups for fear of being prejudiced.	**.34**	−.03	.01	−.20
	23. The lack of diversity keep some faculty/ staff teams from performing to their maximum effectiveness.	**.32**	.01	−.72	−.11
		Turnover Intention			
TIS	1. How often have you considered leaving your career as a professor at a R1 university?	**.76**			
	2. How often have you considered leaving your current position with your current employer?	**.87**			
	3. How satisfying is your job in fulfilling your personal needs?	**.83**			
	4. How often are you frustrated when not given the opportunity at work to achieve your personal work-related goals?	**.73**			
	5. How often do you dream about getting another job that will better suit your personal needs?	**.89**			

Note. DCS = Diversity Climate Scale; TIS = Turnover Intention Scale. Bolded values indicate the items loaded on related constructs.

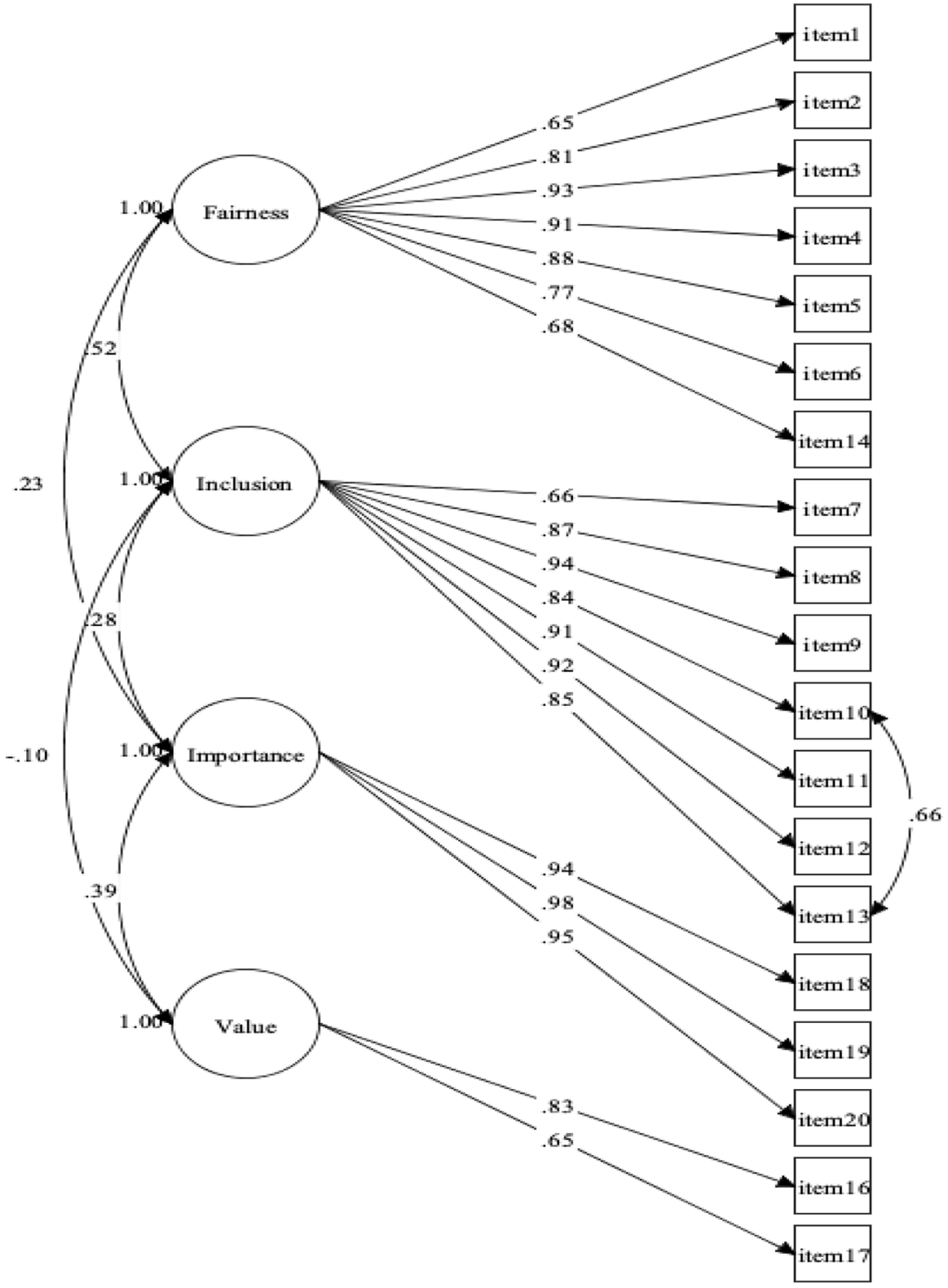

FIGURE 1. *Diversity climate scale factor structure.*
Note. Fairness = *Organizational Fairness;* Inclusion = *Organizational Inclusion;* Importance = *Diversity Importance at Institutional Levels*; Value = Personal Diversity Value.
We indicated observed variables as rectangular and circles as latent variables.

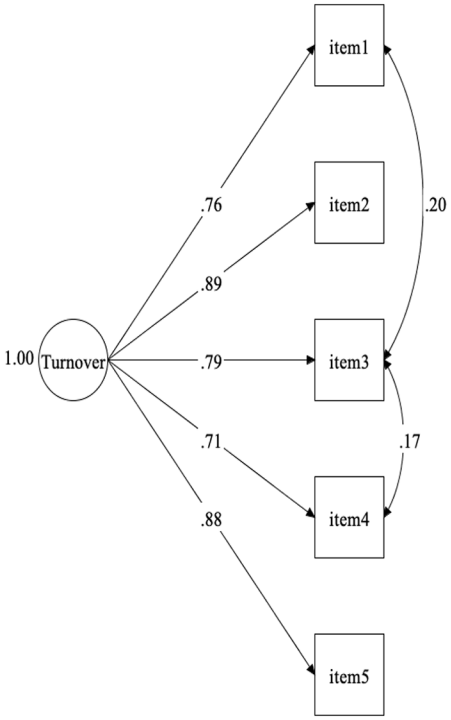

FIGURE 2. *Turnover intention scale factor structure.*
Note. Turnover = Turnover Intention.
We indicated observed variables as rectangular and circles as latent variables.

Faculty's[11] gender (0 = male, 1 = female) illustrated a negative statistically significant relationship with *Organizational Fairness* ($b = -0.54$, $p = 0.000$) and *Organizational Inclusion* ($b = -0.38$, $p = 0.000$) but a positive relationship with *Personal Diversity Value* ($b = 0.52$, $p = 0.000$). In other words, male faculty exhibited a stronger perception of diversity climate regarding organizational fairness and inclusion when compared with female faculty. Relative to male faculty, female faculty expressed a stronger value for diversity.

