Student Perceptions of the Climate for Diversity: The Role of Student–Faculty Interactions

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This study uses data from the 2014 wave of the Student Experience in the Research University (SERU) survey to examine the association between students' interactions with and perceptions of faculty in college and their perceptions of the climate for diversity at research universities. Results revealed that frequently communicating with a faculty member by e-mail or in person, experiencing equitable and fair treatment by faculty members, and being satisfied with access to faculty members outside of class were positively associated with positive perceptions of the climate for diversity; while engaging in creative work with a faculty member, engaging in research activities with a faculty member, working with faculty members on activities other than coursework, talking with a faculty member outside of class about issues and concepts derived from a course, and knowing a professor well enough to ask for a recommendation letter were negatively associated with positive perceptions of the climate for diversity. Additionally, findings from this study suggest that these relationships may be moderated by students' sex, race/ethnicity, and social class.

Keywords: student–faculty interaction, campus climate, diversity, higher education

College students across the nation are exhibiting increased activism and engagement around issues of social injustice (Spade, 2017). This engagement has frequently centered on students' perceptions of an unfavorable and unwelcoming climate for diversity on college campuses and in broader U.S. society (Jaschik, 2015). Much of this unrest has focused on issues of race and ethnicity, however students have also expressed concerns regarding a climate that is unsupportive of their identities, beliefs, and attitudes related to gender, sexual orientation, immigration status, and religion (Green, 2016). In particular, some students have expressed sentiments that they feel unvalued or unwelcomed at their institutions, and that college and university climates often suppress their voices and beliefs. Student demonstrations have prompted a renewed interest in how students' experiences in college may influence their perceptions of the campus environment.

One experience that students frequently encounter in college is their interactions with faculty. There is a wealth of evidence that suggests a positive impact of student–faculty interactions on college student outcomes (for reviews see: Mayhew et al., 2016; Pascarella & Terenzini, 2005). Much of this research has focused on educational outcomes, including student learning, persistence, and development of cognitive skills, but less is known about whether students' experiences with faculty may be related to students' views of the campus climate. This study examines whether differing types of students' interactions with and perceptions of faculty are associated with students' perceptions of the climate for diversity and whether these relationships may be moderated by student characteristics such as sex, race/ethnicity, or socioeconomic status.

Review of Literature

Student–Faculty Interactions

Prior literature demonstrates a positive link between student–faculty interactions and college outcomes (for reviews see: Kim & Sax, 2017; Mayhew et al., 2016; Pascarella & Terenzini, 2005). Students' interactions with faculty have been associated with gains in cognitive skills and intellectual growth (Kim & Lundberg, 2016; Kuh, 1995); critical thinking skills, problem solving skills, and academic learning (Kim & Sax, 2011; Padgett et al., 2010); aspirations to attend graduate or professional school (Hanson, Paulsen, & Pascarella, 2016; Trolian & Parker, 2017); and academic motivation (Komarraju, Musulkin, & Bhattacharya, 2010; Rugutt & Chemosit, 2009; Trolian, Jach, Hanson, & Pascarella, 2016).

The literature on student–faculty interactions comprises a varied compilation of research regarding the definition of these experiences. For example, some studies have conceptualized student–faculty interactions as an aggregated set of all students' experi-

ences with their instructors during college, while other studies have examined specific contexts of these interactions, such as student advising, mentoring, or research with faculty. Prior research has suggested that the context of interactions between faculty and students may be of particular importance. For instance, informal student–faculty interactions have been shown to benefit student learning, where personal relationships that develop through students' interactions with their faculty may be positively linked to educational outcomes (Chory & Offstein, 2016; Meeuwisse, Severiens, & Born, 2010).

The setting of students' interactions with faculty have also been associated with their influence on educational outcomes and student learning. For example, nonclassroom interactions with faculty have been associated with college outcomes. According to Chickering and Gamson (1987), "frequent student–faculty contact in and out of classes is the most important factor in student motivation and involvement" (p. 4). Kuh and Hu (2001) also suggested that supplemental experiences (outside of the classroom) mediate the association between student–faculty interactions and student learning. That is, there might be a greater impact of interactions with faculty for students when they participate with educationally beneficially activities that occur outside of formal instruction. Despite the saliency of meaningful interactions outside of the classroom, nonclassroom interactions may not be a prevalent aspect of many college students' college experiences (Cox & Orehovec, 2007). While a large body of scholarship has examined student–faculty interactions in higher education, little prior research has considered whether students' interactions with and perceptions of faculty members may influence perceptions of the campus climate.

Campus Climate for Diversity

Researchers have also attended to the influence of students' perceptions of the campus climate on college outcomes, examining students' experiences and sense of belonging (Stebleton, Soria, Huesman, & Torres, 2014). Tinto (2012) posited "the campus climate creates the expectational context for individual actions, for the way individuals respond to each other and to the multiple and often competing demands upon their time and energy" (p. 15). In higher education, the campus climate generally refers to faculty, staff, and student attitudes and perceptions about the institutional environment (Kuh, 1990; Veccaro, 2014). Rankin and Reason (2008) offered a similar definition as they assert that climate is "the current attitudes, behaviors, and standards and practices of employees and students of an institution" (p. 264). Examining and assessing the campus climate is important for institutional leaders to better understand the attitudes, feelings, and beliefs of their campus populations (Veccaro, 2014). Higher education scholars have contended that examining research on campus climate often serves as a motivator for change in institutions (Harper & Hurtado, 2007; Hart & Fellabaum, 2008).

Research has illuminated the effects of positive and negative student perceptions of the campus climate. There is a positive association between students who consider their college environment to be supportive or affirming and their levels of academic competence and achievement (Hurtado & Ponjuan, 2005; Reason, Terenzini, & Domingo, 2006). However, negative sentiments about the campus climate may be linked to decreased educational attainment (Rankin et al., 2016). Researchers have also attended to the differing impact of students' perceptions of the campus climate by varying student groups. For instance, among college athletes, there is a positive association between perceptions of climate and their academic success (Rankin et al., 2016). Similarly, Woodford and Kulick (2015) contended that perceptions of and experiences with the campus climate adversely affected academic performance and engagement for sexual minority students.

