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Centering Faculty in Student-Faculty Interaction: Work Environment Facilitating More Interactions and Its Difference by Gender and Race

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Abstract: This study offers insights into how faculty members' integral role in facilitating frequent interactions with students is affected by faculty characteristics, work experiences, and institutional environments. Faculty interactions with students are key to college student learning, development, and academic achievement. Utilizing data from the Faculty Survey of Student Engagement, the authors found significant differences in the level of interaction by gender and race and in the effects of faculty experiences and perceptions of the campus environment on the frequency of faculty interaction with students. Additionally, the magnitude of the effects of faculty experiences and perceptions of the campus environment varied by faculty gender and race. By understanding predictors associated with higher levels of faculty interaction with students, the authors discuss implications for creating campus environments that value faculty efforts to help students succeed.

Keywords: student-faculty interaction, faculty experiences, campus climate, race, gender

Faculty interaction with students in and out of the classroom significantly predicts student learning, development, and academic achievement because of faculty members' integral role as facilitators of students' academic and social engagement in college (Kim & Sax, 2017; Mayhew et al., 2016). However, students' access to and benefits from student-faculty interaction vary by students' demographic characteristics as well as their institutional environment (Kim & Sax, 2009, 2011, 2014, 2018). For instance, female students and students of color tend to have less access to positive, quality interactions with faculty as compared to their male and White peers (Kim & Lundberg, 2016; Lundberg, 2010; Lundberg & Schreiner, 2004). When it comes to academic majors, students in disciplines such as business, marketing, and biology have less interaction with faculty than in disciplines such as arts, literature, and sociology (Kim & Sax, 2014). Students also benefit from their interactions with faculty differently. For instance, Cole (2010) reported that the effect of student-faculty interaction on college GPA was not significant for Latinx undergraduate students, and course-related faculty contact negatively affected African American college students' GPA. Furthermore, the benefit of student-faculty interaction on students' GPA is greater for students in academic majors such as finance, economics, and education than students in majors such as engineering, microbiology, and computer science. (Kim et al., 2015).

Given these findings of the important role of faculty on college students' learning and development, studies have increasingly examined faculty characteristics and institutional environments that influence faculty attitudes, assumptions, and behaviors towards students.

Research showed that faculty's teaching approaches and methods vary by their academic discipline (Hurtado et al., 2012, Milem, 2001; Umbach, 2006), gender (Hurtado et al., 2012, O'Meara et al. 2020; Umbach, 2006), and race (Milem, 2001; O'Meara et al., 2020; and Umbach 2006. For example, some studies found that underrepresented minority (URM) faculty tend to spend more time advising and mentoring students than White and Asian faculty and that women faculty and faculty outside of STEM disciplines are more likely to use student-centered pedagogy than their peers (Hurtado et al., 2012; O'Meara et al., 2020; Umbach 2006). Other studies identified that faculty employment status can also affect college student outcomes (Ran & Sanders, 2020; Umbach, 2007). Ran and Sanders indicated that part-time faculty's limited availability of office space and teaching supplies combined with limited knowledge of curriculum sequencing and student support resources adversely affect students' subsequent course enrollment and academic performance.

While the current literature clearly demonstrates that faculty members play a vital role in student success, the research does not yet provide a clear picture of the corresponding factors associated with faculty to interact with students more frequently. Consequently, this study seeks to understand the faculty characteristics (i.e., gender, race, time spent on activities, etc.) and work environments (i.e., institutional type, institutional values, etc.) that are associated with more frequent interactions with students for faculty members. Using a national college faculty data set, this study answers the following three research questions: (1) How does the level of faculty interaction with students differ by faculty gender and race? (2) What college environment and faculty experiences are linked to higher levels of interaction with students for faculty? (3) How do such college environment and faculty experiences vary by faculty gender and race?

Literature Review

Student-Faculty Interaction

Student-faculty interaction has historically been known as a significant college experience that impacts students' academic and social engagement, and scholars have documented the relationship between students' interactions with faculty and a wide range of student outcomes (Kim & Sax, 2017; Kuh et al., 2010; Mayhew et al., 2016). The frequency and nature of student interactions with faculty determine the quality and effects of interactions with students (Kim & Lundberg, 2016). For example, high quality interactions facilitate positive outcomes for students and include interactions such as talking with students about course material outside of class, working together on an activity outside of coursework, interactions during class (Kim & Lundberg, 2016) and faculty accessibility (Kim & Lundberg, 2022). The most common student outcomes reported to be positively impacted by frequent, high-quality interactions with faculty can be broadly defined in four areas: academic achievement; developmental outcomes; student growth in attitudes, values, and beliefs; and career/vocational outcomes.

Research showed that student-faculty interaction is associated with various academic achievement measures of college students including college GPA and persistence (DeAngelo, 2014; Kim & Sax, 2009; Kim et al., 2015; Komarraju et al., 2010; Tovar, 2015). Kim et al. (2015) found that students who interacted more frequently with faculty tended to report a higher GPA. Tovar (2015) also confirmed the positive impact of student-faculty interaction on college GPA for Latinx college students. When it comes to developmental outcomes, research demonstrated faculty influence on students' cognitive/intellectual skills development, identity formation, academic self-concept development, and sense of belonging (Franklin et al., 2017; Kim & Lundberg, 2016; Kim & Sax, 2014; Kim et al., 2015; Meeuwisse et al., 2010; Parker, et al., 2022; Strayhorn, 2008, 2019). For example, Kim and Lundberg (2016) found that student-faculty interaction was positively associated

with students' self-reported gains in cognitive skills as well as their sense of belonging. Furthermore, some studies suggested that student-faculty interaction influences students' attitudes, values, and beliefs such as attitudes towards diversity, spiritual development, civic attitudes, and engagement with the community on public and personal concerns (Astin et al., 2011; Small & Bowman, 2011; Sax, 2004; Trolian & Parker, 2020). For example, Trolian and Parker (2022) identified a positive relationship between student-faculty interactions and students' openness to diversity, regardless of student race and ethnicity. Studies on vocational outcomes demonstrate that higher frequencies of student-faculty contact increase students' positive attitudes about professional success, career preparation and choice, and graduate school aspirations (Lundberg, 2014; Sax et al., 2005; Trolian & Parker, 2017; Trolian et al., 2021).

