

Workplace Climate for First-Generation Engineering Faculty: Intersectional Analyses with Gender, Race/Ethnicity, and Socioeconomic Background

Julie L. Aldridge

Engineering Education Department
The Ohio State University
Columbus, OH, USA

<https://orcid.org/0000-0001-6655-5971>

So Yoon Yoon

Department of Engineering and Computing Education
University of Cincinnati
Cincinnati, OH, USA

<https://orcid.org/0000-0003-1868-1054>

Monica F. Cox

Engineering Education Department
The Ohio State University
Columbus, OH, USA

Cox.1192@osu.edu

Ebony O. McGee

Department of Teaching and Learning
Vanderbilt University
Nashville, TN, US

Ebony.mcgee@vanderbilt.edu

Joyce B. Main

School of Engineering Education
Purdue University
West Lafayette, IN, USA

jmain@purdue.edu

Abstract— The ongoing lack of diversity in the engineering higher education workforce remains a grand challenge with far-reaching implications for universities and the U.S. economy. Institutional social norms and identity are rooted in upper-class, elite culture. Although all individuals may struggle to conform to some aspects of a university society, first-generation (1stGen) faculty members might have exceptional challenges. Faculty perceptions of workplace climate were measured using a scale to assess ten constructs that may impact faculty persistence. In addition, demographic questions were generated to capture respondents' multiple intersecting social identities in a climate survey. The sample size was 846 tenure and tenure track engineering faculty in the U.S. For this study, we compared the perceptions of engineering faculty using the category of 1stGen Faculty intersecting with gender, race/ethnicity, and socioeconomic background (SEB). We employed multiple regression modeling to analyze the data. Findings revealed a significant difference in leadership self-efficacy when 1stGen status was intersected with socioeconomic background. This study demonstrates how the workplace is experienced by faculty members differently based on their entwined social identities, which builds upon our prior research. These new findings contribute to the validity evidence of the climate survey and provide insight into the 1stGen faculty identity.

Keywords—workplace climate, engineering faculty, intersectionality, first-generation, socioeconomic background, leadership

I. INTRODUCTION

The long-term vitality of the U.S. workforce relies on the full range of engineering career pathways being available to all Americans. The ongoing lack of diversity in the engineering higher education workforce remains a grand challenge with far-reaching implications for universities and the U.S. economy. There is tremendous untapped potential throughout the nation, and every demographic and socioeconomic group must be inspired to participate in engineering [1]. Increasing underrepresented populations' college access and success rates now include first-generation (1stGen) college students [2]. However, in a review of past NSF broadening participation efforts, James and Singer [3] found the portfolio of programs and activities directed at efforts to increase the participation of

underrepresented groups typically focused on women, racial and ethnic minorities, and persons with disabilities.

In higher education, diversity efforts often assume that students benefit from faculty role models with whom they share important traits. First-generation (1stGen) students are recognized as an essential group that is underserved by higher education [4][5]. A 'first-generation college student' is commonly defined as an individual who does not have a parent with a bachelor's degree [4]. 1stGen students often face invisible obstacles and unspoken barriers throughout their academic careers [6]. Faculty diversity research primarily focuses on gender and race/ethnicity, while first-generation status research focuses on students [4] [7]. Despite the increasing need for role models, relatively few studies have investigated the lived experiences of faculty who were 1stGen students [8].

As institutions work to recruit and support 1stGen students, 1stGen faculty grapple with seeking a place among the academic elite [9] while facing a culturally mismatched environment [10]. Academia remains "a bastion for the historically academically privileged, a demographic that, not coincidentally, aligns with the historically White and wealthy" (p. 145) [9]. Institutional social norms and identity are rooted in upper-class, elite culture. Although all individuals may struggle to conform to some aspects of a university society, 1stGen faculty members are exceptionally challenged [8]. Simply put, individuals familiar with the norms of higher education have substantial advantages that perpetuate historical academic privilege [11]. 1stGen faculty must learn higher education's cultural traditions, social norms, and nuances to overcome their positioning outside of academia [12] [13]. Cultural conflicts do not disappear and, in some ways, can heighten as a person transitions from graduate school into the professoriate [4][8].