Black and Hispanic Race/Ethnicity (1 = yes, 0 = no, with White serving as the reference group) displayed a significant negative relationship with *Organizational Inclusion* ($b = -0.74$, $p = 0.009$), *Organizational Fairness* ($b = -0.99$, $p = 0.000$), but positive relationship with *Personal Value of Diversity* ($b = 1.09$, $p = 0.009$). Relative to White faculty, faculty from Black and Hispanic groups had a weaker perception of institutions' inclusion and fairness practices. Meanwhile, faculty from Black and Hispanic groups valued diversity more than White faculty did. Professors' rank (0 = non-full professor, 1 = full professor) had a positive statistically significant relationship with *Organizational Inclusion* ($b = 0.23$, $p = 0.000$) and *Organizational Fairness* ($b = 0.14$, $p = 0.022$) after controlling other covariates. Specifically, faculty who were full professors showed a more positive perception of institutions' inclusion and fairness practices relative to those who were not full professors. The age group from 39 to 48 (1 = yes, 0 = no, age group of above 58 served as a reference group) showed a positive relationship with Personal *Diversity Value* ($b = 0.25$, $p = .0.007$). This indicated that relative to faculty who were above 58, faculty between 38 to 48 tended to value diversity more. Moreover, marital status (0 = unmarried, 1 = married) showed a significantly positive relationship with Institutional Embracement of Inclusion ($b = 0.41$, $p = 0.013$). Married faculty were more likely to agree that diversity was a critical issue at different institutional levels than those not married.

Mechanical aerospace engineering area (1 = yes, 0 = no, electrical and computer engineering area served as a reference group) ($b = 0.13$, $p = 0.043$) and engineering education area (1 = yes, 0 = no, electrical and computer engineering area served as a reference group) ($b = 0.23$, $p = 0.003$) showed a statistically significant and positive relationship with *Organizational Inclusion.* Specifically, faculty in the mechanical aerospace engineering and engineering education area had a stronger perception of the institution's organizational inclusion practices when compared with faculty from the electrical and computer engineering area. Participants' tenure track status (0 = on tenure track, 1 = tenured) showed a significantly positive relationship with *Organizational Fairness* ($b = 0.216$, $p = 0.047$). Faculty who were tenured showed stronger perceptions of the institution's organizational fairness practices relative to those who were on a tenure track but not tenured.

Finally, the interaction between gender and race (i.e., Black, and Hispanic Race vs. White) showed a significantly positive effect on faculty members' perception of Organizational Fairness ($b = 0.56$, $p = 0.002$), indicating that the effect of race (Black and Hispanic vs. White) on faculty' perceptions of organizational fairness differed between male and female faculty. Specifically, while Black and Hispanic faculty showed weaker perceptions of organizational fairness practices in their institutions than White faculty, the relationship was stronger for female faculty than for male ones. In other words, Black and Hispanic female faculty perceived less organizational fairness than male faculty, including Black and Hispanic males.

Faculty's Perceptions of Diversity Climate in Their Institutions and Their Turnover Intentions (RQ2). The SEM model explored how the four latent variables measured by DCS were associated with faculties' turnover intention as measured by the TIS (Figure 4). The model fitted well (Table 2). Path coefficients suggested that engineering faculty turnover intentions are negatively associated with their *Organizational Fairness* ($b = -0.54$, $p < .001$) and *Organizational Inclusion* ($b = -0.14$, $p < .001$), indicating that faculty who

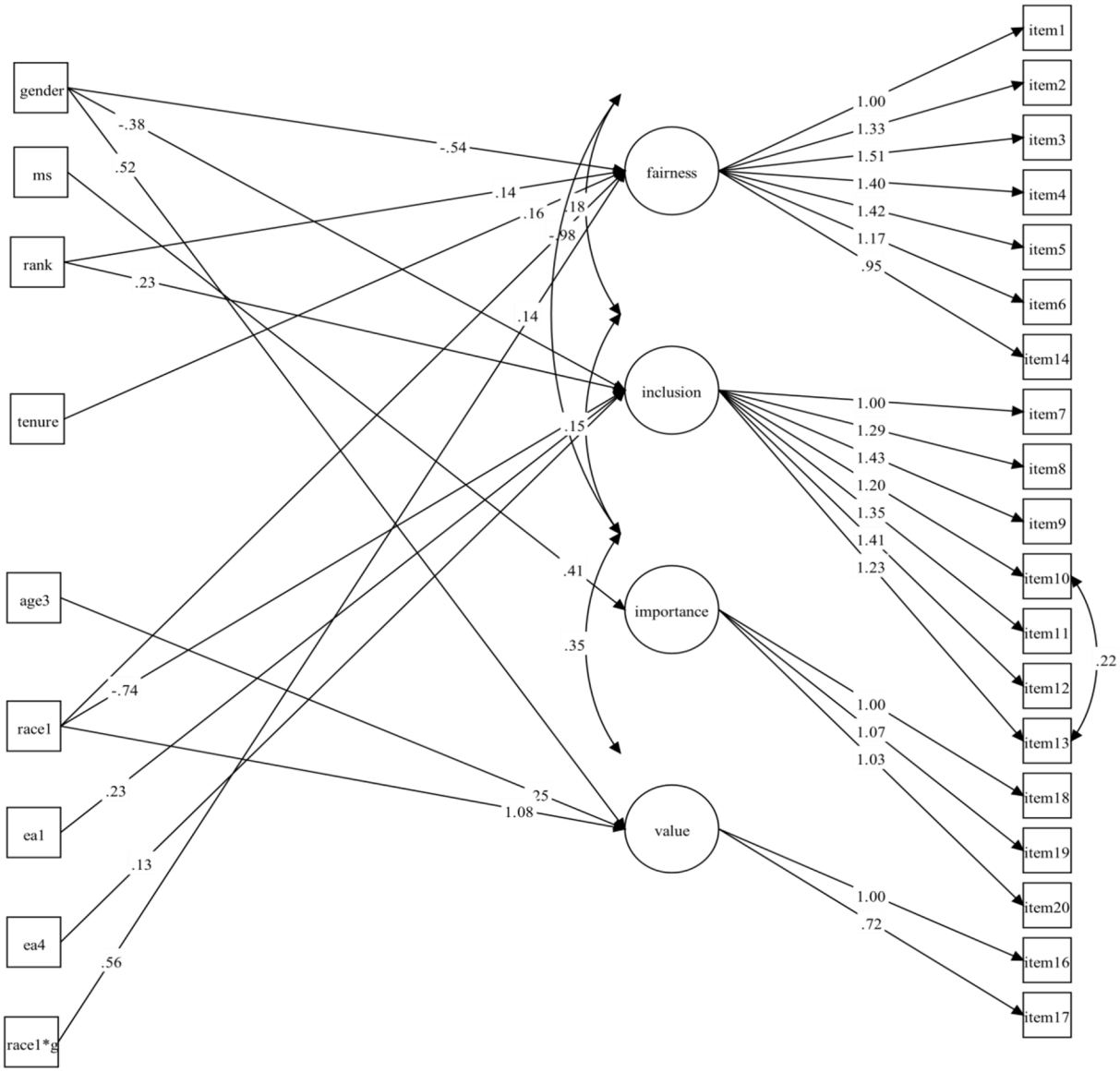

FIGURE 3. *MIMIC model structure.*

Note. Fairness = *Organizational Fairness*; inclusion = *Organizational Inclusion*; Importance = *Institutional Embracement of Inclusion;* Value = *Personal Diversity Value*; ms = marriage status (0 = unmarried, 1 = married); rank = professor rank (0 = non-full professor, 1 = full professor); tenure = tenure track status (0 = on tenure track, 1 = tenured); age3 = age 39 to 48 (0 = no, 1 = yes, with age group of above 58 serving as a reference group; race1 = Black and Hispanic (0 = no, 1 = yes, with White serving as a reference group), ea1 = engineering education area (0 = no, 1 = yes, with electrical and computer engineering area serving as a reference group); ea4 = mechanical aerospace engineering area (0 = no, 1 = yes, with electrical and computer engineering area serving as a reference group); race1*g = interaction between race1 and gender; gender (0 = male, 1 = female).
Only statistically significant unstandardized coefficients are included in the figure.
We indicated observed variables as rectangular and circles as latent variables.

had higher perceptions of organizational fairness and inclusion were less likely to turnover.