As student demographics in higher education has diversified, college impact research also identified some conditional effects of student-faculty interaction depending on students' background characteristics. Studies showed that the effects of student-faculty interaction may vary by student gender, race, and socioeconomic status (Ash & Schreiner 2016; Garvey et al., 2018; Kim & Sax, 2009; Lundberg 2012; Parker et al., 2022; Sax et al., 2005). For example, Kim and Lundberg (2022) documented that the direct effect of student-faculty interaction on cognitive skills development tends to be more pronounced for Latinx college students as compared to their peers in other racial groups. Some studies also identified that the effects of student-faculty interaction are conditioned by the nature of the interaction. For instance, Kim et al. (2022) demonstrated that among various forms of student-faculty interactions, communication with faculty by email or in-person had the strongest effect on students' cognitive gains in critical thinking and communication. Similarly, they also identified that interacting with faculty during class sessions had a larger effect on students' sense of belonging while participation in research-oriented seminars had a greater impact on student gains in cultural appreciation and self-awareness than other types of interactions.

The Faculty Experience: Benefits and Challenges

While most studies have focused on the benefits students experienced as a result from their interactions with faculty, some studies investigated the benefits faculty experience as they interact with their students. Research showed that faculty's interaction with students through undergraduate research is linked to their personal and job satisfaction, networking, friendship and support, and gaining a reputation for talent development (Adedokun et al., 2010; Johnson, 2015; Webber et al., 2013; Zydney et al. 2002,). Other studies also indicated that student-faculty interaction positively affects faculty retention and sense of belonging (Jayakumar et al., 2009; Turner et al., 2008; Wright-Mair, 2020). Jayakumar et al. (2009) suggested that there is a positive relationship between student advising and faculty retention for Asian and White faculty members. Similarly, Turner et al. (2008) found that racially minoritized faculty who participate in mentorship activities such as advising students, writing letters of recommendation, and investment in students' personal and professional growth tend to persist longer at predominantly white institutions.

On the other hand, there are some factors that may hinder faculty from interacting with their students. Perhaps, faculty employment status would be one of the factors. Despite the declining trend in the national percentage of part-time faculty, from 49% in 2011 to 44% in 2020 (National Center for Education Statistics, 2022), there are significant concerns about the effects of the number of non-tenure track and part-time faculty on student success outcomes in undergraduate education (Kezar & Gehrke, 2016). The challenges non-tenure track and part-time faculty experience include limited access to physical resources on campus, teaching during evening or weekend hours, less institutional knowledge related to curriculum, limited knowledge of student support services, and

limited access to support of effective instructional practices and technology; all these challenges for them lead to less frequent interactions with students (Berlin & Brock, 2021; Ran & Sanders, 2020).

Discrimination toward faculty is another factor that may adversely affect student-faculty interaction. Among the 836,600 full-time faculty across all higher education institutions in 2020, nearly 75% were White (National Center for Education Statistics, 2022). Although female faculty comprise the majority of this body of full-time faculty (51%), female faculty and faculty of color make up the majority of lower ranked full-time faculty including associate faculty (68%), instructor (68%), and lecturers (64%). The National Survey of Student Engagement (2015) indicated that faculty who experienced offensive behavior, harassment, discrimination, and isolation said it interfered with their ability to work. For faculty of color, research indicates that students are more likely to question faculty authority, criticize their teaching techniques, and demonstrate a lack of respect toward them (Eagan & Garvey, 2015; Parker & Neville, 2019). Similarly, URM faculty are more likely to experience microaggressions from faculty colleagues (O'Meara et al., 2020).

Lastly, faculty evaluation and reward structures may influence the amount and quality of student-faculty interaction. The nature of faculty work is generally described in three categories: teaching, research, and service; the faculty evaluation and reward systems are typically structured to incentivize research and publication activities, not the quality of student learning that faculty members facilitate through effective teaching methods and in- and out-of-classroom interactions (Berlin & Brock, 2021; Braxton et al., 2002; Fairweather, 2002, Gordon et al., 2024). Fairweather (2002) measured the research and teaching productivity of faculty and discovered that only 22% of faculty could simultaneously demonstrate productivity in both teaching and research. The percentage dropped to 6% when consideration was given to faculty who included active and collaborative teaching techniques known to be more effective for student learning. This suggests that full-time faculty who seek tenure may experience more pressure to prioritize research and publication activities over meaningful interactions with students that benefit students' learning and development. Gordon et al. (2024) extended research in this area and demonstrated that female and faculty of color tend to experience more pressure to provide teaching and service activities, often referred to as "invisible labor" (p. 285), and thus experience greater challenges in the promotion and tenure process.

Faculty Characteristics and Work Environment Affecting Student-Faculty Interaction

While there is a gap in the literature to understand faculty characteristics and work environments that are linked to more frequent and better interactions with students, there is a body of literature that addresses the effects of faculty characteristics on faculty teaching practices. When it comes to faculty race/ethnicity, research showed that faculty of color are more likely than White faculty to encourage students to interact with peers from diverse backgrounds and spend more time preparing for and teaching courses, mentoring other faculty, conducting service-related activities, and advising and mentoring students (Jayakumar et al., 2009; O'Meara et al., 2020; Villalpando & Delgado Bernal, 2002). In addition, faculty of color are more likely to hold a value orientation that demonstrates greater commitment to scholarship of teaching and hold a higher commitment to an educational philosophy that promotes holistic goals (affect, moral, civic responsibility) than their White counterparts (Antonio, 2002). Similarly, Umbach (2006) reported that faculty of color are more likely to engage in student-faculty interaction.

