

Running head: STUDENT INTERACTION ACROSS DIFFERENCE

How Gender and Race Moderate the Effect of Peer Interactions across Difference on Student and

Faculty Perceptions of the Campus Environment

Thomas F. Nelson Laird and Amanda Suniti Niskodé

Indiana University

Author note: Thomas F. Nelson Laird, Assistant Professor, and Amanda Suniti Niskodé, Graduate Associate, Indiana University Center for Postsecondary Research. Please direct correspondence to the lead author at Indiana University Bloomington, 1900 East Tenth Street, Eigenmann Hall Suite 419, Bloomington, IN 47406-7512, or [tflaird@indiana.edu](mailto:tflaird@indiana.edu).

Abstract

Relying on data from 17,141 students and 9,668 faculty who participated in the 2006 administrations of the National Survey of Student Engagement and the Faculty Survey of Student Engagement, respectively, this study illustrates how student interactions across difference positively affect student and faculty perceptions of the campus environment, but that the magnitude of the effect of these interactions varies by racial/ethnic group and gender.

## How Gender and Race Moderate the Effect of Peer Interactions across Difference on Student and Faculty Perceptions of the Campus Environment

Despite public and political opposition to affirmative action policies, researchers continue to demonstrate the positive impact diversity has on educational outcomes for college students (Gurin, Dey, Hurtado, & Gurin, 2002; Hurtado, Milem, Clayton-Pedersen, & Allen, 1999; Milem & Hakuta, 2000; Orfield, 2001; Smith et al., 1997). Positive outcomes of experiences with diversity include working with people from different backgrounds (Hu & Kuh, 2003a), intellectual, social, and civic development (Chang, Astin, & Kim, 2004), and self-confidence and social agency (Nelson Laird, 2005). While some argue that having a diverse student population can lead to negative outcomes for students and campuses (Bloom, 1987; D'Souza, 1991; Wood & Sherman, 2001), the evidence suggests that such negative effects are not widespread.

The rationale for diversity in higher education follows a simple logic. A campus needs to be diverse in order to adequately provide informal and formal experiences with diversity for the campus community. Then, formally and informally, diversity experiences will positively affect a wide range of outcomes. With a strong empirical base of support (e.g., Gurin et al., 2002; Smith et al., 1997), this logic informs teaching and administrative practices on many campuses.

Prominent indicators in the dialogue about diversity in higher education include measures of perceptions of the campus environment (i.e. campus climate measures) and interactions with diverse peers. In work that focuses on interactions across difference, researchers have found the amount of student informal interaction with diverse peers has a positive effect on perceptions of the campus environment (Chang, 1999; Hurtado et al., 1999). There is also ample evidence that student perceptions of the campus environment can differ by race (Ancis, Sedlececk, & Moher, 2000; Cuyjet, 1997; Saenz, Ngai, & Hurtado, 2006; Rankin & Reason, 2005; Reid &

Radhakrishnan, 2003) and gender (Drew & Work, 1998). And, though the effects of diversity experiences on some student perceptions and outcomes are known to vary by race and gender (Gurin et al., 2002; Pascarella, Palmer, Moye, & Pierson, 2001), little is known to date about how gender and race/ethnicity moderate the effects of peer interactions on perceptions of the campus environment.

How diverse interactions effect faculty perceptions is also an unexplored realm in this line of work. Though many faculty play an important role in introducing diversity into the classroom, and on campus more generally, some are hesitant to incorporate diversity into their work (Maruyama & Moreno, 2000). Indicators such as personal demographics (e.g., race, gender), professional characteristics (e.g. tenure, rank), perception of institutional commitment to diversity (e.g. perception of institutions as having a high level of curricular diversity), and faculty participation in diversity-related activities (e.g. workshops) are known predictors of faculty bringing diversity into their courses (Hurtado, 2001; Maruyama & Moreno, 2000; Mayhew & Grunwald, 2006; Milem, 2001).

Yet, faculty members are often not in control of whether students from diverse backgrounds interact. Regardless of their agency in fostering diverse peer interactions, faculty are sometimes present when those interactions happen, particularly in their courses, which can certainly shape their perceptions of the campuses shared by students and faculty. So, it is somewhat surprising that results from the faculty are largely missing in the empirical work on how student experiences with diversity affect the campus environment.