Discussion

The purpose of this study was to investigate the potential relationship between engineering faculty diversity climate and turnover intentions. Our engineering faculty specific results contributed to the literature by aligning with prior work that linked working conditions to broader faculty intention to leave (O'Meara et al., 2019) and provided information concerning how faculty demographic characteristics may be linked to turnover (Rosser, 2005; White-Lewis et al., 2023), i.e., namely through faculty perception of their institution's diversity climate. The results of our study suggested several main findings, including:

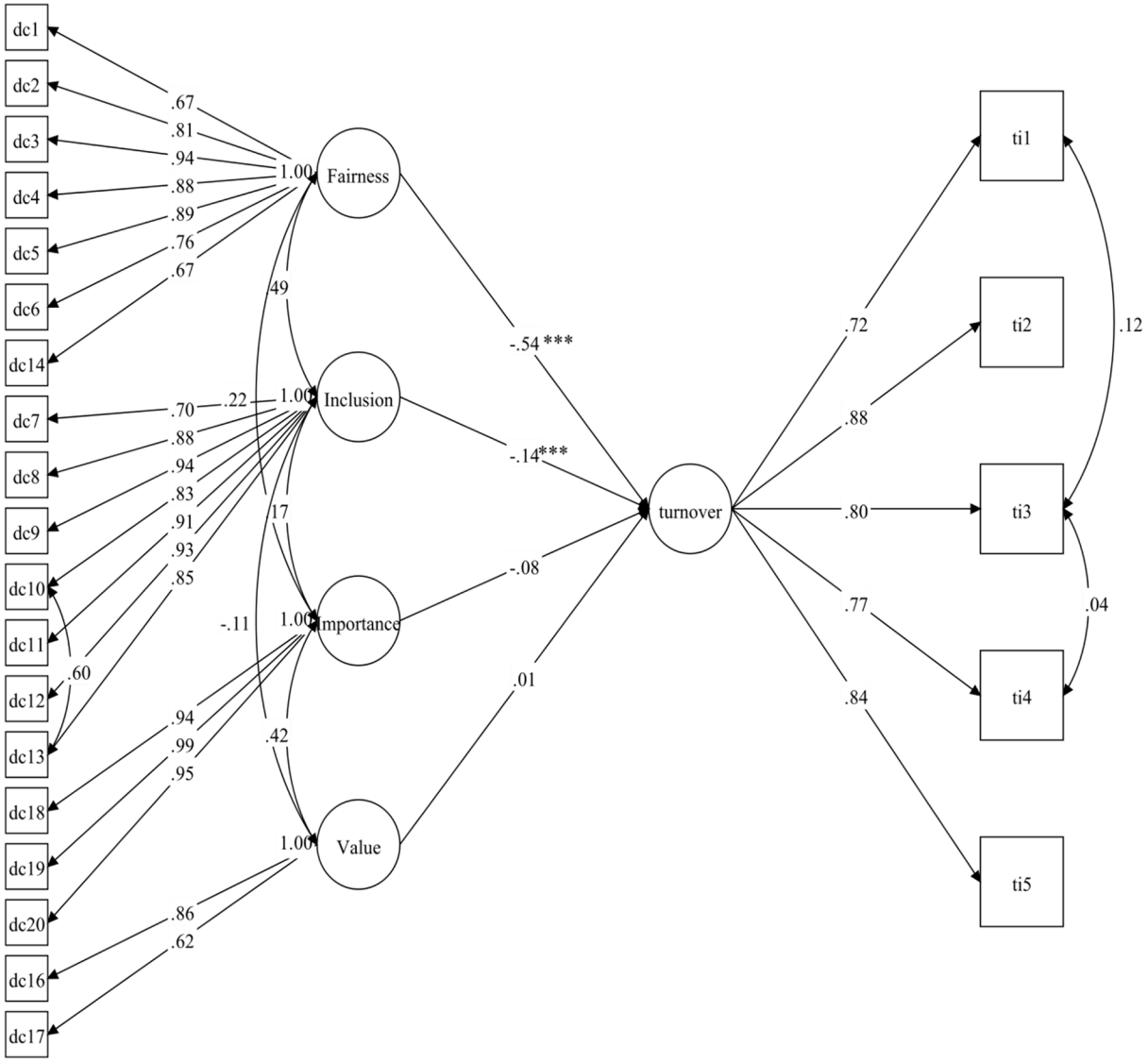

FIGURE 4. *SEM model.*

Note. Fairness = *Organizational Fairness*; inclusion = *Organizational Inclusion*; Importance = *Institutional Embracement of Inclusion*; Value = *Personal Diversity Value*; turnover = *Turnover Intentions*. dc = diversity climate; ti = turnover intention.

Statistically significant standardized coefficients are identified with stars. *** equates to $p < .0001$.

We indicated observed variables as rectangular and circles as latent variables.

- Our CFA results revealed that DCS measures four dimensions (i.e., *Organizational Fairness*, *Organizational Inclusion*, *Personal Diversity Value*, and *Institutional Embracement of Inclusion*) that largely correspond to what Mor Barak et al. (1998) identified in the business context.[12] Overall, DCS functions well in measuring the engineering faculty's perception of the diversity climate in their IHEs. TIS works well in measuring the single dimension of turnover intention.
- In line with the Theories of Social Identity, Intergroup Relations, and Racialized Organization, our MMIC modeling showed that male faculty were more likely to exhibit stronger perceptions of their institutions' fairness and inclusion practices than female faculty. Female faculty also expressed stronger value for diversity than male faculty. While Black and Hispanic faculty showed lower perception of the inclusion and fairness practice in their institutions than White faculty; they also valued diversity more than White faculty did. These findings are consistent with the literature (e.g., Mor Barak et al.,1998; Settles et al., 2021) and suggest that underrepresented women and faculty of color, on average, feel excluded in

engineering academia.[13] Diversity perceptions also differed by faculty rank, engineering area, marital and tenure status, which, consistent with the theoretical frameworks of the study, further highlights the importance of the relationship between the multiple social identity faculty hold and their perceptions of the diversity climate of the institution (Campbell & O'Meara, 2014; Griffin, 2019).