Similar to faculty of color, women faculty are more likely to use active and collaborative learning techniques (Fairweather, 2002; Milem 2001) and student-centered pedagogy (Eagan & Garvey, 2015; Umbach, 2006) as compared to their male counterparts. Such interactions and commitments benefit students, especially racially and ethnically diverse students. However, the

literature indicates that women are more likely to experience stress, feel rushed during the day, and encounter microaggressions more than their male peers (O'Meara et al., 2020). Guarino and Borden (2017) also report that women faculty spend more time on service-related activities, especially related to institutional work, thus "taking care of the academic family" (p. 690).

Research on instructional practices indicates that faculty employment status impacts their use of effective educational practices, including student-faculty interaction (Benjamin, 2003; Umbach, 2006, 2007). For example, Benjamin (2003) found that adjunct faculty are less available to students, spend less time preparing for courses, and assign fewer challenging assignments. A study by Schibik and Harrington (2004) also indicates that first-time freshman who were taught introductory courses by full-time faculty were retained at a higher rate than first-time freshman taught by part-time faculty. Additional research suggests that part-time instructors may have a negative effect on student persistence and completion (Ehrenberg & Zhang 2005; Eagan & Jaeger 2008).

Theoretical framework

Much of the college impact literature draws upon theoretical concepts that students' engagement in college is directly related to student success outcomes (Astin, 1993, 1999; Kuh & Hu, 2001; Kuh et al, 2010; Tinto, 1993). For example, Tinto's theory of student departure suggests that students who positively integrate academically and socially into the institution are more likely to persist. Faculty are critical academic and social agents that facilitate students' integration into college in both frequent and substantive interactions with students (Kuh & Hu, 2001). After studying more than 50 years of research on teaching and learning, Chickering and Gamson (1987) identified student-faculty interaction as one of seven principles of good practice in undergraduate education that promotes student learning. Because student-faculty interaction is an important college experience that facilitates student development and success, this study seeks to understand if there are any faculty characteristics and work experiences that predict higher levels of interaction with students.

The theoretical framework by Blackburn and Lawrence (1995) conceptualizes how a faculty member's work is impacted by their institutional context. They suggest that the "characteristics of individuals and their employing institution combine and lead to variations in faculty motivation, behavior, and productivity" (p. 15). For example, faculty members' academic department and their perceptions of institution, faculty, and student values directly affected how often they engaged in teaching behaviors that prepared undergraduates as scholars (Blackburn & Lawrence, 1995). This study investigates key structural components of their framework, namely that of individual faculty characteristics (i.e., gender, race, and perceptions of the campus environment) and environmental characteristics (i.e., institutional values and academic discipline) and their effects on faculty behaviors associated with frequent student-faculty interaction.

Methods

Data Source and Sample

This study used data from the 2019 administration of the Faculty Survey of Student Engagement (FSSE), a nationwide survey administered by the Center for Postsecondary Research at Indiana University. The FSSE includes over 50 questions focusing on faculty member's perceptions of their institution and their students' engagement, how they allocate their work time, and their professional and personal characteristics. Additional add-on supplements with specific foci, such as Academic Advising or Professional Development, are also available for participating institutions to add. The

dataset used in the current study included only those faculty who responded to both the standard FSSE questionnaire and the Inclusiveness and Engagement with Cultural Diversity topic module.

The original sample in our dataset included responses from 6,344 faculty members from over 30 institutions. Because of the focus of this study, the final analytical sample was reduced to respondents who selected male or female as their gender and self-identified as one of the five largest racial groups (i.e., Asian, Black, Hispanic, White, and Multiracial). The data were checked for missing variables, and expectation-maximization was used to replace missing data for the continuous variables. The data was further screened to omit univariate and multivariate outliers. Finally, the dataset was checked for normality, and any skewed or kurtotic variables were transformed. Consequently, the final dataset included 4,202 faculty members. The sample was 52% female and 81% White. The other 19% of faculty members identified as Asian (7%), Black (4%), Hispanic (4%), and Multiracial (4%). Most of the sample (79%) were full-time faculty members and held a terminal degree (76%) in their field, but only 40% were tenured.

Variables

The dependent variable for this study was frequency of student-faculty interactions, as reported by the faculty members. The variable is a four-item factor scale crated by FSSE that consists of the following individual items: a student talked with faculty about their career plans, worked with faculty on activities other than course work, discussed course topics/ideas/concepts with faculty outside class, and discussed with faculty academic performance. The items were measured using a four-point Likert Scale, from "1 = never" to "4 = very often

Independent variables of this study included 1) faculty characteristics, 2) institutional characteristics, 3) faculty experiences, and 4) college environments. Faculty characteristics included academic discipline, full-time status, academic rank, tenure status, number of years teaching, whether or not the faculty member had a terminal degree and a doctoral degree, as well as the age, gender, and race. Institutional characteristic variables included institutional selectivity, size, and control (private vs. public). Faculty experiences included time spent on the following activities: advising, research, service, and teaching activities, number of courses taught, and faculty sense of belonging. College environment variables included three factor scales focused on faculty perception of the quality of students' interactions with various agents on campus (other students, faculty, and staff), the faculty members' perception of institutional values (e.g., emphasis on sense of community among faculty, taking allegations of discrimination or harassment seriously, etc.) and faculty perception of institutional commitment to gender and racial diversity. Table 1 provides full details about variables used in the current study.

Table 1: List of Variables and Coding Schemes.