Some prior literature on campus climates has focused specifically on the campus racial climate. Earlier research, such as Hurtado's (1992) study on campus racial climate, demonstrated that many students experienced considerable racial conflict on campus. Research has shown that adverse views of the campus racial climate are negatively associated with persistence, particularly for students from racial or ethnic minority groups, and are linked to lower levels of sense of belonging for these students (Harper & Hurtado, 2007; Museus, Nichols, & Lambert, 2008; Museus & Truong, 2009). Conversely, positive perceptions of the campus racial climate provide benefits for students and institutions. Synthesizing the prior body of literature on campus climate, Harper and Hurtado (2007) asserted that "students who attend racially diverse institutions and are engaged in academically purposeful activities that involve interactions with peers from different racial/ethnic backgrounds come to enjoy cognitive, psychological and interpersonal gains that are useful during and after college" (p. 14). Purposively attending to college students' perceptions of campus climate is important for higher education in considering the impact of students' perceptions on their college experiences.

Prior scholarship has also focused on the differential perceptions of the campus climate for students with differing identities, such as race/ethnicity or gender. Research has demonstrated that students from different racial or ethnic groups have varying perceptions of the campus racial climate (Harper & Hurtado, 2007). Often, research has shown that students of color have negative perceptions of the campus racial climate when compared with their White peers (Lee, 2010; Means, 2016). Parker, Puig, Johnson, and Anthony (2016) found that undergraduate Black men felt isolated and alienated from peers and faculty of other races on campus, and that students exhibited concerns about campus safety, racial profiling, and a general lack of support. Researchers have also found that issues of racism, discrimination, and stereotypes influence Asian American students' experiences and views of the campus racial climate (Kotori & Malaney, 2003; Museus, 2008; Museus & Truong, 2009).

Despite this large body of research on the climate for diversity on college campuses, a more limited body of research has focused on the influence of students' experiences with faculty on their perceptions of the campus climate. Some prior research has examined the relationship between perceptions of campus climate and other college experiences, such as peer-to-peer interactions and diversity related coursework (Bowman & Denson, 2014), but few studies have specifically considered the role of faculty in affecting the campus climate for diversity. A qualitative study of African American college students illustrated how interactions with faculty may elicit sentiments of racism, such as microaggressions, among that then affect their perceptions of campus climate (Solorzano, Ceja, & Yosso, 2000). Findings from this study suggested that microaggressions in academic and social spaces had a negative impact on African American students' perceptions of the

campus racial climate. Further, Hurtado, Milem, Clayton-Pedersen, and Allen (1998) noted that "research on the impact of college on students' racial attitudes, cultural awareness/acceptance, and social/political attitudes suggests that faculty may have a larger, more important role than traditionally believed" (p. 286). Despite this prior work, there remains a need to understand whether students' interactions with and perceptions of faculty may influence their perceptions of the campus climate for diversity.

Theoretical Framework

The framework that guided this study is Hurtado et al. (1998) conceptual perspectives about the campus climate for diversity in higher education. Students engage with diversity through external and internal contexts. External contexts are environmental forces that affect the climate such as governmental policies, regulatory pressures, and legalities (e.g., affirmative action). Institutional factors represent the internal contexts that shape the campus climate for diversity, such as the historical background of racial diversity at a particular college or university. This framework accentuates how campus climate might affect the experiences of individuals from different backgrounds and suggests that students' views of diversity and the campus climate are associated with social interactions with institutional members and intergroup relations. This study utilizes these concepts to consider how students' interactions with and perceptions of faculty may be related to students' views of the diversity climate on campus. Furthermore, this study focuses on the climate for racial diversity as well as other facets of diversity, such as those relating to gender and religious beliefs. While Hurtado et al.'s (1998) theory is grounded in the context of racial campus climate (and is well suited for the present study), the researchers of the present study consider the underlying theoretical tenets as an applicable framework to guide the examination of gender, political, and religious diversity in addition to racial/ethnic diversity.

The review of literature revealed that prior scholarship has principally examined student–faculty interactions as an aggregated construct. Limited research has attended to the effects of varying types of student–faculty interactions. To a lesser extent, limited research has focused on the association between these types of experiences and perceptions of the campus climate. This study, therefore, examines the relationship between several distinct types of students' interactions with and perceptions of faculty and their perceptions of the climate for diversity. The research questions that guide this study are: (a) Are students' overall interactions with and perceptions of faculty associated with their perceptions of the campus climate for diversity at research universities? (b) Are the varying types of interactions with or perceptions of faculty associated with students' perceptions of the campus climate for diversity at research universities? and (c) Are these relationships moderated by students' sex, race/ethnicity, or social class?

Method

Data and Sample

This study used data from the 2014 wave of the Student Experience in the Research University (SERU) survey, a cross-sectional, multiinstitutional study of student experiences at research universities. The SERU survey was designed to "improve the undergraduate experience and educational processes by generating new, longitudinal information on the undergraduate experience at research universities" (Center for Studies in Higher Education, n.d., para. 1). The SERU is administered annually to undergraduate students attending participating SERU consortium institutions, which includes 24 research universities across the United States. Institutions chose whether to participate in SERU each year or every other year, and institutions also choose varying modules of the survey to administer to their student populations, such as the Academic Experiences and Globalization Module or Community and Civic Engagement Module. All data collection is completed using an online survey instrument. After narrowing the 2014 SERU sample to those who completed the modules of interest to this study and using listwise deletion to handle missing data, this study used a sample of 33,786 student participants from 10 SERU consortium universities who participated in the 2014 survey administration.

The sample used in this study was 61% female and 39% male. The overall sample was 7% Asian/Asian American/Pacific Islander, 4% Black/African American, 6% Latino/a/Hispanic, 1% Native American Indian, and 82% White/Caucasian. The sample was 25% first-generation and 75% continuing-generation students. Within the sample, 76% aspired to earn a graduate/professional degree and 24% aspired to earn a bachelor's degree or less. Fields of study included 17% arts/humanities, 15% engineering, 11% business, 11% social sciences, 8% biological sciences, 4% physical sciences, 3% professional fields, 2% technology, 2% education, and 20% undecided or other. The average age of participants was 21.15, and 28% of sample participants indicated that they lived on-campus during the time of the survey's administration.