- Further advancing the utility of Social Identity Theory, through its framework, we sought to gain a better understanding of the way people group themselves in relation to similar attributes such as race and gender identity. Our results suggest that race and gender identity matter regarding how engineering faculty perceive their institution's diversity climate, as Black and Hispanic female faculty demonstrated lower perceptions of organizational fairness than Black and Hispanic male faculties. In support of the theory of intersectionality that suggests women of color face unique experiences from their multiple identities that differ from other women or men of color (Crenshaw, 1991), and past research on the topic (Fields & Howell, 2023; Zinn & Zambrana, 2019), our findings suggest that female engineering faculty of color perceive the most unfavorable diversity climate.
- SEM results suggest that faculty who had more positive perceptions of fairness and inclusion practices in their institutions tended to have lower turnover intentions. These findings speak to the importance of workplace climate for the faculty respondents.

Overall, this study fills several important gaps in the literature. First, we use a recent nationally representative dataset that focuses specifically on engineering faculty as opposed to STEM faculty or even faculty in general. Past research has called for a "deeper look into specific disciplines to expose intra-field distinctions that likely exist under the surface and to further articulate cross-field similarities" (Gonzales et al., 2024, p. 15). This is because the norms and cultures of specific disciplines, as reinforced and intertwined with the subcultures of institutional units, have a critical influence on faculty (Campbell & O'Meara, 2014). In response, our engineering focus allowed us to key into more nuanced questions specific to engineering, such as the potential relationship between engineering area (subfield) and diversity climate perceptions. In addition, while most studies on engineering diversity focus on women in engineering (Riffle et al., 2013; Xu, 2008) and are largely qualitative, this study was intentionally inclusive of race/ethnicity and relied on a quantitative analysis that relied on data from IHEs across the nation. Finally, this study validated the applicability of the DCS and TIS, which are often used in the business sector, for an engineering academic setting, providing evidence to support the use of the tool for further research and practice in this space.

Limitations

Despite positive correlations between turnover intention and turnover (Bothma & Roodt, 2013; Griffeth et al., 2000), as mentioned earlier, they are not synonymous. Cohen et al.'s (2016) research distinguished turnover and turnover intention as separate concepts at the organizational level but emphasized the importance of how demographic differences (such as race) affect communication and networking patterns that affect turnover. They suggested the importance of public employers concentrating on the demographic characteristics of their institution instead of self-reported turnover intentions. Our study advocates for both. Another limitation of our study is that our check for response bias suggests that our participants are likely to have more experience and be full professors than non-participants. Because pre-tenured faculty are more likely to turnover (Connolly et al., 2015) and because a substantial proportion of this group is likely to be underrepresented faculty of color, the results of the study could be different with more representation of early career faculty. That said, our large sample size (n = 1,101) mitigates some of this concern. Moreover, our sample area is derived from respondents across the nation. Still, results must be interpreted cautiously with the aforementioned caveat in mind.

While we were able to interrogate some potential differences in perception across organizational levels (e.g., university, college, department), another limitation of our study is that we did not examine in-depth the potential congruency or disparity in the influence of the various layered roles. Finally, our focus was on R1 institutions and the field of engineering, results may differ for faculty from a different context.

Implications and Conclusion

Our work contributes to a body of literature that suggests that faculty often leave or intend to leave their employers due to poor work environments (O'Meara et al., 2014; Settles et al., 2022; White-Lewis et al., 2023). When the diversity climate is negative, faculty may not feel the sense of belonging and engagement that is necessary for a healthy organization to thrive. Prior research has suggested negative diversity experiences faculty encounter in their work environments (often resulting in the perception of a negative diversity climate) can influence not only their institutional but also their psychological departure (Griffin et al., 2011). Responses to open-ended follow-up probes with our survey participants suggest these norms of engineering faculty culture can range from having certain types of work (e.g., knowledge production and publication) being privileged over other types (e.g., change effecting, mentorship, service work) in contexts where the unprivileged work are disproportionately assigned to underrepresented faculty, underrepresented faculty not being perceived as legitimate scholars (e.g., being seen as "affirmative action" hires), as well their

experiences ranging from exposure microaggressions to outright discrimination. These factors echo findings in the literature on underrepresented faculty experiences across fields (Gonzales et al., 2024; Griffin et al., 2011; Settles et al., 2022), and undoubtedly contribute to workplace exclusion in the engineering academic work context, requiring intentional address if workplace inclusion in engineering academia is ever to be achieved. For the field of engineering specifically, fostering an environment of inclusion necessitates confronting long-held ideology concerning what it means to be a "good engineer" (e.g., that good engineering is depoliticized operating in a realm of meritocracy vs. using engineering to address social issues which are often the concern and interest of racially underrepresented engineering faculty) (Cech, 2013; Cech & Sherick, 2015). Furthermore, our findings respond to the call by Gonzales et al. (2024) concerning the importance of directly confronting disciplinary-embedded biases by addressing epistemic questions if institutions are serious about reducing bias.

One goal of this study was to contribute to the body of research on improving workplace climates for faculty of all backgrounds, going beyond the recognition that work climates can be improved upon to providing potential resources to help with that improvement effort. Results from this study could benefit employers in R1 institutions who may want to use the DCS as a tool to assess the faculty's perception of the diversity climate in their institutions. The tool can be used to learn how faculty perceive the diversity climate in their institutions so that faculty and institutions may work together to improve the status quo of faculty working conditions. Second, this tool may be especially beneficial for tracking how faculty's perception of the diversity climate is associated with their turnover intentions. Organizations can employ the instruments tested in our study to collect survey data that can then be coupled with qualitative interview and observation data to develop a clearer understanding of the role institutional practice, policies, and relationships may have in reinforcing or perpetuating workplace exclusion to determine areas of improvement. To move the needle on making diversity, equity, and inclusion (DEI) progress, institutional leaders must have a clear understanding of the challenges, experiences, and perceptions of all faculty, especially those that are traditionally marginalized and underrepresented (Griffin, 2019).[14]

The diversity climate instrument and turnover intention tools are particularly valuable given the current environment where several states have recently passed policies and legislation that have been hostile to diversity and inclusion efforts (e.g., defunding diversity offices and their initiatives, requiring the removal of diversity statements in public-facing documents) (Engram & Mayer, 2023). The Macro-level (Ray, 2019) anti-DEI efforts that have been targeting campuses nationwide likely contribute to stress, burnout, and racial battle fatigue of faculty from marginalized identities (which would also likely have implications for students and staff). Data obtained from diversity climate and turnover intention surveys can allow for the assessment of the impact of these policies and procedures on the diversity perceptions and sentiments of the workforce, painting an informative picture of workplace inclusion overall. Doane et al., (2023) speculated on the damaging impact that the removal of DEI initiatives and resources could have on faculty, and data from these survey instruments could empirically document whether these speculations represent a reality for institutions.

It is important to note that the way faculty approach their work is influenced by their professional and personal histories (Gonzales, 2014) and, as a result, creating a sense of belonging recognizes that this results in variation in values, expectations, and capital that must be acknowledged. Ultimately, "institutional leaders and policymakers cannot assume that the climates in academic departments are acceptable simply because professors have not located to another institution" (Griffin et al., 2011, p. 522). Therefore developing an inclusive culture of belonging requires a comprehensive organizational strategy that is intentional in its focus on inclusion and a constant flow of data and communication (obtained from tools such the DCS and the turnover intention survey) that allows for issues to be understood, addressed, and the solutions evaluated for effectiveness.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding for this research was provided by the National Science Foundation. Publication charges were provided by the University of South Carolina's College of Education.