Variables	Coding Scheme
Dependent Variables	
Student-Faculty Interaction	Factor scale of 4 items below
Talked about their career plans	1 = Never; 2 = Sometimes; 3 = Often; 4 = Very Often
Worked on activities other than coursework	1 = Never - 4 = Very Often
Discussed course topics/ideas/concepts outside class	1 = Never - 4 = Very Often
Discussed academic performance	1 = Never - 4 = Very Often

Variables	Coding Scheme
Independent Variables	
Faculty Characteristics	
Gender	1 = Male; 0 = Female
White	1 = White; 0 = All others
Academic Discipline	7 categories: Arts & Humanities, Sciences, Engineering, Professional Programs, Business, Social Sciences, Other
Fulltime	1 = FT; 0 = PT
Academic Rank	1 = Other to 5 = Professor
Tenure	1 = Tenured; All others = 0
Years Teaching	Categories: 1 = 4 or less to 5 = 30 or more years
Terminal Degree	0 = No; 1 = Yes
Doctorally Prepared	0 = No; 1 = Yes
Age	Categories: 1 = 34 or younger to 5 = 65 or older
Institutional Characteristics	
Selectivity	Categories; 2 = less or non-competitive to 6 = most competitive
Institutional Size	Categories; 2 = fewer than 2,499 to 5 = more than 10,000 students
Private Control	1= private; 0 =public
Faculty Experiences	
Time spent on advising	1 = 0 hrs; 2 = 1-4 hrs; 3 = 5-8 hrs; 4 = 9-12 hrs; 5 = 13-16 hrs; 6 = 17-20 hrs; 7 = 21-20 hrs; 8 = 30+ hrs
Time spent on research	1 = 0 hrs - 8 = 30+ hrs
Time spent on service	1 = 0 hrs - 8 = 30+ hrs
Time spent on teaching activities	1 = 0 hrs - 8 = 30+ hrs
Number of courses taught	Continuous; 0-13+
Faculty sense of belonging	Factor scale of 3 items: I feel comfortable being myself at this institution; I feel valued by this institution; I feel like part of the community at this institution 1 = Strongly disagree to 4 = Strongly agree
College Environments	
Quality of Interactions with agents on campus	Factor scale: faculty perceptions of quality of student interactions with 5 groups on campus: students, academic advisors, faculty, student services, administrative staff ; 1 = poor to 7 = excellent
Faculty perception of institutional values	Factor scale: How much does your institution emphasize the following? (a. Demonstrating a commitment to Diversity, b. Providing faculty with the resources needed for success in a multicultural world, c. Creating an overall sense of community among faculty, d. Ensuring that you are not stigmatized because of your identity

	e. Providing information about anti-discrimination and harassment policies, f. Taking allegations of discrimination or harassment seriously, g. Helping faculty develop the skills to confront discrimination and harassment 1 = very little to 4 = very much
Faculty perception of institutional commitment to diversity	Factor scale: How much does your institution provide a supportive environment for the following forms of diversity? (a. Racial/ethnic identity; b. Gender Identify) 1 = very little to 4 = very much

Analysis

To answer our first research question on the differences in the level of faculty interaction with their students by faculty gender and race/ethnicity, a series of t-tests were used to compare mean scores of student-faculty interaction between male and female faculty members and a set of one-way ANOVA to compare the scores across the five racial/ethnic groups of faculty. To answer our second research question about the college environments and faculty experiences that are linked to a higher level of interaction with students among faculty members, hierarchal multiple regression was employed using forward method with all the independent variables listed in Table 1 with the full sample of 4,096 faculty members. Using the results of that model, the independent variables that loaded in the final model for the aggregate sample were then entered into seven separate multiple regression equations to examine how the effects of college environments and faculty experiences on the frequency of faculty's interactions with students differ by faculty gender and race/ethnicity (third research question).

Results

Gender and Racial Differences in Faculty's Interactions with Students

As shown in Table 2, significant differences in the amount of student-faculty interaction exist based on faculty members' gender and race. These differences were apparent in the factor scale variable as well as three of the individual items measuring specific types of student-interaction (i.e., talked about career plans, discussed course topics outside of class, and discussed academic performance). On average, female faculty (M = 35.85, SD = 12.64) members report engaging in significantly more interaction with students than their male peers do (M =33.74, SD = 12.41; $t(4,200) = 1.17$, $p < .001$). Furthermore, Black faculty members report the highest levels of student interactions (M = 38.83, SD = 12.77), compared to their peers in other racial groups whereas Asian faculty members reported some of the lowest levels of student interactions (M = 33.38, SD = 12.65; $F(4, 4197) = 5.94$, $p < .001$). Meanwhile, Hispanic faculty members (M = 35.13, SD = 13.11) generally reported higher levels of student interactions than all other groups expect for Black faculty members, with their frequency of discussing academic performance with students (M = 2.99, SD = .72) significantly higher than that of White faculty members (M = 2.82, SD = .72; $F(4, 4197) = 7.08$, $p < .001$).

Table 2. Differences in Mean Values of Student-Faculty Interaction by Gender and Race.