Variables

The dependent variable of interest in this study was a scaled measure of students' perceptions of the climate for diversity on their university campus (standardized; $\alpha = .87$), which measured the degree to which students felt respected and free to express their beliefs at their university. This scale was comprised of eight items that measured the extent to which students felt free to express their political beliefs on campus, students felt free to express their religious beliefs on campus, students felt that members of their race/ethnicity are respected on campus, students felt that members of their socioeconomic status are respected on campus, students felt that members of their gender are respected on campus, students felt that their religious beliefs are respected on campus, students felt that their political beliefs are respected on campus, and students felt that members of their sexual orientation are respected on campus. Response options for each item ranged from *strongly agree* to *strongly disagree*.

The independent variables of interest in this study were 12 measures of students' interactions with and perceptions of faculty, including whether they participated in research with a faculty member (1 = yes; 0 = no); whether they participated in creative work with a faculty member (1 = yes; 0 = no); how frequently the student communicated with a faculty member by e-mail or in person (*never* to *very often*; standardized); how frequently the student talked with faculty members outside of class about issues and concepts derived from a course (*never* to *very often*; standardized); how frequently the student worked with faculty members on

activities other than coursework, (e.g., student organization, campus committee, etc.; *never* to *very often*; standardized); how frequently a student experienced open channels of communication between faculty and students regarding student needs, concerns, and suggestions (*never* to *very often*; standardized); how frequently a student experienced equitable and fair treatment by faculty members (*never* to *very often*; standardized); how frequently faculty members providing prompt and useful feedback on student work (*never* to *very often*; standardized); how satisfied a student was with advising by faculty members on academic matters (*very dissatisfied* to *very satisfied*; standardized); how satisfied a student a student was with access to faculty members outside of class (*very dissatisfied* to *very satisfied*; standardized); a student's listing of how many faculty members know them well enough to ask for a letter of recommendation (*0* to *4 or more*; standardized); and how often a student had a class in which the faculty member knew or learned the student's name (*never* to *very often*; standardized). See Table 1 for operational definitions of all dependent and independent variables.

This study also utilized several control variables to more appropriately estimate the relationship between students' interactions with and perceptions of faculty and their perceptions of the climate for diversity on campus. Control variables included student background characteristics such as sex, race/ethnicity, age, social class, and parental education. Control variables also included several college/university institutional characteristics (added to the dataset from 2014 Integrated Postsecondary Education Data System [IPEDS] data), including institutional size, the percentage of undergraduate students on campus who are White (vs. students of color), the percentage of faculty on campus who are full-time (vs. part-time/contingent faculty), and the percentage of full-time faculty on campus who are White (vs. full-time faculty of color).

Control variables also included student attitudes and college experiences such as their educational aspirations, college GPA, college major, class standing/year in college, whether they lived on campus during the time of the survey (vs. living off campus), how many hours students spent engaged in on- and off-campus employment during college, how many hours students spent engaged in clubs and cocurricular activities during college, and how many hours students spent socializing with friends during college. Additionally, this study controlled for two scaled measures of students' experiences during college, including a scaled measure of students' satisfaction and sense of belonging (five items; $\alpha = .86$), and a scaled measure of students' perceptions that courses needed for graduation and for their major were made available to them (two items; $\alpha = .78$). Please see Table 2 for operational definitions and descriptive statistics for all control variables.

Analyses

The researchers analyzed the data in several stages using ordinary least-squares (OLS) regression in STATA. In the first stage of analysis, the researchers created a scaled measure of all 12 types of interactions with and perceptions of faculty members (12-item standardized scale; $\alpha = .80$) and examined the association between this student–faculty interaction scale and students' perceptions of the climate for diversity. In the second stage, the researchers examined the association between each type of interaction with or perception of faculty members and students' perceptions of the climate for diversity. As students with differing background characteristics are likely to experience the campus climate for diversity differently (Harper & Hurtado, 2007), the researchers examined whether the relationships between each type of interaction with or perception of faculty members and students' perceptions of the

Table 1

Description of Dependent and Independent Variables

Variable name	Operational definition
Research experiences	1 = Currently doing/completed creative projects with faculty for course credit, for pay, or volunteer; 0 = Did not complete creative projects with faculty
Creative experiences	1 = Currently doing or completed research with faculty for course credit, for pay, or volunteer; 0 = Did not complete research with faculty
Faculty communication	How often the student communicated with faculty by e-mail or in person (*never* to *very often*); standardized
Faculty nonclassroom interactions	How often the student talked with the instructor outside of class about issues and concepts derived from a course (*never* to *very often*); standardized
Faculty nonacademic interactions	How often the student worked with a faculty member on an activity other than coursework (e.g., student organization, campus committee, cultural activity) (*never* to *very often*); standardized
Faculty–student open communication	How often there were open channels of communication between faculty and students regarding student needs, concerns, and suggestions (*never* to *very often*); standardized
Faculty–student equitable treatment	How often the student was treated equitably and fairly by the faculty (*never* to *very often*); standardized
Faculty feedback	How often faculty provided prompt and useful feedback on student work (*never* to *very often*); standardized
Satisfaction with faculty advising	How satisfied the student is with advising by faculty on academic matters (*very dissatisfied* to *very satisfied*); standardized
Satisfaction with access to faculty	How satisfied the student is with access to faculty outside of class (*very dissatisfied* to *very satisfied*); standardized
Faculty recommendation	How many professors the student knows well enough to ask for a letter of recommendation (*0* to *4 or more*); standardized
Faculty name recognition	During this year, how often the student had a class in which the professor knew or learned their name (*never* to *very often*); standardized
Perceptions of the climate for diversity	Measure of acceptance on campus relative to student demographics of race, religion, political beliefs, socioeconomic status, gender, sexual orientation; six-item scale ($\alpha = .87$); standardized

Note. All continuous variables were standardized. Each variable had a $M = 0$ and a standard deviation = 1.