A. Purpose of the Study

The purpose of this study is to explore the workplace climate for 1stGen faculty based on the theoretical framework of intersectionality using multiple social identities. The following

research question guided this study. What, if any, are the differences in perceptions of the workplace by 1stGen status?

II. THEORETICAL FRAMEWORK

A. Intersectionality

Although first-generation status is easily defined and applies to students, graduate students, and faculty, the 1stGen identity is deeply diverse and profoundly complex [8]. Currently, the literature focuses on 1stGen students as a homogenous group [14]. In a systematic review of first-generation student studies, Kim et al. [2] found that the literature often fails to consider the intersection of 1stGen status and gender despite the possibility that the experiences of 1stGen females are distinct from males. Furthermore, while females are more likely to be 1stGen than non-1stGen [2], 1stGen students are also often ethnic/racial minorities [15][16][17].

In a study of 1stGen students, O'Shea [18] found that categorizing participants simply as 'first-generation' was limiting because the single label failed to recognize that students fall into various categories or groupings. O'Shea also criticized the use of cultural capital theory to frame the experiences of 1stGen individuals because it relies on a deficit perspective of disadvantage due to a lack of normative cultural knowledge.

First-generation faculty studies are sparse and often approach 1stGen status as equivalent to a lower socioeconomic background (SEB) [19][20][21], which is not always the case. For example, Standlee [7] explains that a college-educated parent may be low-income, and a non-college-educated parent may be middle class or higher. As for SEB, Waterfield et al. [21] suggested, "exploring intersecting marginalized identities would enrich understandings of subtle forms of social exclusion in higher education." Intersectional frameworks that include racial identity and social class are recommended as starting points for understanding first-generation status [2][22].

Due to these ambiguities and complexities, we approach this faculty study with an intersectionality framework [23]. Since its inception, intersectionality has become a buzzword in the social sciences [24], but there is no universally accepted academic definition for the term. Our understanding of intersectionality relies on the working definition from Else-Quest and Hyde [25][26]: every person is characterized simultaneously by multiple social identity categories. These categories are intertwined and linked to each other. There is an element of power or inequality embedded within each category. These categories characterize not only a person's social identity(s) but also the person's ever-changing social context. Our study employs intersectionality: first, as a theory to guide the identification of constructs and the creation of scale items to probe those constructs, and second, as a methodological approach to analyze data based on the survey respondents' multiple demographic identities.

B. Department Climate Factors

We developed and validated our survey to probe several department-level constructs of psychological climate [27][28][29][30]. Our climate constructs include diversity climate, inclusion climate, fair process for advancement, sense of belonging, professional recognition, work-life balance, and mentoring. Psychological climate is defined as individual employee perceptions of their work practices and procedures related to organizational influences on individual performance, satisfaction, and motivation [31][32]. Scale items are worded with both organizational ('we,' 'colleagues') and individual ('I,' 'my') referents, but this does not change the fact that psychological level climate is measured and examined at the individual level [33]. Individuals tend to engage in strategies that allow them to feel better about themselves in comparison to others. Therefore, we note that employees are more likely to have a favorable view when assessing their work environment from an individual perspective than from the viewpoint of employees in general [33].

C. Leadership Self-efficacy

In addition to climate constructs, our survey also includes leadership self-efficacy (LSE). LSE can be defined as an individual's belief in their ability to carry out leadership behaviors, such as delegating, decision-making, and motivating others. Self-efficacy theory is defined as a person's beliefs in their capabilities to exercise control over their behavior and the events that affect their lives. A person's sense of self-efficacy can provide the foundation for motivation, well-being, and persistence [34][35]. In addition, stronger beliefs in LSE can positively impact individual and collective performance [36][37].