Faculty Demographic	Student-Faculty Interaction (Factor Scale)	Talked about career plans	Activities other than coursework	Discussed course outside of class	Discussed academic performance
Female	35.85**	3.04**	2.40	2.82*	2.92**
Male	33.74**	2.91**	2.35	2.74*	2.75**
Asian [A]	33.38 [B]	2.76 [B, W, M]	2.37	2.71	2.83 [B]
Black [B]	38.83 [A, H, W]	3.21 [A, H, W]	2.58	2.91 [H, W]	3.06 [A, W, M]
Hispanic [H]	35.13 [B]	2.96 [B]	2.30	2.78 [B]	2.99 [W]
White [W]	34.70 [B]	2.98 [A, B]	2.37	2.77 [B]	2.82 [B, H]
Multiracial [M]	35.58	3.01 [A]	2.43	2.89	2.79 [B]
Total Sample	34.84	2.97	2.38	2.78	2.84

Note. Significant differences at the .05 level in values between racial groups are indicated by abbreviations in brackets.
N values = 2,192 females, 2,010 males, 299 Asian, 185 Black, 168 Hispanic, 3,391 White, and 159 Multiracial
*p < .01; p** < .001

Predictors of Faculty's Interactions with Students

Multiple regression analysis revealed several faculty characteristics and college environments that significantly predicted levels of student-faculty interaction. The results indicated that ten independent variables explained 21% of the variance in student-faculty interaction (R^2 = .21, F(13, 4082) = 83.24, p < .001). Like the t-test results, being a male faculty member negatively influenced the amount of student-faculty interaction reported. With respect to academic disciplines, being a faculty member in the sciences (negatively) or professional programs (positively) contributed to the frequency of student-faculty interaction. Other positive predictors of frequent student-faculty interaction included full-time status, time spent advising, the number of courses taught, time spent on service activities, and time spent on teaching activities. The two environmental variables that made significant positive contributions to levels of student-faculty interaction were faculty perception of institutional values and faculty perception of their students' quality of interactions with others on campus. Refer to Table 3 for full regression analysis results.

Table 3. Standardized Regression Coefficients of Faculty Experiences and College Environments that Affect the Frequency of Student-Faculty Interaction.

Independent Variables	Beta
Faculty Member Demographics	
Male	-.06**
Institutional Characteristics	
Institutional Size	-.03
Private	.00
Academic Discipline of Faculty	
Sciences	-.06**
Professional Programs	.04
Faculty Experiences	
Full-time Appointment	.11**
Academic Rank	.01
Time Spent Advising	.28**
Number of Courses Taught	.14**
Time Spent on Service	.16**
Time Spent Teaching	.04*
College Environments	
Faculty Perception of Institutional Values	.05**
Quality of Interactions	.05*
	Total Adjusted R^2 = .21

Note: N = 4,096

Conditional Effects of College Environments and Faculty Experiences

Lastly, we conducted additional multiple regression analyses by separating our faculty sample across different gender and racial groups to investigate how the effects of college environments and faculty experiences on the frequency of faculty's interactions with students differ by faculty gender and race/ethnicity. The separate regression models identified some differences in the magnitude of the effects of several independent variables on student-faculty interaction depending on faculty gender and race (Table 4 provides full results.). For example, the regression analysis using only female faculty members explained 23% of the variance in student-faculty interaction (R^2 = .23, F(13, 2115) = 48.75, p < .001) but only identified seven significant independent variables. For women, neither teaching in professional programs nor time spent teaching significantly contributed to increased amount of student-faculty interaction. The regression findings for male faculty members more closely mirrored the full sample, identifying the same nine faculty and environmental experiences as significantly affecting the frequency of student-faculty interaction; however, the model was not as strong and only explained 18% of the variance (R^2 = .18, F(13, 1953) = 33.32, p < .001).

Table 4. Standardized Regression Coefficients of Faculty Experiences and environments that Affect the Frequency of Student-Faculty Interaction by Gender and Race.

Independent Variables	Gender		Race				
	Female	Male	Asian	Black	Hispanic	White	Multi-racial
Faculty Member Demographics							
White	.01	.02					
Male			-.02	-.15*	-.01	-.06***	-.04
Institutional Characteristics							
Institutional Size	.00	-.05	-.06	-.06	.05	-.03	-.09
Private	.02	-.03	.07	-.07	.10	-.01	.02
Faculty Academic Discipline							
Sciences	-.05**	-.06**	-.01	.13	-.15*	-.07***	-.01
Professional Programs	.03	.05*	.08	.22**	-.06	.02	.09
Faculty Experiences							
Full-time Appointment	.12***	.08***	.06	.02	-.04	.13***	.03
Academic Rank	.04	-.02	.06	.08	.05	.00	.02
Number of Courses Taught	.14***	.14***	.18**	.22**	.05	.13***	.09
Time Spent Advising	.29***	.27***	.20***	.25**	.36***	.28***	.36***
Time Spent on Service	.16***	.15***	.16**	.20*	.10	.15***	.16
Time Spent Teaching	.02	.06*	.09	-.03	.06	.04*	-.04
College Environments							
Faculty Perception of Institutional Values	.04*	.07**	.12*	.16*	-.11	.05**	.11
Quality of Interactions	.05*	.05*	.09	.06	.21*	.04*	-.03
Total Adjusted R^2	.23***	.18***	.21***	.26***	.21***	.21***	.18***

Note: *N* values = 2,129 females; 1,967 males, 287 Asian, 169 Black, 158 Hispanic, 3,325 White, and 157 Multiracial

*p < .05; ** p <.01; ***p < .001

When the faculty sample was subdivided into groups based on race, the regression equation for Black faculty members explained the most variance ($R^2 = .26$, $F(13, 155) = 5.49$, $p < .001$) but with only six independent variables making a significant contribution—gender, professional programs as the faculty member discipline, number of courses taught, time spent advising, time spent in service, and faculty perception of institutional values. As the largest racial group in this

study, the model for White faculty members mirrored the aggregate model, with one exception—professional programs as a discipline did not significantly affect SFI—and explained 21% of the variance ($R^2 = .21$, $F(13, 3311) = 68.72$, $p < .001$). Four independent variables (number of courses taught, time spent advising, time spent in service, and faculty perception of institutional values) explained 21% of the variance in student-faculty interaction among Asian faculty members ($R^2 = .21$, $F(13, 273) = 6.66$, $p < .001$). Teaching in the science disciplines negatively affected the amount of student-faculty interaction among Hispanic faculty members whereas time spent advising and faculty perceptions of the quality of student interactions among various groups on campus positively contributed to increased amount of student-faculty interaction for this population. Overall, the regression equation for Hispanic faculty members explained 21% of the variance ($R^2 = .21$, $F(13, 144) = 4.17$, $p < .001$). Interestingly, only one independent variable, time spent advising, made a significant and positive contribution to SFI among faculty members who identified as Multiracial. However, that one faculty experience explained 18% of the variance in the dependent variable ($R^2 = .18$, $F(13, 143) = 3.65$, $p < .001$).