Table 2
Descriptive Table of Control Variables (n = 33,786)

Variable name	Operational definition	M	SD
Sex: Male	1 Male, 0 = Female	.39	.49
Race/ethnicity: Latino/a/Hispanic/Hispanic	1 = Latino/a/Hispanic, 0 = Not Latino/a/Hispanic	.06	.24
Race/ethnicity: Native American Indian	1 Native American Indian, 0 = Not Native American Indian	.01	.10
Race/ethnicity: Asian/Pacific Islander	1 = Asian/Asian American/Pacific Islander, 0 = Not Asian/Asian American/Pacific Islander	.09	.29
Race/ethnicity: Black/African American	1 = Black/African American, 0 = Not Black/African American	.04	.19
College class year	College class standing: 1 = freshman/first-year, 2 = sophomore, 3 = junior, 4 = senior, 5 = other	2.93	1.06
Age	Self-reported age (ranged from 16 to 71)	21.15	3.62
Social class	1 = low income/poor, 5 = wealthy	3.13	.87
Parents' education	1 = either parent has a bachelor's degree or higher, 0 = neither parent has a bachelor's degree	.75	.43
Degree aspirations	1 = higher than a bachelor's degree, 0 = bachelor's degree or less	.76	.42
Institutional size	Standardized total institutional size (as reported to IPEDS, 2014)	.00	1.00
Percentage of students who are White	Standardized percentage of undergraduate students at the institution who are White (as reported to IPEDS, 2014)	.00	1.00
Percentage of faculty who are full-time	Standardized percentage of faculty at the institution who are full-time (as reported to IPEDS, 2014)	.00	1.00
Percentage of FT faculty who are White	Standardized percentage of full-time faculty at the institution who are White (as reported to IPEDS, 2014)	.00	1.00
Cumulative GPA	College GPA at the time of data collection	3.23	.60
Residence: Lives on campus	1 = yes, 0 = no	.28	.45
Hours of on-campus work	Number of hours paid employment (including internships) on campus	5.13	10.31
Hours of off-campus work	Number of hours paid employment (including internships) off campus	3.84	7.26
Hours of cocurricular involvement	Number of hours participating in student clubs or organizations	2.13	1.23
Hours of social interactions	Number of hours socializing with friends	3.29	1.44
College major: professional	1 = yes, 0 = no	.02	.14
College major: social science	1 = yes, 0 = no	.10	.31
College major: arts/humanities	1 = yes, 0 = no	.17	.38
College major: technology	1 = yes, 0 = no	.02	.15
College major: education	1 = yes, 0 = no	.02	.13
College major: engineering	1 = yes, 0 = no	.14	.35
College major: biological science	1 = yes, 0 = no	.08	.28
College major: physical science	1 = yes, 0 = no	.04	.19
College major: business	1 = yes, 0 = no	.10	.30
College major: other	1 = yes, 0 = no	.20	.40
Course Availability Scale*	Standardized, mean-based scale of respondent's satisfaction with general education, breadth requirements or courses needed for graduation (two items; α = .78)	.00	1.00
Satisfaction and Belonging Scale*	Standardized, mean-based scale of level of satisfaction with college experiences and sense of belonging (five items; α = .86)	.00	1.00

Note. IPEDS = Integrated Postsecondary Education Data System.
* Continuous variable, standardized.

climate for diversity were moderated by sex, race/ethnicity, and socioeconomic status. In the third stage of analysis, the researchers examined whether the relationships between each type of interaction with or perception of faculty members and students' perceptions of the climate for diversity were moderated by students' sex. In the fourth stage, the researchers examined whether the relationships between each type of interaction with or perception of faculty members and students' perceptions of the climate for diversity were moderated by students' race/ethnicity. In the fifth stage, the researchers examined whether the relationships between each type of interaction with or perception of faculty members and students' perceptions of the climate for diversity were moderated by students' social class. All continuous variables were standardized prior to analyses for ease in interpretation. Models were examined for potential multicollinearity issues, and variance inflation factors (VIF) ranged from 1.01–1.89, below recommended VIF limits. Additionally, models utilized a clustering command (SVY in STATA) to control for the nested nature of the data,

where students were nested within institutions participating in the study.

Results

Overall Student–Faculty Experiences

In the first stage of analysis, the researchers created a scaled measure of all 12 types of interactions with and perceptions of faculty members (α = .80) and examined the association between this student–faculty interaction scale and students' perceptions of the climate for diversity. In the presence of a host of controls for student background characteristics, college/university institutional characteristics, student attitudes, and college experiences, student–faculty interactions were positively associated, on average, with students' positive perceptions of the climate for diversity ($\beta = 0.15$, $p < .001$, $R^2 = 0.19$). In other words, in general, students' interactions with or perceptions of

faculty members were positively associated with participants feeling respected and feeling free to express their beliefs at their university.

Varying Types of Student–Faculty Experiences

In the second stage of analysis, the researchers examined the association between each of the 12 different types of interactions with or perceptions of faculty members and students' perceptions of the climate for diversity. Table 3 presents the regression estimates of the association between each of these types of interactions with and perceptions of faculty members and perceptions of the climate for diversity ($R^2 = 0.23$). Frequently communicating with a faculty member by e-mail or in person ($\beta = 0.07$, $p < .001$), experiencing equitable and fair treatment by faculty members ($\beta = 0.16$, $p < .001$), having faculty members who frequently provided prompt and useful feedback on student work ($\beta = 0.02$, $p < .01$), and being satisfied with access to faculty members outside of class ($\beta = 0.06$, $p < .001$) were all positively associated, on average, with students' positive perceptions of the climate for diversity. In other words, each of these interactions with or perceptions of faculty members was positively associated with participants feeling respected and feeling free to express their beliefs at their university.

There was also a negative association between several interactions with and perceptions of faculty members and students' perceptions of the climate for diversity. Engaging in research activities with a faculty member ($\beta = -0.06$, $p < .01$), working with faculty members on activities other than coursework ($\beta = -0.05$, $p < .001$), talking with a faculty member outside of class about issues and concepts derived from a course ($\beta = -0.04$, $p < .001$), and knowing a professor well enough to ask for a recommendation letter ($\beta = -0.04$, $p < .001$) were all negatively associated, on average, with students' positive perceptions of the climate for diversity. In other words, each of these interactions with or perceptions of faculty members was negatively associated with participants feeling respected and feeling free to express their beliefs at their university.