Self-efficacy is affected by an individual's traits, attributes, and psychological tendencies [38], which are influenced by a person's social class [39]. For example, research suggests that lower-class college students are more interdependent [39] and empathic [40]. Piff et al. [41] found that individuals from lower social classes were more pro-social than their higher-class counterparts. In the context of leadership, while people, in general, believe power is attainable through political and social means, individuals from lower social classes are less willing to seek power through political pathways [42].

Individuals from lower social classes tend to learn interdependence and value strong relational orientations toward others [38]. In contrast, growing up in higher social classes corresponds to having more resources, making a person less likely to depend on others [43]. Furthermore, people from higher social classes are more likely to learn that speaking up is valued and that their views are important and should be heard.

While there is little research directed at social class and leadership, studies suggest that people from higher social classes may be more likely to pursue leadership positions due to their higher levels of confidence, assertiveness, and self-efficacy [38][43][44]. Stephens et al. [45] found that cultural mismatch can fuel social class disparities in higher education.

The problem is a mismatch in culture between higher education norms and working-class values, not a cultural deficit on the part of people from lower socioeconomic backgrounds.

III. METHOD

A. Participants

Public listings available on university websites were used to identify potential participants and collect contact information for engineering faculty in the U.S. A Python script enabled us to collect emails from engineering faculty on university websites. In fall 2019 and spring 2020, data were collected online using a self-reported online survey including the workplace climate scale [46]. While approximately 28,400 engineering faculty were invited by email, 1,615 faculty on the non-tenure, tenure and tenured tracks from 221 institutions across 47 states responded to the workplace climate for persistence survey (WCPS).

Among them, 846 respondents on the tenure or tenured tracks completed the scale section of the WPCS and a first-generation demographic question. The mean age of the participants was 50.5 ($n = 817$, $SD = 11.6$). Table I shows the demographic characteristics of the participants from the WCPS, capturing variables of gender, race/ethnicity, socioeconomic background (SEB), and disability status. SEB was captured by a demographic question about whether the respondent worked outside the academy to finance their college education.

TABLE I. DEMOGRAPHIC CHARACTERISTICS OF 846 ENGINEERING FACULTY PARTICIPANTS

Category	Subgroups	<i>n</i>	%
Gender	Male	578	68.3
	Female	268	31.7
	Other/No response	0	0.0
Ethnicity	Hispanic	48	5.7
Race	American Indian or Alaska Native	1	0.1
	Asian	84	9.9
	Black	23	2.7
	White	669	79.1
	Multiracial	18	2.1
Disability Status	Yes	125	14.8
	No	716	84.6
Socioeconomic Background	Worked outside the academy to finance a college education	89	10.5
First-Generation	Yes	133	15.7
	No	713	84.3
Undergraduate Education	in the USA	674	79.7
	in the non-USA	170	20.1
Tenure Rank	Assistant (on tenure track)	139	16.4
	Associate/Full (tenured)	707	83.6
Institution Type	Public	645	76.2
	Private	192	22.7
Total		846	100.0

Note. Due to unspecified responses, the numbers are inconsistent with the total number of participants.

B. Measures

The WCPS was created as part of a multi-year, multiphase, mixed-methods research project funded by the National Science Foundation (NSF) to explore the experiences of women and women of color tenure-track engineering faculty. The initial development procedure for the survey, including the ten scale

constructs with definitions, was previously reported [27][28][29][30].

This survey probes factors contributing to an individual's experiences as they continue, or persist, as a faculty member in association with their intersecting social identities. The WCPS consists of six-point Likert scale items (1 = strongly disagree to 6 = strongly agree) and demographic questions. The 49 scale items measure ten constructs identified from the literature, such as organizational climate and motivation factors, that underpin an individual's experiences as they persist in an academic engineering career. The constructs are as follows: (1) Diversity Climate, (2) Inclusion Climate, (3) Fair Process for Advancement, (4) Sense of Belonging, (5) Professional Recognition, (6) Work-Life Balance, (7) Intrinsic Motivation, (8) Mentoring (9) Financial Responsibilities, and (10) Leadership Self-efficacy. We developed three items for leadership self-efficacy based on the literature [47]. While there are many examples in the literature of university climate studies using surveys (e.g., [48][49]), this study attempted an intersectional approach using multiple social identities.