Limitations

This study is limited in several respects. First, data reported in the FSSE survey is self-reported and may not represent the actual commitments or experiences of the faculty. For example, the frequency with which a faculty member reports interactions with students may not reflect the actual experiences of the student. Similarly, reported time spent on activities could be over- or under-estimated unless each faculty member referred to a time log of hours spent on such activities. Second, the sample for this study does not represent the national characteristics of post-secondary faculty with regard to tenure, full-time appointment, and faculty race. Tenured and full-time faculty in this sample are 13.5% higher and 23% higher, respectively, than national data, and the proportion of Asian, Black, and Hispanic faculty were 2 to 5% lower than nationally reported data. Thus, the predictors identified in this study may not be generalized across all faculty populations. Third, the data interpreted in this study is not causal and should be interpreted as correlational. Further, the predictor variables identified in this study only identify potential relationships between faculty characteristics and experiences with student-faculty interaction and do not explore faculty motivations for interacting with students. Lastly, the data set we analyzed did not include any student-level characteristics such as gender, academic discipline, race, or years in college. The frequency and nature of student-faculty interaction is complex and is affected as much by the student as the faculty member. Interpretation of data in this study provides insights about faculty and institutional factors that influence faculty's interactions with students and does not include reasons for why the frequency (or lack thereof) of interactions occur or the nature of the interactions with the students. Future research is needed to further understand the complexity of factors that predict faculty interactions with students.

Discussion and Implications

The findings of this study contribute to our understanding of the faculty characteristics and work environments that are linked to higher levels of faculty interaction with students, extending the research on student-faculty interaction from a predominant focus on student behaviors to a focus on faculty behaviors. By doing so, our study provides insights for institutional leaders to create institutional environments that encourage faculty to interact more frequently and meaningfully with students. In this study, we used a national data set administered to faculty that included faculty member's perceptions of their institution, how they allocate their work time, and their professional

and personal characteristics. A series of t-tests, one-way ANOVA, and hierarchical multiple regression techniques were used to analyze differences in the level of and predictors of faculty interactions with students depending on faculty gender and race. Our results are consistent with prior research that female faculty and faculty of color tend to interact more frequently with students (Eagan & Garvey, 2015; Hurtado et al., 2012; Umbach, 2006). However, our research adds to the literature by identifying faculty experiences and work environments that contribute to higher levels of faculty interaction with students, disaggregated by gender and race.

We found that women faculty and Black faculty in our sample tended to interact with their students more frequently than their male and White peers. The higher frequency of interaction with students for faculty of color may be explained by previous qualitative findings that interacting with students, especially racially minoritized students, may contribute to their improved sense of belonging at the institution (Wright-Mair, 2020). On the other hand, we also speculate that systemic issues related to gender and racial bias may demand faculty of color and female faculty to interact more frequently with students. Padilla (1994) explains that faculty of color feel obligated to "show good citizenship to the institution" (p. 26) when called upon by administration who assume that faculty of color are experts where cultural awareness and expertise are needed. Such "cultural taxation" (p. 26) is experienced when faculty of color are expected to teach courses related to diversity (Haynes & Tuitt, 2020) or are expected to represent matters of diversity on institutional committees (Padilla, 1994). Similarly, inequitable workload expectations may be placed upon female professors who experience greater demands from students because female faculty are perceived as more nurturing than their male counterparts (El-Alayli et al., 2018). Hirschfield and Joseph (2012) extend Padilla's definition of cultural taxation to "identity taxation" (p. 2014) to include female faculty and other historically marginalized faculty who experience similar workload demands. Though faculty efforts may benefit the institution and the students whom they support, faculty of color and female faculty may be "spending [inequitably] considerable time" (Padilla, 1994, p. 26) interacting with students to manage tensions related to gender, racial, and ethnic issues in their department or institution.

Our findings also identified some faculty experiences that are related to higher levels of interaction with students including time spent advising students, service activities such as committee and administrative work, number of courses taught, and full-time faculty appointments. In the current study, the strongest positive predictor of faculty interaction with students was time spent advising students, confirming the theoretical framework on faculty work by Blackburn and Lawrence (1995) who suggest that faculty time spent on specific activities and the level of effort lead to productivity outcomes, such as student-faculty interaction. Advising and service activities are often associated with mentoring students both in and out of the classroom through formal academic advising and career mentoring relationships that help students persist and complete their degrees. Despite faculty observations of increased anxiety, depression, and stress among college students, faculty perceive their role as important because they believe their care for students through these activities directly impacts student success (Goerisch, 2019).

Results from this study also substantiate prior research on full-time faculty who engage in more substantive interactions with students than part-time faculty on both course-related interactions and time spent with students outside of class on activities such as committee work or campus organizations (Berlin & Brock, 2021; Cox et al., 2010; Ran & Sanders, 2020; Umbach, 2007). We highlight this finding because institutions are facing economic pressures to lower costs which has resulted in hiring more part-time faculty than institutional leaders feel is best for meeting institutional needs such as student learning (Kezar et al., 2019; Kezar & Gehrke, 2016). Such pressures threaten student success if the level of student-faculty interaction in undergraduate education decreases (Goerisch, 2019; Kezar et al., 2019). Goerisch explains how one university's

budget cuts led to increased course enrollments and the perception among faculty that university and government leaders do not value activities such as advising or mentoring, both of which led to decreased faculty engagement in such activities.