Varying Types of Student–Faculty Experiences by Sex, Race/Ethnicity, and Social Class

In the third stage of analysis, the researchers analyzed whether the relationships between each type of interaction with or perception of faculty members and students' perceptions of the climate for diversity were moderated by students' sex, race, and social class.

Differences by students' sex. Table 4 presents the regression estimates of these relationships by students' sex ($R^2 = 0.23$). Male and female students exhibited similar patterns of association with two exceptions. Having faculty members who frequently provided prompt and useful feedback on student work was positively associated, on average, with students' positive perceptions of the climate for diversity for male students ($\beta = 0.02$, $p < .01$), but was not statistically significant for female students. Additionally, knowing a professor well enough to ask for a recommendation letter was negatively associated, on average, with students' positive perceptions of the climate for diversity for female students ($\beta = -0.05$, $p < .001$), but was not statistically significant for male students.

Table 3

Regression Estimates for the Association Between Students' Interactions With and Perceptions of Faculty in College and Students' Perceptions of the Climate for Diversity at Research Universities (n = 33,786)

Variable name	Coef.	SE
Student background characteristics		
Sex: Male	.07**	.02
Race/ethnicity: Latino/a/Hispanic	−.20***	.04
Race/ethnicity: Native American Indian	−.06	.06
Race/ethnicity: Asian/Pacific Islander	−.16***	.03
Race/ethnicity: Black/African American	−.32***	.06
College class year	−.03**	.01
Age	−.05***	.01
Social class	.08***	.01
Parents' education: bachelor's degree or higher	.04	.02
Degree aspirations: graduate or professional school	.02	.02
Institutional characteristics		
Institutional size	−.03	.02
Percentage of students who are White	.01	.03
Percentage of faculty who are full-time	−.06	.02
Percentage of FT faculty who are White	.02	.04
Student Attitudes and College Experiences		
Cumulative GPA	−.03***	.00
Residence: lives on campus	−.02	.01
Hours of on-campus work	.03	.01
Hours of off-campus work	.00	.01
Hours of cocurricular involvement	−.02	.01
Hours of social interactions	.03**	.01
College major: professional	−.07	.05
College major: social science	−.04	.03
College major: technology	.08**	.03
College major: education	−.15***	.03
College major: engineering	.02	.02
College major: biology/sciences	.07**	.02
College major: physical/sciences	−.02	.03
College major: business	−.03	.03
College major: other	.01	.03
Satisfaction and Belonging Scale	.26***	.03
Course Availability Scale	.07***	.01
Interactions with and perceptions of faculty		
Research experiences	−.06**	.02
Creative experiences	−.02	.01
Faculty communication	.07***	.01
Faculty nonclassroom interactions	−.04***	.01
Faculty nonacademic interactions	−.05***	.01
Faculty–student open communication	.01	.01
Faculty–student equitable treatment	.16***	.01
Faculty feedback	.02	.01
Satisfaction with faculty advising	.01	.01
Satisfaction with access to faculty	.06***	.01
Faculty recommendation	−.04***	.00
Faculty name recognition	−.01	.01
R^2	.23	

Note. All continuous variables are standardized; Reference group for male is female, reference group for race/ethnicity is White, reference group for parents' education is less than a bachelor's degree, reference group for residence is lives off campus, reference group for degree aspirations is bachelor's degree or less, reference group for major is arts/humanities.
** $p < .01$. *** $p < .001$.

Differences by students' race/ethnicity. Table 5 presents the regression estimates of these relationships by students' race/ethnicity ($R^2 = 0.21$–0.38). Engaging in research activities with a faculty member was negatively associated, on average, with students' positive perceptions of the climate for diversity for White

Table 4

Regression Estimates for the Association Between Students' Interactions With and Perceptions of Faculty in College and Students' Perceptions of the Climate for Diversity at Research Universities by Sex (n = 33,786)

Variable name	Male $n = 13,177$ Coef. (SE)	Female $n = 20,609$ Coef. (SE)
Research experiences	−.07 (.03)	−.06 (.02)
Creative experiences	−.01 (.01)	−.02 (.01)
Faculty communication	.06 (.01)***	.07 (.01)***
Faculty nonclassroom interactions	−.05 (.01)***	−.03 (.01)**
Faculty nonacademic interactions	−.04 (.01)**	−.05 (.01)***
Faculty–student open communication	.01 (.01)	.01 (.01)
Faculty–student equitable treatment	.17 (.01)***	.16 (.01)***
Faculty feedback	.02 (.01)**	.01 (.01)
Satisfaction with faculty advising	.02 (.01)	.01 (.01)
Satisfaction with access to faculty	.07 (.01)***	.06 (.01)***
Faculty recommendation	−.02 (.01)	−.05 (.01)***
Faculty name recognition	−.01 (.01)	−.01 (.01)
R^2	.23	.23

Note. All continuous variables are standardized; control variables included race/ethnicity, college class year, age, social class, parents' education, degree aspirations, institutional size, percentage of students who are White, percentage of faculty who are full-time, percentage of FT faculty who are White, cumulative GPA, residence, hours of on-campus work, hours of off-campus work, hours of cocurricular involvement, hours of social interactions, college major, Satisfaction and Belonging Scale, and Course Availability Scale.
** $p < .01$.   *** $p < .001$.

students ($\beta = -0.06$, $p < .01$), but was not statistically significant for other racial/ethnic groups. Engaging in creative activities with a faculty member was negatively associated, on average, with students' positive perceptions of the climate for diversity for White students ($\beta = -0.03$, $p < .01$), but was not statistically significant for other racial/ethnic groups. Frequently communicating with a

faculty member by e-mail or in person was positively associated, on average, with students' positive perceptions of the climate for diversity for Latino/a/Hispanic students ($\beta = 0.06$, $p < .01$), for Asian/Pacific Islander students ($\beta = 0.10$, $p < .001$), and for White students ($\beta = 0.06$, $p < .001$), but was not statistically significant for other racial/ethnic groups.