C. Data Analysis

To answer our research question, we considered the following data analysis methods: correlation matrix between variables of interest and multiple regression analyses to explore any differences in the workplace climate by engineering faculty's first-generation status. We applied several multiple regression models for continuous dependent variables (i.e., workplace climate factors) using SPSS Statistics 27 [50] to explore differences due to intersecting multiple social identities. Social identity variables (e.g., gender, race/ethnicity, SEB, disability, and 1stGen status) were entered into the first block of the model. Then other background variables, such as undergraduate education in USA/non-USA, tenure status, and private vs. public institution, were entered into the second block of the model. Note that we controlled the variance by faculty's intrinsic motivation (IM) and financial responsibility (FR), which is an indicator of the current socioeconomic status, in the regression models.

For all the regression analyses, the assumptions for multiple regressions (e.g., linearity, independence of errors, and multicollinearity) were checked before the analyses. In addition, due to the small sample size, race/ethnicity was categorized as the majority (i.e., White) and the minority (i.e., Hispanic, American Indian or Alaska Native, Asian, African American/Black, and Hawaiian and Pacific Islander). Note that we presented a focus on the first-generation status in the analyses.

IV. RESULTS

A. Descriptive Statistics

We calculated the correlation coefficients between each of the ten WCPS scale constructs and each demographic variable to explore relationships between the variables. Table II presents the correlation coefficients of ten factors that showed varied significance with intersectional social identity variables,

including faculty gender, race/ethnicity, SEB, disability, and 1stGen status. In addition, educational background (undergraduate education in the USA or not), tenure status (i.e., not tenured vs. tenured), and institution type (i.e., public vs. private) are presented.

In detail, a point-biserial correlation is used to explore the relationship between a continuous climate factor and a binary demographic variable. The correlation result is equivalent to the results from independent samples *t*-test statistics, comparing two group means of the continuous climate factor variable by the binary demographic variable. For example, the six positive correlation coefficients of the Male variable with (a) Diversity Climate, (b) Inclusion Climate, (c) Fair Process for Advancement, (d) Sense of Belonging, (e) Professional Recognition, and (f) Work-Life Balance all indicate that there were statistically significant differences in the perceptions of the six climate factors that are not in favor of female engineering faculty. However, there were no statistically significant gender differences in the four climate-relevant factors, such as (a) Intrinsic Motivation, (b) Mentoring, (c) Leadership Self-efficacy, and (d) Financial Responsibilities.

Interestingly, there were differences among various demographic/social identity variables. Faculty with disabilities presented less positive perceptions than faculty without a disability on eight out of the ten climate factors. Faculty who received their undergraduate education in the U.S. presented higher, or more positive, leadership self-efficacy perceptions than faculty who received undergraduate education in other countries. Tenured faculty presented higher, or more positive, perceptions of four workplace climate factors (i.e., Fair Process for Advancement, Sense of Belonging, Leadership Self-efficacy, and Work-Life Balance), and they perceived less mentoring support than non-tenured faculty. However, the effect sizes were small to medium [51].

It is important to note that those comparisons by a binary demographic variable on climate factors did not consider variances from other demographic/social identity variables but simply compared differences between two groups (e.g., male and female engineering faculty), meaning no intersectional analysis).