Interestingly, the impact of academic discipline on the frequency of faculty's interaction with their students was similar to prior research findings on the impact of academic discipline on the frequency of students' interaction with their professors. (Kim & Sax, 2011; Kim et al., 2015). For example, students in disciplines other than the hard sciences reported greater frequency of working with faculty on activities other than coursework and interaction with faculty outside the class on course related topics (Kim et al., 2015). Comparatively, the current study found that teaching in the sciences negatively contributed to the level of faculty's interaction with their students. Hurtado et al. (2011) suggest that students in the sciences perceive faculty as reluctant to meet with students. Faculty confirm such hesitancy because demonstration of publication and service-related activities are required in the faculty evaluation and reward systems, but student-faculty interaction is not. In contrast, we found that teaching in professional programs (i.e., health professions, communications majors, education majors, and other social science professions) positively contributed to faculty's frequent interaction with students.

It is also noteworthy that our findings demonstrated that a positive campus climate is related to higher levels of student-faculty interaction for all racial and gender groups of faculty members except Multiracial faculty. Findings from prior research indicate that a supportive campus environment with high quality interpersonal relationships facilitates student learning and success (Lundberg, 2012; Lundberg & Schreiner, 2004; NSSE, 2020; Umbach & Wawrzynski, 2005) and that faculty who perceive their institution as more committed to diversity and inclusion also perceive that students have higher quality relationships with others on campus (BrckaLorenz, 2018). Students who perceive a more positive campus climate tend to report higher levels of interactions with faculty (Kim & Lundberg, 2022). Similarly, our findings indicate that when faculty perceive a positive campus climate, faculty from all racial and gender groups, except for Multiracial faculty, interact more frequently with their students. These findings suggest that a positive campus climate impacts *both* students and faculty and fosters more frequent student-faculty interactions.

Lastly, we found that predictors of faculty interaction with students vary by race and gender of faculty members. Our study found fewer positive predictors of student interaction for females than males, yet the model explained a greater variance in the frequency of faculty interactions with students for female faculty. Being in a professional program and number of courses taught were not significant for female faculty, despite contrary evidence that professional programs tend to facilitate greater student-faculty interaction and that teaching more courses exposes the faculty member to more students. This finding supports evidence that female faculty, regardless of teaching load or academic discipline, experience higher workloads such as student advising and service activities (El-Alayli et al., 2018; Gordon et al., 2024; O'Meara et al., 2017). Comparatively, advising was a positive predictor for all gender and racial groups, but the magnitude of the effect was greatest for Hispanic and Multiracial faculty. Current literature suggests that racially minoritized faculty are committed to fostering meaningful relationships with students of color regardless of their workload because of a deep desire to mentor the next generation of professionals (Salinas et al., 2020, Wright-Mair, 2020). Salinas found that for Latinx faculty, this type of relationship mirrors Latin American cultural values of family and the need for supportive relationships to combat feelings of isolation and promote success. These faculty became successful in the academy because of supportive professional mentoring relationships and thus want to "pay it forward" (p. 131) to the next generation of students.

Similarly, the college environment was a significant positive predictor for all gender and racial groups except Multiracial faculty but was more significant for Black and Hispanic faculty. This

finding is significant, given the racial and gender bias many minority and female faculty experience from students, colleagues, and academic leaders. Research indicates that underrepresented faculty often confront racial and gender bias in faculty evaluation and rewards structures that negatively impact their promotion and retention (Gordon et al., 2024; Kelly-Woessner & Woessner, 2006; Lazos, 2012; Richards, 2019). Richards, a Black, female professor, suggests that "students are more likely to be hostile to a Black female professor with rigorous academic expectations because we challenge both racialized and gendered expectations of our incompetence and we disrupt the role expectations of women as nurturers" (p. 138). Such racially biased perceptions from students can be reflected in student evaluations of faculty, which are thus used to inform departmental and university leaders on rehiring and promoting faculty. Faculty of color who encounter such systemic bias experience fear or psychological distress. Our findings suggest that faculty, particularly racially minoritized faculty, who perceive the college environment as one where individuals have quality interactions with one another and where the institution provides resources and practices that take discrimination and harassment seriously, interact with students more frequently. It is worthy to note that Multiracial faculty was the smallest racial group in this study, and the regression model for this population provided few significant findings. However, because the faculty population is becoming increasingly diverse and many colleges and universities are interested in continued diversification of their faculty workforce, this group merits further investigation by educational researchers in future studies to understand the impact of their complex cultural identities (Harris et al., 2021) on their unique contributions and challenges in the academy.

Implications

Higher education is under tremendous stress with enrollment challenges, financial strains, decreased perception of the value of a college degree, and increased costs, as evidenced by the rising number of college closures that have occurred in recent years (Unglesbe, 2024). Colleges and universities are in need of intentional strategies to increase student success and retention, which can include increased emphasis on educationally effective practices such as student-faculty interaction. Implications of this study are to assist faculty and university leaders in gaining greater awareness of the positive predictors associated with higher levels of faculty interaction with students. However, these findings must be critically examined considering that our research confirms existing literature that faculty of color and women faculty tend to carry higher advising and service loads than their male and White counterparts. If our speculation that systemic issues related to gender and racial bias is true, we need to recognize that faculty of color and women faculty may experience "identity taxation" (Hirschfield & Joseph, 2012, p. 214) and increased expectation to be responsible for the 'invisible labor' (Gordon et al., 2024, p. 285) of student care as compared to their White and male counterparts. Such demands may be a result of the neoliberal forces on the academy that include decreased educational funding, pressuring faculty to maintain higher teaching and service loads (Kezar et al., 2019) and an increasingly diverse student body who seek faculty with similar gender and racial characteristics. These factors may contribute to experiences of faculty of color and women faculty who often feel higher levels of stress and increased workloads, experience shorter retention in their employment, and are promoted less frequently that their White and male counterparts (Eagan & Garvey, 2015; Gordon et al., 2024), Guarino & Borden, 2017; Jayakumar et al., 2009; O'Meara et al., 2020). Furthermore, they may experience gender and racial bias from students who may expect more from female faculty (El-Alayli et al, 2018) and view women faculty and faculty of color as less credentialed than male and White faculty (El-Alayli et al, 2018, Lazos, 2012, and Richards, 2019). Institutional and departmental leaders must encourage White and male faculty to acknowledge the burden such systemic structures place on their colleagues (Gordon et al., 2024) and