Working with faculty members on activities other than coursework was negatively associated, on average, with students' positive perceptions of the climate for diversity for Latino/a/Hispanic students ($\beta = -0.08$, $p < .01$), for Asian/Pacific Islander students ($\beta = -0.11$, $p < .001$), and for White students ($\beta = -0.04$, $p < .001$), but was not statistically significant for other racial/ethnic groups. Experiencing equitable and fair treatment by faculty members was positively associated, on average, with students' positive perceptions of the climate for diversity for all groups, including Latino/a/Hispanic students ($\beta = 0.17$, $p < .001$), Native American students ($\beta = 0.17$, $p < .001$), Asian/Pacific Islander students ($\beta = 0.17$, $p < .001$), Black students ($\beta = 0.18$, $p < .001$), and White students ($\beta = 0.15$, $p < .001$). Being satisfied with access to faculty members outside of class was positively associated, on average, with students' positive perceptions of the climate for diversity for White students ($\beta = 0.06$, $p < .001$), but was not statistically significant for other racial/ethnic groups. Knowing a professor well enough to ask for a recommendation letter was negatively associated, on average, with students' positive perceptions of the climate for diversity for White students ($\beta = -0.04$, $p < .001$), but was not statistically significant for other racial/ethnic groups.

Differences by students' social class.   Table 6 presents the regression estimates of these relationships by students' social class ($R^2 = 0.20$–0.29). Engaging in research activities with a faculty member was negatively associated, on average, with students' positive perceptions of the climate for diversity for upper-middle class students ($\beta = -0.08$, $p < .01$), but was not statistically significant for other social class groups. Frequently

Table 5

Regression Estimates for the Association Between Students' Interactions With and Perceptions of Faculty in College and Students' Perceptions of the Climate for Diversity at Research Universities by Race/Ethnicity (n = 33,786)

Variable name	Latino/a/Hispanic $(n = 2,050)$ Coef. (SE)	Native American $(n = 328)$ Coef. (SE)	Asian/Pacific Islander $(n = 3,132)$ Coef. (SE)	Black $(n = 1,202)$ Coef. (SE)	White $(n = 27,074)$ Coef. (SE)
Research experiences	−.07 (.06)	.15 (.16)	−.09 (.06)	−.02 (.05)	−.06 (.02)**
Creative experiences	−.03 (.05)	−.11 (.12)	.00 (.03)	−.06 (.06)	−.03 (.01)
Faculty communication	.06 (.02)**	.01 (.10)	.10 (.02)***	.01 (.05)	.06 (.01)***
Faculty nonclassroom interactions	−.01 (.02)	.07 (.13)	−.03 (.02)	.01 (.04)	−.04 (.01)***
Faculty nonacademic interactions	−.08 (.02)**	−.03 (.09)	−.11 (.02)***	−.09 (.05)	−.04 (.01)**
Faculty–student open communication	−.03 (.01)	−.05 (.08)	.02 (.01)	.00 (.05)	.01 (.01)
Faculty–student equitable treatment	.17 (.02)***	.17 (.03)***	.17 (.03)***	.18 (.03)***	.15 (.01)***
Faculty feedback	−.01 (.03)	.01 (.02)	.01 (.03)	.03 (.03)	.03 (.01)***
Satisfaction with faculty advising	.06 (.02)	−.14 (.07)	.03 (.02)	.05 (.04)	.01 (.01)
Satisfaction with access to faculty	.03 (.02)	.09 (.06)	.01 (.01)	.08 (.03)	.06 (.01)***
Faculty recommendation	−.02 (.02)	−.09 (.07)	−.03 (.02)	−.02 (.04)	−.04 (.01)***
Faculty name recognition	−.04 (.02)	.02 (.08)	.01 (.01)	−.01 (.03)	−.01 (.01)
R^2	.23	.38	.24	.36	.21

Note. All continuous variables are standardized; control variables included sex, college class year, age, social class, parents' education, degree aspirations, institutional size, percentage of students who are White, percentage of faculty who are full-time, percentage of FT faculty who are White, cumulative GPA, residence, hours of on-campus work, hours of off-campus work, hours of cocurricular involvement, hours of social interactions, college major, Satisfaction and Belonging Scale, and Course Availability Scale.
** $p < .01$.   *** $p < .001$.

Table 6

Regression Estimates for the Association Between Students' Interactions With and Perceptions of Faculty in College and Students' Perceptions of the Climate for Diversity at Research Universities by Social Class (n = 33,786)

Variable name	Low income/Poor (n = 1,490) Coef. (SE)	Working class (n = 5,447) Coef. (SE)	Middle class (n = 14,963) Coef. (SE)	Upper-Middle class (n = 10,929) Coef. (SE)	Upper-class/Wealthy (n = 957) Coef. (SE)
Research experiences	.01 (.04)	−.06 (.05)	−.05 (.02)	−.08 (.02)**	−.04 (.07)
Creative experiences	−.09 (.05)	−.01 (.02)	−.01 (.01)	−.03 (.02)	−.05 (.09)
Faculty communication	.08 (.03)	.05 (.02)	.07 (.01)***	.07 (.01)***	.14 (.03)***
Faculty nonclassroom interactions	.01 (.03)	−.01 (.02)	−.03 (.01)	−.07 (.01)***	−.10 (.02)***
Faculty nonacademic interactions	−.09 (.03)**	−.03 (.02)	−.06 (.01)***	−.04 (.01)***	−.02 (.04)
Faculty–student open communication	−.04 (.04)	.03 (.01)	.00 (.01)	.03 (.01)	.02 (.04)
Faculty–student equitable treatment	.15 (.03)**	.13 (.01)***	.19 (.01)***	.13 (.01)***	.17 (.04)***
Faculty feedback	.08 (.03)	.01 (.02)	.01 (.01)	.02 (.01)	.04 (.03)
Satisfaction with faculty advising	.01 (.03)	.04 (.02)	.02 (.01)	−.01 (.01)	.01 (.04)
Satisfaction with access to faculty	.07 (.04)	.07 (.01)***	.06 (.01)***	.05 (.02)**	.08 (.03)**
Faculty recommendation	−.02 (.04)	−.04 (.02)	−.04 (.01)***	−.02 (.01)	−.05 (.03)
Faculty name recognition	−.09 (.04)	−.02 (.02)	.01 (.01)	−.02 (.01)	−.02 (.06)
R^2	.29	.22	.23	.20	.24