TABLE II. CORRELATION MATRIX BETWEEN VARIABLES OF INTERESTS

#	Variable	1	2	3	4	5	6	7	8	9	10
	Male (0 = female, 1 = male)	0.06	0.26*	0.26*	0.18*	0.02*	0.20*	0.00	0.05	0.12*	0.04
	White (0 = non-White, 1 = White)	0.01	0.07*	0.07	0.00	0.05	0.03	-0.06	0.04	-0.03	-0.03
	Worked outside to finance college education (0 = no, 1 = yes)	0.00	0.04	0.02	0.02	0.03	0.01	-0.01	0.04	-0.04	0.13*
	Disability (0 = no, 1 = yes)	-0.08*	-0.10*	-0.10*	-0.09*	-0.13*	-0.14*	-0.07*	-0.04	-0.18*	0.06
	First-generation	0.04	.071*	0.06	0.03	0.03	0.03	-0.04	-0.02	0.07*	-0.07
	Undergraduate Education in USA (0 = no, 1 = yes)	-0.02	-0.03	0.01	-0.02	0.05	0.04	0.02	0.09*	-0.02	0.04
	Tenured Status (0 = no, 1 = yes)	0.06	0.06	0.05	0.13*	0.07*	0.07	-0.12*	0.08*	0.12*	0.03
	Institution type (0 = public; 1 = private)	0.03	-0.07*	-0.01	-0.01	0.00	0.01	0.02	0.02	-0.02	0.02
1	Intrinsic Motivation	1.00	0.27*	0.38*	0.39*	0.46*	0.41*	0.30*	0.30*	0.39*	-0.18*
2	Diversity Climate		1.00	0.72*	0.54*	0.57*	0.57*	0.34*	0.27*	0.22*	-0.01
3	Inclusion Climate			1.00	0.64*	0.69*	0.71*	0.41*	0.33*	0.32*	-0.02
4	Fair Process for Advancement				1.00	0.52*	0.58*	0.34*	0.32*	0.33*	-0.03
5	Sense of Belonging					1.00	0.84*	0.50*	0.47*	0.31*	-0.06
6	Professional Recognition						1.00	0.46*	0.47*	0.27*	-0.05
7	Mentoring							1.00	0.27*	0.20*	-0.06
8	Leadership Self-efficacy								1.00	0.22*	-0.04
9	Work-Life Balance									1.00	-0.10*
10	Financial Responsibility										1.00
	<i>M</i>	5.09	4.27	4.15	4.54	4.68	4.72	3.36	4.96	3.93	3.95
	<i>SD</i>	0.86	1.30	1.36	1.30	1.14	1.18	1.53	1.00	1.35	1.50

Note. **p* < 0.05

B. Workplace Climate with a Focus on First-Generation Engineering Faculty

Table III presents results from multiple regression modeling to explore any differences in the perceptions of the ten workplace climate factors due to intersecting multiple social identities. In particular, we focused on intersecting effects of multiple demographic identities by faculty's 1stGen status. The other intersectional analyses, such as female faculty or faculty with a disability, on several workplace climate factors, were previously reported in another publication [29]. To save space, 95% confidence intervals of unstandardized parameter estimate, *B*, and

Collinearity indexes, such as tolerance (*T*) and variance inflation factor (*VIF*), were not included in Table III.

TABLE III. WORKPLACE CLIMATES FOR FIRST-GENERATION ENGINEERING FACULTY INTERSECTED BY GENDER, RACE/ETHNICITY, AND SOCIOECONOMIC BACKGROUND

Predictor	Climate for Diversity					Climate for Inclusion				
	<i>B</i>	<i>S.E.</i>	<i>B</i>	<i>T</i>	<i>p</i>	<i>B</i>	<i>S.E.</i>	<i>B</i>	<i>t</i>	<i>p</i>
Constant	1.69	0.33		5.1	<.001	0.53	0.33		1.6	0.11
Male	0.65	0.10	0.24	6.6	<.001	0.63	0.10	0.22	6.3	<.001
White	0.22	0.12	0.07	1.9	0.06	0.20	0.12	0.06	1.7	0.10
SEB	0.08	0.10	0.03	0.8	0.45	-0.04	0.10	-0.01	-0.4	0.70
Disability	-0.29	0.12	-0.08	-2.4	0.02	-0.30	0.12	-0.08	-2.5	0.01
1stGen	-0.03	0.46	-0.01	-0.1	0.95	0.07	0.46	0.02	0.2	0.88