ORCID iD

Henry Tran https://orcid.org/0000-0002-2229-7111

Notes

1. According to a report based on the Faculty Job Satisfaction Survey conducted by the Collaborative on Academic Careers in Higher Education (COACHE) 2020, among the participants (28,080 faculty members across 41 institutions), 23.7% of participants stated that they have looked for a job offer from outside their company during the previous five years. Quite often, the starkest disparities on campuses occur in departments or units of engineering, where there are very few if any underrepresented minority faculty members (Nelson & Brammer, 2010; Tran & Platt, 2022).

2. Consistent with other work, findings from their multivariate regression analysis of data from restaurant employees and managers suggest the importance of the diversity climate for turnover intention.

3. Ten institutions were not contacted because they shared joint engineering programs with institutions in our sample (duplicating their count if considered), and the others did not offer engineering. Of the 118 institutions, 74% were public and 26% were private nonprofit. Institutions were spread across the states (e.g., 30% in Southwestern, 28% in Western, and 22% in Northeastern).

4. Concerns about response rates are rooted in concerns about bias in sample responses (Hellevik, 2016). For example, those who complete the survey may differ in some meaningful way from those who did not. As a result, we checked the potential bias in response rate by examining the association between faculty demographics and their response status (yes vs. no). Both years worked as a tenure-track professor ($ß = 0.03$, $p < 0.05$) and years worked as a tenure-track professor in the institution ($ß = 0.03$, $p < 0.05$) were significantly associated with their response, indicating that those who worked for a longer time as a tenure-track professor or as a tenure-track professor in the current institution were more likely to respond. Tenure track status did not have a significant impact on the response status. However, more participants ranked as full professors responded to the survey ($ß = 0.47$, $p < 0.05$).

5. For example, while revising the Diversity Climate Scale, we replaced the term "manager" with "administrator," and the term "here" (signaling the employer) was disaggregated and replaced with "the department, college, and university" separately, depending on the context.

6. Also, an open-ended item was developed as the first question: "What are the key diversity concerns specific to your departments/ subject specialty?" In the fourth item, the term 'lay off decision" was changed to be a more general question about fairness in the tenure and promotion decisions. Also, the question asking about the administrator's fair interpretation of human resource policy for all "employees" was revised to identify only "faculty members." In the same question, we provided a more relevant example of human resource policies to the university faculty (i.e., performance evaluation) rather than "sick leave" in the original survey. Regarding the sixth and seventh items, the words "assignment" and "employee" were restated as "teaching and service load" and "faculty" to reflect the university context. The question asking about the mentoring program in use that identifies and prepares all underrepresented people of color or females for promotion was revised in two stages. First, it was changed to comprise three questions specifying where the mentoring program was in use (i.e., university, college, or department). However, there was a concern about the fatigue that might arise by repeatedly asking the same question for different divisions of the institution. As a result, a matrix question was developed to resolve this problem. Moreover, the phrase containing the term "the minority faculties" was revised from "underrepresented people of color" and "female employees" to "underrepresented tenure-track faculty of color" and "female tenure-track faculty." In the 14th question, a brief definition of the "old boys' network" was added. The next question asking whether the university spends enough money and time on diversity awareness and related training was rephrased to inquire whether the university invests insufficient resources (i.e., people and money) on the same issue. The 18th item took the form of a matrix question asking whether diversity is an important issue in their university, college of engineering, and department separately. To clarify the meaning of "diversity issues" in the 21st item, we reworded it to state "the lack of diversity" to denote the scarcity of diversity being the diversity issue of focus.

7. Positionality: Before discussing our analytic plans, we discuss our positionalities. While the study itself is quantitative, there nonetheless are analytic interpretations that could be influenced by the authors' perspectives. All authors in this study are scholars of color from the field of education, three of Asian descent (two female graduate students and a male faculty), and one Black faculty. The first author is a leading expert in human resources (HR) issues in education and approaches this work from an HR workplace inclusion lens. The second author of this paper is an expert in higher education, specifically studying those from marginalized backgrounds. Together, we seek to produce scholarships that help to cultivate a sense of belonging among the educational workforce, particularly for those who have been historically excluded.

8. We did not add sexual orientation as a covariate due to a lack of variation (92.1% identified as heterosexual) to detect cross-sexual orientation group differences for diversity climate perceptions.

9. Path coefficients between covariates and factors were examined to determine the relationship between engineering faculty demographic characteristics on their perception of the diversity climate in their institutions.

10. All items loaded on hypothetical factors except Item 15 ("The university invests insufficient resources (i.e., people and money) on diversity awareness and related training") and Item 21 ("I feel at ease with people from different backgrounds other than my own").

11. For analysis purposes, we removed the third category of gender (i.e., other) due to the small number of cases ($n = 12$, 1.1%). The removal did not affect the analysis results

12. Item 15 ("The university invests insufficient resources (i.e., people and money) on diversity awareness and related training"), Item 21 ("I feel at ease with people from different backgrounds other than my own"), Item 22(" I am afraid to disagree with members of other groups for fear of being prejudiced"), and Item 23 (" The lack of diversity keep some faculty/ staff teams from performing to their maximum effectiveness") were inadequate for explaining the related constructs. Therefore, we suggest excluding these three items when DCS was used to measure employees' perceptions of diversity climate in IHE settings.

13. Prior research has suggested that these faculty often perceive microaggression and epistemic exclusion in their work contexts, as demonstrated by reports of stronger perception of their scholarship being devalued relative to their counterparts, showcasing social identity-based biases in action against these marginalized groups that has been linked to their turnover intentions through more negative feelings about job satisfaction and feelings about their work climate (Settles et al., 2021).

14. Beyond obtaining a pulse of the status quo of institutional or unit diversity, the instruments can also be employed to determine the potential effectiveness of interventions designed to improve DEI outcomes. For example, O'Meara et al. (2019)'s review of the literature found initiatives such as the use of hiring and performance evaluation rubrics and decision-making tools, competitive spousal hire and child-care policies, "transparent data on faculty work activities, planned rotations of time-intensive roles, credit systems, commitment to fair workload, [as well as] clear benchmarks and expectations" (pp. 751–752) as important for faculty equity. Institutional leaders can test the effectiveness of these strategies on diversity climates in their own contexts with the tools examined in our study.

References

Alderfer, C. P., & Smith, K. K. (1982). Studying intergroup relations embedded in organizations. *Administrative Science Quarterly*, *27*(1), 35–65. https://doi.org/10.2307/2392545

Arnold, N. W., Crawford, E. R., & Khalifa, M. (2016). Psychological heuristics and faculty of color: Racial battle fatigue and tenure/promotion. *Journal of Higher Education*, *87*(6), 890–919. https://doi.org/10.1353/jhe.2016.0033

Bandalos, D. L. (2018). *Measurement theory and applications for the social sciences*. Guilford Publications.