Note. All continuous variables are standardized; control variables included sex, race/ethnicity, college class year, age, parents' education, degree aspirations, institutional size, percentage of students who are White, percentage of faculty who are full-time, percentage of FT faculty who are White, cumulative GPA, residence, hours of on-campus work, hours of off-campus work, hours of cocurricular involvement, hours of social interactions, college major, Satisfaction and Belonging Scale, and Course Availability Scale.
** $p < .01$. *** $p < .001$.

communicating with a faculty member by e-mail or in person was positively associated, on average, with students' positive perceptions of the climate for diversity for middle class students ($\beta = 0.07$, $p < .001$), upper-middle class students ($\beta = 0.07$, $p < .001$), and upper class/wealthy students ($\beta = 0.17$, $p < .001$) but was not statistically significant for other social class groups. Talking with a faculty member outside of class about issues and concepts derived from a course was negatively associated, on average, with students' positive perceptions of the climate for diversity for upper-middle class students ($\beta = -0.07$, $p < .001$) and for upper class/wealthy students ($\beta = -0.10$, $p < .001$), but was not statistically significant for other social class groups. Working with faculty members on activities other than coursework was negatively associated, on average, with students' perceptions of the climate for diversity for low-income/poor students ($\beta = -0.09$, $p < .01$), for middle class students ($\beta = -0.06$, $p < .001$), and for upper-middle class students ($\beta = -0.04$, $p < .001$), but was not statistically significant for other groups.

Experiencing equitable and fair treatment by faculty members was positively associated, on average, with students' positive perceptions of the climate for diversity for all groups, including low-income/poor students ($\beta = 0.15$, $p < .01$), working class students ($\beta = 0.13$, $p < .001$), middle class students ($\beta = 0.19$, $p < .001$), upper-middle class students ($\beta = 0.13$, $p < .001$), and upper class/wealthy students ($\beta = 0.17$, $p < .001$). Being satisfied with access to faculty members outside of class was positively associated, on average, with students' positive perceptions of the climate for diversity working class students ($\beta = 0.07$, $p < .001$), middle class students ($\beta = 0.06$, $p < .001$), upper-middle class students ($\beta = 0.05$, $p < .01$), and upper class/wealthy students ($\beta = 0.08$, $p < .01$), but was not statistically significant for low income/poor students. Finally, knowing a professor well enough to ask for a recommendation letter was negatively associated, on average, with students'

positive perceptions of the climate for diversity for middle class students ($\beta = -0.04$, $p < .001$), but was not statistically significant for other social class groups.

Limitations

This study and its findings are limited in several important ways. First, the SERU sample used in this study is largely female (61%) and White (82%). Additionally, some of the racial/ethnic groups included in the study are very small (e.g., Native American Indian students comprised only 1% of the sample), and the findings of this study, therefore, are not necessarily representative of the racial/ethnic composition of all U.S. research universities. Moreover, while this study included data from 10 research universities, including 10 of the largest public universities in the U.S., the small number of institutions represented in the sample further limits the generalizability of this study's results to all research universities in the United States. Finally, this study's use of listwise deletion to handle missing data may further limit the study's representativeness and overall generalizability.

This study is also limited by the cross-sectional nature of the SERU study, wherein student experiences and attitudes are captured at a single point in time, a factor that limits our ability to conclude that students' interactions and experiences with faculty members had an *effect* on students' perceptions of the climate for diversity on campus, but rather that they seem to be associated. Further research, using a longitudinal or experimental design, is needed to determine the extent to which interactions and experiences with faculty members affect students' perceptions of the climate for diversity on campus. Additionally, this study is limited by use of a preexisting dataset, where survey prompts and response options were predetermined and where potential control variables were limited to items featured in the SERU study and accompanying IPEDS institutional data.

Finally, this study is limited in its assessment of whether students who vary along several student characteristics may have had differential access to faculty during college. Some students in the sample may have been more likely to have access to some experiences with faculty, making it less likely that these experiences would have had the potential to influence their perceptions of the campus climate for diversity.

Discussion and Implications

This study examined the association between students' interactions with and perceptions of faculty and their perceptions of the climate for diversity on campus. This research contributes to furthering our understanding of the relationships between varying types of student experiences with faculty and diversity-centered subject matters (i.e., perceptions of the campus climate for diversity). The research also furthers our understanding of how classroom and nonclassroom experiences with faculty may influence students' perceptions of their campus environment on matters such as diversity, gender, and religious or political beliefs.

Findings indicate both positive and negative associations between different types of interactions with and perceptions of faculty and students' perceptions of the campus climate for diversity. Frequently communicating with a faculty member by e-mail or in person, experiencing equitable and fair treatment by faculty members, and being satisfied with access to faculty members outside of class were generally positively associated with positive perceptions of the climate for diversity. Conversely, engaging in creative work with a faculty member, engaging in research activities with a faculty member, working with faculty members on activities other than coursework, talking with a faculty member outside of class about issues and concepts derived from a course, and knowing a professor well enough to ask for a recommendation letter were generally negatively associated with positive perceptions of the climate for diversity. Though coefficients were often small (due to the disaggregation of types of student experiences with faculty members), these experiences, taken together, suggest that students' interactions with and perceptions of faculty members in college are associated with student perceptions of the climate for diversity on campus.

These results provide mixed support for previous research that has demonstrated a positive association between student–faculty interactions and college outcomes but draws attention to the context of the interactions or experiences that a student may have when engaging with faculty members in college. These findings suggest that the context of students' interactions with faculty may be salient for students, and that students seemingly benefit from the ability to have experiences with faculty that they perceive to be equitable and fair engagements. This study's findings suggest that it may be the type and context of the experiences that students have with faculty that matter in fostering students' perceptions of an inclusive campus climate.

Additionally, findings from this study suggest that the relationship between students' experiences with faculty and perceptions of the climate for diversity may be moderated by students' sex, race/ethnicity, and social class. Students' experiences with faculty differed somewhat by sex, demonstrating that male and female students may differ in terms of the interactions that positively affect their perceptions of the campus climate. Similarly, experiences with faculty differed somewhat by social class, again suggesting that experiences with faculty may differ and have differential effects for students from differing class backgrounds.