UG USA	-0.13	0.12	-0.04	-1.1	0.27	0.01	0.12	0.00	0.1	0.96
Tenured	0.06	0.12	0.02	0.5	0.60	0.01	0.12	0.00	0.1	0.96
Private	-0.26	0.10	-0.08	-2.6	0.01	-0.05	0.10	-0.01	-0.5	0.65
IM	0.39	0.05	0.26	7.7	<.001	0.58	0.05	0.37	11.3	<.001
FR	0.02	0.03	0.02	0.6	0.53	0.04	0.03	0.04	1.2	0.23
Male*1stGen	0.05	0.27	0.01	0.2	0.86	0.15	0.28	0.04	0.6	0.59
White*1stGen	0.08	0.33	0.02	0.2	0.81	-0.15	0.33	-0.04	-0.5	0.66
SEB*1stGen	0.08	0.28	0.02	0.3	0.78	0.34	0.28	0.08	1.2	0.23
FR*1stGen	0.00	0.08	0.00	-0.0	0.99	-0.05	0.08	-0.05	-0.6	0.55
	$R^2 = 0.16$; Adjusted $R^2 = 0.15$					$R^2 = 0.21$; Adjusted $R^2 = 0.20$				
Predictor	Advancement					Sense of Belonging				
	B	S.E.	β	t	p	B	S.E.	B	t	p
Constant	1.20	0.32		3.7	<.001	1.28	0.27		4.7	<.001
Male	0.37	0.10	0.14	3.8	<.001	0.37	0.08	0.15	4.5	<.001
White	-0.02	0.12	-0.01	-0.2	0.88	0.11	0.10	0.04	1.1	0.30
SEB	0.03	0.10	0.01	0.3	0.80	0.00	0.08	0.00	0.1	0.96
Disability	-0.22	0.12	-0.06	-1.9	0.06	-0.28	0.10	-0.09	-2.8	0.01
1stGen	-0.32	0.45	-0.09	-0.7	0.48	-0.21	0.38	-0.07	-0.6	0.58
UG USA	-0.11	0.12	-0.03	-0.9	0.36	0.14	0.10	0.05	1.4	0.17
Tenured	0.34	0.11	0.10	3.0	<.001	0.07	0.10	0.02	0.7	0.48
Private	-0.07	0.10	-0.02	-0.7	0.49	-0.01	0.08	-0.01	-0.2	0.87
IM	0.56	0.05	0.37	11.2	<.001	0.58	0.04	0.44	13.9	<.001
FR	0.02	0.03	0.03	0.7	0.50	0.00	0.03	-0.01	-0.2	0.88
Male*1stGen	0.26	0.27	0.06	0.9	0.35	0.15	0.23	0.04	0.7	0.51
White*1stGen	-0.06	0.32	-0.01	-0.2	0.86	0.01	0.27	0.00	0.0	0.98
SEB*1stGen	0.21	0.27	0.05	0.8	0.44	-0.05	0.23	-0.01	-0.2	0.83
FR*1stGen	0.02	0.08	0.02	0.3	0.79	0.03	0.07	0.04	0.5	0.61
	$R^2 = 0.19$; Adjusted $R^2 = 0.18$					$R^2 = 0.25$; Adjusted $R^2 = 0.24$				
Predictor	Professional Recognition					Mentoring				
	B	S.E.	β	t	p	B	S.E.	B	t	P
Constant	1.53	0.29		5.3	<.001	1.35	0.40		3.4	<.001
Male	0.45	0.09	0.18	5.1	<.001	-0.02	0.12	-0.01	-0.2	0.86
White	0.02	0.11	0.01	0.2	0.86	-0.27	0.15	-0.07	-1.9	0.07