Beran, T. N., & Violato, C. (2010). Structural equation modeling in medical research: A primer. *BMC Research Notes*, *3*, 267. https://doi.org/10.1186/1756-0500-3-267

Bonilla-Silva, E. (1997). Rethinking racism: Toward a structural interpretation. *American Sociological Review*, *62*(3), 465–480. https://doi.org/10.2307/2657316

Bothma, C. F., & Roodt, G. (2013). The validation of the turnover intention scale. *SA Journal of Human Resource Management*, *11*(1), 1–12. https://doi.org/10.4102/sajhrm.v11i1.507

Buttner, E. H., & Lowe, K. B. (2017). Addressing internal stakeholders' concerns: The interactive effect of perceived pay equity and diversity climate on turnover intentions. *Journal of Business Ethics*, *143*(3), 621–633. https://doi.org/10.1007/s10551-015-2795-x

Buttner, E. H., Lowe, K. B., & Billings-Harris, L. (2012). An empirical test of diversity climate dimensionality and relative effects on employee of color outcomes. *Journal of Business Ethics*, *110*, 247–258. https://doi.org/10.1007/s10551-011-1179-0

Campbell, C. M., & O'Meara, K. (2014). Faculty agency: Departmental contexts that matter in faculty careers. *Research in Higher Education*, *55*, 49–74. https://doi.org/10.1007/s11162-013-9303-x

Cech, E. A. (2013). The (mis) framing of social justice: Why ideologies of depoliticization and meritocracy hinder engineers' ability to think about social injustices. In J. Lucena (Ed.), *Engineering education for social justice: Critical explorations and opportunities* (pp. 67–840. Springer. https://doi.org/10.1007/978-94-007-6350-0_4

Cech, E. A., & Sherick, H. M. (2015). Depoliticization and the structure of engineering education. In S. Christensen, C. Didier, A. Jamison, M. Meganck, C. Mitcham, & B. Newberry (Eds.), *International perspectives on engineering education: Engineering education and practice in context* (*vol. 1*, pp. 203–216). Springer.

Cohen, G., Blake, R. S., & Goodman, D. (2016). Does turnover intention matter? Evaluating the usefulness of turnover intention rate as a predictor of actual turnover rate. *Review of Public Personnel Administration, 36*(3), 240–263.

Collaborative on Academic Careers in Higher Education (COACHE). (2020). *2019 year in review: The collaborative on academic careers in higher education*. https://coache.gse.harvard.edu/files/gse-coache/files/coache_2019_annual_report_fin.pdf

Connolly, M. R., Lee, Y., & Savoy, J. N. (2015). *Faculty hiring and tenure by sex and race: New Evidence from a national survey*. http://www.chronicle.com/items/biz/pdf/AERA%202015%20paper_FINAL.pdf

Corneille, M., Lee, A., Allen, S., Cannady, J., & Guess, A. (2019). Barriers to the advancement of women of color faculty in STEM: The need for promoting equity using an intersectional framework. *Equality, Diversity, and Inclusion: An International Journal*, *38*, 328–348. https://doi.org/10.1108/edi-09-2017-0199

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation*, *10*(1), 7. https://doi.org/10.7275/jyj1-4868

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, *43*(6), 1241–1299. https://doi.org/10.2307/1229039

Daly, C., & Dee, J. (2006). Greener pastures: Faculty turnover intent in urban public universities. *Journal of Higher Education*, *77*(5), 776–803. https://doi.org/10.1353/jhe.2006.0040

DiStefano, C., Liu, J., & Burgess, Y. (2017). Investigating the structure of the pediatric symptoms checklist in the preschool setting. *Journal of Psychoeducational Assessment*, *35*(5), 494–505. https://doi.org/10.1177/0734282916647648

Doane, J., & Unda, M. D. C. (2023). *Texas' declining diversity of the undergraduate class, 2015–2022: A critical policy analysis of anti-DEI legislation in the 88th session of the texas state legislature*. Texas Center for Education Policy.

Dwivedi, S. (2015). Turnover intentions: Scale construction & validation. *The Indian Journal of Industrial Relations*, *50*(3), 452–468. https://www.jstor.org/stable/24549107

Engram, D. V., & Mayer, K. (2023). Ya'll don't hate White supremacy enough for me: How performative DEI prevents anti-racism and accountability in higher education. *The Vermont Connection*, *44*(1), 56–64. https://scholarworks.uvm.edu/tvc/vol44/iss1/10

Ezell, J. M. (2021). "Trickle-down" racial empathy in American higher education: Moving beyond performative wokeness and academic panels to spark racial equity. *Journal of Education*, *203*(1), 002205742110535. https://doi.org/10.1177/00220574211053586

Feagin, J., & Elias, S. (2013). Rethinking racial formation theory: A systemic racism critique. *Ethnic and Racial Studies*, *36*(6), 931–960.

Fields, C. W., & Howell, G. L. (2023). # BlackWomenAtWork: Lessons learned from Black women educators at historically White institutions. In G. Jean-Marie & H. Tran (Ed.), *Leadership in turbulent times* (pp. 97–110). Emerald.

Figueroa, T., Hurtado, S., Cobian, K., Wilkins, A., & Lewis-White, D. (2016). C*ultivating STEM talent: Lessons from STEM pioneers and exemplar institutions*. https://www.heri.ucla.edu/nih/downloads/2016-Cultivating_STEM_talent_Lessons_from_STEM_pioneers_and_exemplar_institutions.pdf

Finney, S. J., & DiStefano, C. (2013). Non-normal and categorical data in structural equation models. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 439–492). Information Age.

Frank, T. J., Powell, M. G., View, J. L., Lee, C., Bradley, J. A., & Williams, A. (2021). Exploring racialized factors to understand why Black mathematics teachers consider leaving the profession. *Educational Researcher*, *50*(6), 381–391. https://doi.org/10.3102/0013189x21994498

Glisson, C. (2015). The role of organizational culture and climate in innovation and effectiveness. *Human Service Organizations: Management, Leadership & Governance*, *39*(4), 245–250. https://doi.org/10.1080/23303131.2015.1087770

Gonzales, L. D. (2014). Framing faculty agency inside striving universities: An application of Bourdieu's theory of practice. *The Journal of Higher Education*, *85*(2), 193–218. https://doi.org/10.1353/jhe.2014.0011

Gonzales, L. D., Culpepper, D., & Anderson, J. (2024). An analysis of academic hiring research and practice and a lens for the future: How labor justice can make a better academy. In L. W. Perna (Ed.), *Higher education: Handbook of theory and research* (*vol. 39*, pp. 381–471). Springer Nature Switzerland.

Gonzales, L. D., Hall, K., Benton, A., Kanhai, D., & Núñez, A. M. (2021). Comfort over change: A case study of diversity and inclusivity efforts in US higher education. *Innovative Higher Education*, *46*, 445–460.

Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management*, *26*, 463–488. https://doi.org/10.1177/014920630002600305

Griffin, K. A. (2019). Institutional barriers, strategies, and benefits to increasing the representation of women and men of color in the professoriate: Looking beyond the pipeline. *Higher Education: Handbook of Theory and Research*, *35*, 1–73. https://doi.org/10.1007/978-3-030-11743-6_4-1

Griffin, K. A., Pifer, M. J., Humphrey, J. R., & Hazelwood, A. M. (2011). (Re) defining departure: Exploring Black professors' experiences with and responses to racism and racial climate. *American Journal of Education*, *117*(4), 495–526. https://doi.org/10.1086/660756

Griffith, E. E., & Dasgupta, N. (2018). How the demographic composition of academic science and engineering departments influences workplace culture, Faculty experience, and retention risk. *Social Sciences*, *7*(71), 1–25. https://doi.org/10.3390/socsci7050071

Guarino, C. M., & Borden, V. M. (2017). Faculty service loads and gender: Are women taking care of the academic family? *Research in Higher Education*, *58*(6), 672–694. https://doi.org/10.1007/s11162-017-9454-2

Hellevik, O. (2016). Extreme nonresponse and response bias: A "worst case" analysis. *Quality & Quantity*, *50*, 1969–1991. https://doi.org/10.1007/s11135-015-0246-5

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jackson, J. (2004). The story is not in the numbers: Academic socialization and diversifying the faculty. *National Women's Studies Association Journal*, *16*(1), 172–185. https://doi.org/10.1353/nwsa.2004.0035

Johnson, D. D. (2021). Predictors of teachers' turnover and transfer intentions: A multiple mediation model of teacher engagement. *Journal of Education Human Resources*, *39*(3), 322–349. https://doi.org/10.3138/jehr-2020-0017

Jolly, P. M., & Self, T. T. (2020). Psychological diversity climate, organizational embeddedness, and turnover intentions: A conservation of resources perspective. *Cornell Hospitality Quarterly*, *61*(4), 416–431. https://doi.org/10.1177/1938965519899935

Kaminski, D., & Geisler, C. (2012). Survival analysis of faculty retention in science and engineering by gender. *Science*, *335*(6070), 864–866.

Kaur, I., Mishra, G., & Farooqi, R. (2022). Diversity climate perceptions and turnover intentions: Evidence from the Indian IT industry. *International Journal of Human Capital and Information Technology Professionals*, *13*(1), 1–17. https://doi.org/10.4018/ijhcitp.300309

Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). Guilford.

Kossek, E. E., & Zonia, S. C. (1993). Assessing diversity climate: A field study of reactions to employer efforts to promote diversity. *Journal of Organizational Behavior*, *14*, 61–81. https://doi.org/10.1002/job.4030140107

Lee, J., Kim, S., & Kim, Y. (2021). Diversity climate on turnover intentions: A sequential mediating effect of personal diversity value and affective commitment. *Personnel Review*, *50*(5), 1397–1408. https://doi.org/10.1108/pr-11-2019-0636

Lewis, J. C., Alemán-Díaz, A., Behl, M., Kolesar, S., White, L., Jones, B., Garza, C., & Cooper, S. (2022). Rethinking committee work in the research enterprise: The case of regenerative gatekeeping. *AGU Advances*, *3*(6), e2022AV000772.

Liera, R. (2020). Moving beyond a culture of niceness in faculty hiring to advance racial equity. *American Educational Research Journal*, *57*(5), 1954–1994.

Liera, R. (2023). Expanding faculty members' zone of proximal development to enact collective agency for racial equity in faculty hiring. *The Journal of Higher Education*, *94*(6), 766–791. https://doi.org/10.1080/00221546.2023.2195769

Liera, R., & Hernandez, T. E. (2021). Color-evasive racism in the final stage of faculty searches: Examining search committee hiring practices that jeopardize racial equity policy. *The Review of Higher Education*, *45*(2), 181–209. https://doi.org/10.1353/rhe.2021.0020

McDonald, R. P., & Ho, M. H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, *7*(1), 64. https://doi.org/10.1037//1082-989x.7.1.64

McKay, P. F., Avery, D. R., Tonidandel, S., Morris, M. A., Hernandez, M., & Hebl, M. R. (2007). Racial differences in employee retention: Are diversity climate perceptions the key? *Personnel Psychology*, *60*(1), 35–62. https://doi.org/10.1111/j.1744-6570.2007.00064.x

Melaku, T. M., & Beeman, A. (2020, June 25). *Academia isn't a safe haven for conversations about race and racism*. Harvard Business Review. https://hbr.org/2020/06/academia-isnt-a-safe-haven-for-conversations-about-race

Mor Barak, M. E., Cherin, D. A., & Berkman, S. (1998). Organizational and personal dimensions in diversity climate: Ethnic and gender differences in employee perceptions. *The Journal of Applied Behavioral Science*, *34*(1), 82–104. https://doi.org/10.1177/0021886398341006

Moreno, J. F., Smith, D. G., Clayton-Pedersen, S. P., Parker, S., & Teraguchi, D. H. (2006). *The revolving door for underrepresented minority faculty in higher education: An analysis from the Campus Diversity Initiative*. Association of American Colleges and Universities.

Muthen, L. K., & Muthen, B. (2019). *Mplus. The comprehensive modeling program for applied researchers: User's guide*, 5.

National Center for Educational Statistics (NCES). (2021). Number and percentage distribution of science, technology, engineering, and mathematics (STEM) degrees/certificates conferred by postsecondary institutions, by race/ethnicity, level of degree/certificate, and sex of student: 2008-09 through 2015–16. National Center for Educational Statistics (2021 c.) COE - Graduate Degree Fields.

National Center of Education Statistics. (n.d.). *Fast facts*. http://nces.ed.gov/fastfacts/display.asp?id=61

Nelson, D. J., & Brammer, C. N. (2010). Pristine single-walled carbon nanotube purity evaluation by using 1 H NMR spectroscopy. *Analytical and Bioanalytical Chemistry*, *396*, 1079–1086. https://doi.org/10.1007/s00216-009-3091-3

O'Meara, K., Lennartz, C. J., Kuvaeva, A., Jaeger, A., & Misra, J. (2019). Department conditions and practices associated with faculty workload satisfaction and perceptions of equity. *The Journal of Higher Education*, *90*(5), 744–772. https://doi.org/10.1080/00221546.2019.1584025

O'Meara, K., Lounder, A., & Campbell, C. M. (2014). To heaven or hell: Sensemaking about why faculty leave. *The Journal of Higher Education*, *85*(5), 603–632. https://doi.org/10.1353/jhe.2014.0027

Osborne, J. W., Costello, A., & Kellow, J. T. (2008). Best practices in exploratory factor analysis. In J. Osborne (Ed.), *Best Practices in Quantitative Methods* (pp. 86–99). SAGE Publications, Inc. https://doi.org/10.4135/9781412995627.d8

Price-Haywood, E., Gozu, A., Kern, D., Powe, N., Wand, G., & Cooper, L. (2005). The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. *Journal of General Internal Medicine*, *20*, 565–571. https://doi.org/10.1111/j.1525-1497.2005.0127.x

Ray, V. (2019). A theory of racialized organizations. *American Sociological Review*, *84*(1), 26–53. https://doi.org/10.1177/0003122418822335

Ray, V., & Seamster, L. (2016). Rethinking racial progress: A response to Wimmer. *Ethnic and Racial Studies*, *39*(8), 1361–1369.