The findings of the present study also demonstrate moderating differences by varying racial/ethnic groups. Non-White students, overall, had more negative perceptions of the campus climate, when compared to their White peers. Black students generally did not have significant and positive interactions with faculty that promoted positive perceptions of the campus climate, except for faculty–student equitable treatment (a stronger association) and satisfaction with access to faculty. In fact, faculty–student equitable treatment was consistently a strong predictor across all racial/ethnic groups. Additionally, several interactions, such as faculty nonclassroom interactions and faculty recommendations, proved to be positive experiences for White students but not significant predictors for Non-White students. When considering race and ethnicity, prior studies have concentrated on potential differential effects on student learning. For example, Lundberg and Schreiner (2004) found similar associations by racial group between quality of faculty relationships and general measures of college-centered learning. The present study suggests similar differences for students from differing racial/ethnic groups.

Some emerging research is focused on the differential influence of race/ethnicity on college students' experiences and outcomes, such as their perceptions of the campus environment. To a greater extent, evidence has shown that Non-White students, particularly Black students, hold negative views of the collegiate environment, when compared to their White peers (Campbell, Carter-Sowell, & Battle, 2019; Lo, McCallum, Hughes, Smith, & McKnight, 2017). While anecdotally this notion can be inferred through the numerous instances of race-related campus crises and student activism (Bartner, 2018; WMC5, 2018), these findings provide empirical support that suggest Non-White students' experiences with faculty may not be promoting, or even hindering, constructive perceptions of the campus climate.

This study's findings may offer some potential insight into the recent social unrest and activism that has occurred on college campuses (Jaschik, 2015). Additionally, Hurtado et al.'s (1998) notions about the historical legacy of inclusion/exclusion help to interpret and explain these findings. Across the U.S., students are increasingly aware of adverse campus environments related to diversity, which correspond to an entrenched legacy of institutionalized exclusion for some groups of students. A heightened awareness of the campus climate for diversity often reveals students' perceptions of an unwelcoming climate at colleges and universities. The findings from this study demonstrate the important role of faculty in influencing students' perceptions of the campus climate, particularly for students from underrepresented or marginalized backgrounds. When students perceive that they are treated fairly and equitably, they are more likely to have positive perceptions of the campus climate.

Engagement with faculty is a key element of college impact models (see Mayhew et al., 2016; Pascarella & Terenzini, 2005) that underscores the influence of the environment in transforming inputs (i.e., precollege characteristics and experiences) to outputs (i.e., educated students who are prepared to be global citizens). Fostering an environment where students have positive perceptions of the campus climate involves institutional

reflection and change, as well as the implementation of processes and practices to assess the campus climate. Harper and Hurtado (2007) suggested "administrators, faculty and institutional researchers proactively audit their campus climates and cultures to determine the need for change" (p. 20). Collaborations between faculty, administrators, and student affairs should begin with an assessment of the programs that foster student–faculty interaction, as well as an investigation of students' perceptions of the climate.

Creating positive incentives for faculty to engage with students about topics of diversity, equity, and inclusion are vital for higher education. Programs that provide safe spaces and are conducive for difficult dialogues around topics of diversity are several ways in which faculty might work to foster positive perceptions about the campus climate among students. Encouraging use of innovative pedagogical tools to facilitate critical discussions with students may help to engage faculty members in ensuring an inclusive and welcoming campus climate for students. Additionally, providing faculty recognition for interaction with students may promote increased contact with students, and encouragement of interactions that acknowledge and respect students' diverse backgrounds may facilitate the positive benefits of these relationships. Restructuring promotion and tenure policies may affect faculty members' attention to ensuring students are perceiving their interactions as fair and equitable.

Directions for Future Research

The findings from this study suggest several avenues for future research on the association between student–faculty interactions and students' perceptions of the campus climate. The present study did not substantively attend to association between race, racism, student–faculty interactions and perceptions of campus climate. Considering that the most recent instances of students' unfavorable perceptions of the campus climate were associated with race, researchers might design future studies that include elements of race, racism and discrimination.

Scholars should also consider the moderating effects of these experiences on college students' perceptions, particularly by sexual orientation, immigration status, or religious affiliation. Our understanding of campus climate would also benefit from additional evidence demonstrating how the student–faculty interactions of minoritized students might compare with nonminoritized students and their resulting perceptions of the campus climate. Furthermore, future research should account for the demographics of students' faculty members. For instance, do sexual minority college students receive a benefit from interactions with sexual minority faculty as opposed to faculty who do not identify as a sexual minority?

This study elicits the question of the role and responsibility of faculty members as a potential intervention in facilitating a welcoming and inclusive campus environment. Further inquiry is needed to explore and explain if and how faculty members should be more involved in key elements of the college environment that affects students' engagement and outcomes. A similar potential area of inquiry centers on the identities of faculty members, with a focus on their association with students' perceptions and experiences with the college environment. Hurtado, Alvarado, and Guillermo-Wann (2015) helped to explain and further our under-

standing of the relationship between campus climate and racial identity salience. Little research has focused on similar concepts regarding faculty and the association of those perspectives in relationship to their students. This is important when considering the potential for faculty members' own identities and awareness. Future research is needed that illuminates our understanding about the faculty-centered identity experiences that may subsequently affect student outcomes.

Future research should examine the types and contexts of student–faculty interactions in college and the influence of those experiences on students' perceptions about the climate for diversity on campus. For instance, researchers might investigate student and faculty dialogues pertaining to affirmative action, LGBTQ equality, free speech, or religious freedom on campus. Additionally, an important finding of this study is the importance of experiences with faculty that students consider to be equitable and fair. Future research should further investigate the meaning of this assertion for students. Perhaps qualitative researchers might deconstruct what equitable experiences with faculty may look like. Further, researchers ought to examine the effects of students' perceptions of inequitable or unfair experiences and the influence of these experiences on their overall perceptions of the climate for diversity on college campuses. These and other lines of future inquiry will help us to continue to understand the potential influence of faculty members on students' perceptions of the campus climate for diversity.

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