SEB	-0.05	0.09	-0.02	-0.6	0.54	0.04	0.12	0.01	0.3	0.77
Disability	-0.34	0.11	-0.10	-3.2	0.00	-0.17	0.14	-0.04	-1.2	0.25
1stGen	-0.44	0.40	-0.14	-1.1	0.27	-0.64	0.55	-0.15	-1.2	0.25
UG USA	0.17	0.11	0.06	1.7	0.10	0.30	0.15	0.08	2.1	0.04
Tenured	0.05	0.10	0.02	0.5	0.62	-0.56	0.14	-0.14	-4.1	<.001
Private	0.03	0.09	0.01	0.3	0.78	0.06	0.12	0.02	0.5	0.61
IM	0.55	0.04	0.40	12.3	<.001	0.52	0.06	0.29	8.6	<.001
FR	0.00	0.03	-0.01	-0.1	0.89	-0.04	0.04	-0.04	-1.0	0.30
Male*1stGen	0.10	0.24	0.03	0.4	0.68	0.51	0.33	0.11	1.5	0.13
White*1stGen	0.20	0.29	0.06	0.7	0.49	-0.31	0.40	-0.07	-0.8	0.43
SEB*1stGen	0.02	0.24	0.00	0.1	0.95	-0.04	0.34	-0.01	-0.1	0.91
FR*1stGen	0.06	0.07	0.08	0.9	0.36	0.10	0.10	0.09	1.0	0.31
	$R^2 = 0.22$; Adjusted $R^2 = 0.21$					$R^2 = 0.12$; Adjusted $R^2 = 0.11$				
Predictor	Leadership Self-efficacy					Work-Life Balance				
	B	S.E.	β	t	p	B	S.E.	B	T	p
Constant	2.88	0.26		10.9	<.001	0.91	0.34		2.7	0.01
Male	0.08	0.08	0.04	1.0	0.34	0.23	0.10	0.08	2.3	0.02
White	0.00	0.10	0.00	-0.0	0.97	-0.15	0.12	-0.05	-1.2	0.21
SEB	0.06	0.08	0.03	0.8	0.45	-0.13	0.10	-0.05	-1.3	0.19
Disability	0.00	0.10	0.00	-0.0	0.99	-0.52	0.12	-0.14	-4.3	<.001
1stGen	-0.09	0.37	-0.03	-0.2	0.82	0.12	0.46	0.03	0.3	0.79
UG USA	0.22	0.10	0.09	2.3	0.02	0.09	0.12	0.03	0.7	0.49
Tenured	0.11	0.09	0.04	1.2	0.22	0.34	0.12	0.09	2.9	<.001
Private	0.04	0.08	0.02	0.5	0.61	-0.02	0.10	-0.01	-0.2	0.85
IM	0.34	0.04	0.29	8.6	<.001	0.56	0.05	0.36	10.9	<.001
FR	-0.01	0.03	-0.01	-0.3	0.74	-0.02	0.03	-0.02	-0.6	0.58
Male*1stGen	-0.12	0.22	-0.04	-0.6	0.57	0.01	0.28	0.00	0.0	0.98
White*1stGen	0.26	0.26	0.08	1.0	0.33	0.12	0.33	0.03	0.4	0.72
SEB*1stGen	-0.44	0.22	-0.14	-2.0	0.04	0.03	0.28	0.01	0.1	0.91
FR*1stGen	0.07	0.06	0.10	1.0	0.30	-0.02	0.08	-0.02	-0.2	0.85
	$R^2 = 0.11$; Adjusted $R^2 = 0.09$					$R^2 = 0.19$; Adjusted $R^2 = 0.18$				