Riffle, R., Schneider, T., Hillard, A., Polander, E., Jackson, S., DesAutels, P., & Wheatly, M. (2013). A mixed methods study of gender, STEM department climate, and workplace outcomes. *Journal of Women and Minorities in Science and Engineering*, *19*(3), 227–243. https://doi.org/10.1615/jwomenminorscieneng.2013005743

Roodt, G. (2004). *Turnover intentions* [Unpublished document]. University of Johannesburg.

Rosser, V. J. (2005). Measuring the change in faculty perceptions over time: An examination of their worklife and satisfaction. *Research in Higher Education*, *46*, 81–107. https://doi.org/10.1007/s11162-004-6290-y

Ryan, J. F., Healy, R., & Sullivan, J. (2012). Oh, won't you stay? Predictors of faculty intent to leave a public research university. *Higher Education*, *63*(4), 421–437. http://www.jstor.org/stable/41429091

Settles, I. H., Jones, M. K., Buchanan, N. T., & Brassel, S. T. (2022). Epistemic exclusion of women faculty and faculty of color: Understanding scholar(ly) devaluation as a predictor of turnover intentions. *The Journal of Higher Education*, *93*(1), 31–55. https://doi.org/10.1080/00221546.2021.1914494

Settles, I. H., Jones, M. K., Buchanan, N. T., & Dotson, K. (2021). Epistemic exclusion: Scholar(ly) devaluation that marginalizes faculty of color. *Journal of Diversity in Higher Education*, *14*(4), 493–507. https://doi.org/10.1037/dhe0000174

Stapleton, L. M., & Kang, Y. (2018). Design effects of multilevel estimates from national probability samples. *Sociological Methods & Research*, *47*(3), 430–457.

Stewart, R., Volpone, S. D., Avery, D. R., & McKay, P. (2011). You support diversity, but are you ethical? Examining the interactive effects of diversity and ethical climate perceptions on turnover intentions. *Journal of Business Ethics*, *100*, 581–593. https://doi.org/10.1007/s10551-010-0697-5

Su, X. (2021). Validation of the Chinese version of the turnover intention scale in social workers. *Journal of Social Service Research*, *47*(2), 207–218. https://doi.org/10.1080/01488376.2020.1738312

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Brooks/Cole Publishing.

Tajfel, H., & Turner, J. C. (1986). The social identity theory of inter-group behavior. In S. Worchel & L. W. Austin (Eds.), *Psychology of intergroup relations* (pp. 2–24). Nelson-Hall.

Taylor, L. L., Beck, M. I., Lahey, J. N., & Froyd, J. E. (2017). Reducing inequality in higher education: The link between faculty empowerment and climate and retention. *Innovative Higher Education*, *42*(5), 391–405. https://doi.org/10.1007/s10755-017-9391-1

Tierney, W. G., & Rhoads, R. A. (1993). *Enhancing promotion, tenure and beyond: Faculty socialization as a cultural process* (ASHE-ERIC Higher Education Report No. 6). ASHE-ERIC Higher Education Reports, The George Washington University, One Dupont Circle, Suite 630, Washington, DC 20036–1183.

Tran, H., Platt, C. S., Sumpter, R., & Nallo, B. S. (2020). Engineering faculty diversity initiatives at research intensive institutions: What's used, and has it worked? *Journal of Negro Education*, *89*(4), 471–488.

Tran, H., & Platt, S. (2022). Using Talent centered education leadership to create equitable and inclusive workplaces for Black male faculty in engineering. In A. G. Robins, L. Knibbs, M. N. Weaver, & A. A. Hilton (Eds.), *Young, gifted and missing: The underrepresentation of African American males in science, technology, engineering and mathematics disciplines* (vol. 25, pp. 145–162). Emerald Publishing Limited.

Villalpando, V., & Delgado Bernal, D. (2002). A critical race theory analysis of barriers that impede the success of faculty of color. In W. A. Smith, P. G. Altbach, & K. Lomotey (Eds.), *The racial crisis in American higher education* (pp. 243–269). State University of New York.

Ward, L. W. M., Cate, L. M., & Ford, K. S. (2024). Culture of hegemonic collegiality: Pre-tenure women faculty experiences with the "fourth bucket." *Review of Higher Education*, *47*(2), 217–243. https://doi.org/10.1353/rhe.2024.a914961

White-Lewis, D. K., O'Meara, K., Mathews, K., & Havey, N. (2023). Leaving the institution or leaving the academy? Analyzing the factors that faculty weigh in actual departure

decisions. *Research in Higher Education*, *64*(3), 473–494. https://doi.org/10.1007/s11162-022-09712-9

Whittaker, J. A., Montgomery, B. L., & Acosta, V. G. (2015). Retention of underrepresented minority faculty: Strategic initiatives for institutional value proposition based on Perspectives from a Range of Academic Institutions. *Journal of Undergraduate Neuroscience Education*, *13*, A136–A145.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, *73*(6), 913–934. https://doi.org/10.1177/ 0013164413495237

Xu, Y. J. (2008). Gender disparity in STEM disciplines: A study of faculty attrition and turnover intentions. *Research in Higher Education*, *49*(7), 607–624. https://doi.org/10.1007/s11162-008-9097-4

Yosso, T., Smith, W., Ceja, M., & Solórzano, D. (2009). Critical race theory, racial microaggressions, and campus racial climate for Latina/o undergraduates. *Harvard Educational Review*, *79*(4), 659–691. https://doi.org/10.17763/haer.79.4.m6867014157m707l

Zakiryanova, I., & Redkina, L. (2020). Research on ethnocultural identity in H. Tajfel's social identity theory and JC Turner's self-categorization theory. In *SHS Web of Conferences* (Vol. 87, p. 00103). EDP Sciences.

Zinn, M. B., & Zambrana, R. E. (2019). Chicanas/Latinas advance intersectional thought and practice. *Gender & Society*, *33*(5), 677–701. https://doi.org/10.1177/0891243219853753

Authors

HENRY TRAN is an associate professor in the area of Educational Leadership at College of Education at the University of South Carolina, and editor of the *Journal of Education Human Resources* and co-editor of *Leadership in Turbulent Times: Cultivating Diversity and Inclusion in the Higher Education Workplace* and *Leadership in Turbulent Times: Cultivating Diversity and Inclusion in the P–12 Education Workplace*. Email: htr@sc.edu. His research focuses on human resources management issues in the field of education, including recruitment, inclusion and retention across the P–20 education workforce spectrum.

C. SPENCER PLATT is an associate professor of Higher Education Administration and Director of the Community College Leadership Alliance at the University of South Carolina. Email: splatt@mailbox.sc.edu. His research focuses on issues of equity, excellence, and access in higher education.

RUIQIN GAO is a postdoctoral researcher for the Child Development Research Center at the University of South Carolina, 1530 Wheat St, Columbia, SC 29201; Email: rgao@email.sc.edu. Her research interests include structural equation modeling with survey data and classroom assessment.

JUNGSUN GO is a research assistant for the Research, Evaluation and Measurement Center at the University of South Carolina; Email: goj@email.sc.edu. Her research interests include survey development, and structural equation modeling.