to share in the workload by creating inclusive environments that support and encourage students of color.

Our study did not include an investigation of faculty motivations for higher levels of interaction with students. However, the theoretical framework by Blackburn and Lawrence (1995) suggests a critical interplay between the characteristics and values of faculty and the institutions they serve to describe faculty motivations, behaviors, and productivity. They report that a professor's perceived institutional value of teaching and the professor's values about teaching led to variations of teaching effort. When the professor's value of teaching excellence was similar to the perceived institutional value of teaching excellence, faculty demonstrated greater efforts in teaching. Our study confirms a similar relationship for Hispanic faculty who value mentoring students out of a desire to "pay it forward" (Salinas et al., 2020, p. 131) and who perceive the institution as committed to a positive environment through quality interactions. Such alignment of values may seek to explain why Hispanic faculty exhibit higher levels of interactions with students.

The most significant finding of our study is that a positive campus environment is related to higher levels of faculty interaction with students regardless of faculty gender or race. Blackburn and Lawrence (1995) suggest that professors' understanding of the institutional context directly affects the behavior of faculty. In other words, policies and evaluation/rewards structures have an impact on faculty behavior. Our study confirmed that women faculty and faculty of color interact more frequently with students than their White and male colleagues and that, especially for historically underrepresented groups (i.e., Black and Hispanic), such campus environments had a greater effect on student-faculty interaction.

We must, however, caution that our study does not explain whether the higher levels of faculty interaction with students produces the quality of relationships needed to help students develop, persist, and complete college. Nor can we assume a causal relationship between a positive college environment and higher levels of student-faculty interaction. Interestingly, a study by Perry et al. (2022) noted that greater gender diversity was negatively associated with institutional outcomes such as student persistence and completion. They posit that the nature of faculty work and the competitive academic market create social pressures among faculty to prioritize research and scholarly activities above teaching and mentoring students. However, Perry et al. also reported that a more positive diversity climate moderated the negative effects of institutional outcomes. Drawing on organizational research, Ali et al. (2011, 2015) and Richard et al. (2013) report that when decision-making processes include a diverse workforce and organizational policies promote inclusiveness, the benefits of a diverse workforce increase organizational performance. Increasing a positive diversity climate has been shown to increase student retention (Perry et al., 2022), decrease turnover of diverse employees (Ali et al, 2015), and increase retention and satisfaction among racially diverse faculty (Jayakumar, 2009). University and departmental leaders must thus put efforts toward systemic structures that promote a positive campus climate in order to advance both the success of students and of faculty.

Important considerations to promote a positive campus climate for faculty can be guided by similar results that students have a more positive perception of campus climate when they feel as if they are treated equitably (Kim & Lundberg, 2022). Systemic structures that support fair and equitable treatment of faculty include policies and practices related to hiring, retention, and tenure and that demonstrate awareness and value of gender and racial differences among the faculty (Gordon et al., 2024). For example, gender-focused policies and practices have positively increased gender diversity in organizations (Ali et al., 2015). In the university setting, such policies may reflect greater flexibility in promotion and tenure processes for women. Additionally, valuing teaching and mentoring (Gordon et al., 2024) as well as the scholarship of women faculty and faculty of color, which is often focused on diversity, may increase retention of female faculty and faculty of color

(Haynes & Tuitt, 2020; Perry et al., 2022). Hiring and retention practices that are systemically placed to support underrepresented faculty and staff and that promote values of diversity and inclusiveness may reduce the burden of identity taxation with formalized mentoring and support for all faculty (Haynes & Tuitt, 2020, Richards, 2019). Furthermore, Richards posits that institutional workshops and training on diversity brings awareness to gendered and racialized bias and exposes how such bias enforces discriminatory practices (Lazos, 2012). Such awareness may assist White and male faculty to recognize discriminatory practices that negatively affect their colleagues and departmental leaders to distribute service and advising loads more equitably among all faculty within a department, rather than simply assume the work will be covered by female faculty and faculty of color. Results from our study indicate that promoting a positive campus climate for faculty positively contributes to higher levels of interaction with students, a critical practice that fosters student success. Future research needs to focus on a more qualitative understanding of faculty lived experiences and their effects on interactions with students, including their social identities, external pressures on institutional challenges such as enrollment declines and increased costs, campus climate, and faculty hiring, promotion, and retention practices.

Conclusion

Student-faculty interaction is a crucial college experience that contributes to student success. This study offers insights into how faculty members' integral role in facilitating frequent interactions with students is affected by faculty characteristics, work experiences, and institutional environments. Findings demonstrate that the level of interaction differs by faculty gender and race and that the effects of faculty experiences and perceptions of the institutional environment on the frequency of faculty interaction with students also differ by faculty gender and race. By understanding the predictors associated with higher levels of faculty interaction with students, we suggest that institutional leaders consider the challenges and sacrifices some faculty may face and create environments that value faculty efforts to help students succeed.

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