Note. Male (0 = female, 1 = male); White (0 = non-White faculty, 1 = White faculty); SEB (0 = did not work outside to finance college education, 1 = worked outside to finance college education); Disability (0 = no; 1 = yes); 1stGen (0 = no first generation; 1 = first generation); UG = Undergraduate education; Tenured (0 = not tenured, 1 = tenured); Private (0 = public, 1 = private); IM = intrinsic motivation; FR = financial responsibility; B =

unstandardized parameter estimate; S.E. = Standard Error; β = standardized parameter estimate

In detail, we focused here on 1stGen faculty intersections, specifically with Gender, Race/ethnicity, SEB, and Financial Responsibilities. Due to the small sample sizes of minority groups, intersections with Race/ethnicity results are reported for White versus non-White 1stGen only. The predictor, SEB*1stGen reports results for respondents who identified as first-generation and had worked outside the academy to finance their college education compared to the others. The predictor, Financial responsibilities (FR)*1stGen reports results for respondents who are first-generation with a tendency to keep their current position due to financial obligations compared to the others compared to others.

The faculty's Intrinsic Motivation was a significant and positive predictor of most of the climate factors. We summarized the key significant predictors of climate factors below.

- Diversity Climate was not favored by female faculty, faculty with disabilities, and/or faculty at a private institution compared to their counterparts.
- Inclusion Climate was not favored by female faculty and/or faculty with disabilities.
- Fair Process for Advancement was not favored by female faculty and/or non-tenured faculty compared to their counterparts.
- Sense of Belonging was not favored by female faculty and/or faculty with disabilities compared to their counterparts.
- Professional Recognition was not favored by female faculty and/or faculty with disabilities compared to their counterparts.
- Mentoring was not favored by faculty who received undergraduate education in non-USA and/or tenured faculty compared to their counterparts.
- Leadership Self-efficacy was lower for female faculty and/or faculty who received undergraduate education in non-USA than their counterparts. There was a negatively significant interaction effect between the faculty's socioeconomic background and 1stGen status. This implies that faculty who were the first generation and had to work to finance their higher education showed lower leadership self-efficacy compared to their counterparts.
- Work-Life Balance was lower for female faculty, faculty with a disability, and/or non-tenured faculty compared to their counterparts.

V. DISCUSSION

We applied multiple regression modeling to analyze data to answer the following research question: What, if any, are the differences in perceptions of the workplace by 1stGen status? Findings from multiple regression modeling revealed significant differences in Leadership Self-efficacy when 1stGen status was intersected with socioeconomic background. Other than that, 1stGen status alone did not

reveal any significant differences. Respondents' SEB alone also did not reveal differences. The findings imply that to uncover differences, we needed to approach 1stGen and SEB as an intersectional identity.

Our findings illustrate why it is important to approach 1stGen status as an intersectional identity, and, to specifically consider the intersection of 1stGen with SEB. Studies of first-generation faculty are sparse, and there are few studies on social class and leadership. Conflating 1stGen with a lower socioeconomic background would have failed to reveal significant differences in faculty perceptions of leadership self-efficacy. Our findings also indicate that an intersectional approach to investigating leadership self-efficacy can provide new insight into who pursues leadership positions in higher education.

Our findings suggest that faculty who believe they can be effective leaders tend to come from higher social classes and were not first-generation students. Individuals who pursue leadership reinforce the perceived value of traits, such as assertiveness, confidence, and making their views heard. On the other hand, working-class traits, such as interdependence and a strong relational orientation to others, may be missing from higher education leadership. Individuals who are 1stGen and lower SEB were found to have significantly lower leadership self-efficacy and viewed themselves as less able to carry out leadership behaviors, such as delegating, decision-making, and motivating others.

A. Limitation of the Study and Future Research

The small sample sizes in some social identities limited this study. For example, due to the small sample sizes, potential differences for multiple intersecting identities, such as 1stGen*SEB* racial/ethnicity and 1stGen*SEB*disability remain hidden. Also, this study was only aimed at tenured and tenure-track faculty. We recommend future research on the relationship between 1stGen status and SEB and its effect on faculty leadership styles and aspirations.

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