By drawing on data from both students and faculty, this study seeks to examine the effect of student interactions across difference—those that students are having and those that faculty members are observing in their courses—on students' and faculty members' perceptions of the

supportiveness of the campus environment, and show how this effect varies by racial/ethnic group and gender. To further demonstrate the need for study, the following discussion provides a brief overview of the literature regarding campus environment, the effect of diverse interactions on perceptions of campus environment, and the faculty role in students' diverse interactions.

### *Perceptions of Campus Environment*

“Campus environment” is undoubtedly a multidimensional construct. Numerous scholars have developed their own conceptualizations of campus environment with varying emphasis placed on physical factors (Griffith, 1994; Miller & Banning, 1992; Stern, 1986; Sturner, 1973; Thelin & Yankovich, 1987), human characteristics and subcultures (Astin, 1968; Clark & Trow, 1966; Holland, 1973, Moos, 1986; Kolb, 1983), and organizational factors (Hage & Aiken, 1970; Strange, 1981; 1983b).

Other researchers have approached the study of campus environment as a construction of people's perceptions of various college characteristics (Baird & Hartnett, 1980; Moos 1979, Moos, 1994a; Pace & Baird, 1966; Walsh, 1973). The perceptual approach is important because of the strong connections between the perceived environment and students' satisfaction, learning, and development. In their extensive review of the literature on student success, Kuh, Kinzie, Buckley, Bridges, and Hayek (2006) found that “the single best predictor of student satisfaction with college is the degree to which they perceive the college environment to be supportive of their academic and social needs” (p. 40). More specifically, they reported that students' perceptions of the environment influence levels of satisfaction and the degree of effort placed on educationally purposeful activities such as active and collaborative learning. This, in turn, directly effects their personal development and learning (Hu and Kuh 2002, 2003b; Kuh and Hu 2001a, 2001b; Kuh, Hu, and Vesper 2000). Thus perceptions of the campus environment should

not be ignored; how supportive an institution is perceived to be has numerous impacts on the multiple facets of student success.

It is also important to note that within the existing literature on perceptions of the campus environment, “campus environment” has been defined and measured in a variety of ways. Many researchers have narrowed their study of campus environment to feelings or perceptions regarding race or diversity (Hurtado & Carter, 1997; Hurtado, Carter, & Kardia, 1998; Hurtado et al., 1999; Nora & Cabrera, 1996). Conversely, others have defined environment more broadly, looking at the perception of campus overall (Ancis et al., 2000; Davis, 1995; Drew & Work, 1998; Fisher & Hartmann, 1995; Johnson-Durgans, 1994; Nettles & Johnson, 1987; Reid & Radhakrishnan, 2003; Patterson, Sedlacek & Perry, 1984). The present study’s conceptualization of campus environment is more in line with the latter, examining students’ and faculty members’ perceptions of 1) students’ relationships with others on campus and, 2) how much their institutions emphasize supporting various academic and non-academic activities of students.

#### *Effect of Interactions across Difference on Perceptions of Campus Environment*

Extensive research has shown that students’ interaction with diverse peers is related to perceptions of the campus environment (Astin, 1993; Chang, 1999; Gurin, 1999; Hurtado, Milem, Clayton-Pedersen, & Allen, 1998; 1999; Milem & Hakuta, 2000). This holds true across samples with multiple racial/ethnic groups as well as in studies of specific racial group’s perceptions of the environment. For example, in their study of 370 Latinos across nine campuses, Hurtado and Ponjuan (2005) found that “Latinos who reported positive interactions with diverse peers during college and participation in academic support programs tended to score higher on the sense of belonging index, indicating there are both informal and college-facilitated activities that create a feeling of inclusiveness in college” (p.245). While most of the literature indicates

that such diverse interaction leads to positive perceptions of the environment, a limited amount of research has raised questions about that effect, at least at the institutional level (Pike & Kuh, 2006).

Students' perceptions of the campus environment also vary by race/ethnicity. Many researchers have explored this phenomenon yielding mixed results. Most of the studies indicate that students of color view the campus environment less favorably than Whites (Johnson et al., 2007; Reid and Radhakrishnan 2003; Rankin & Reason, 2005). A few studies have found other results (e.g., Cureton, 2003), suggesting that what aspect of the environment is being measured may influence the results.

Gender can also be a significant factor in students' views of the campus climate. The notion of the "chilly climate" for women was studied extensively in the 1980s and 90s as many researchers found that college women were not receiving an equitable education (Hall & Sandler, 1982; Sandler, Silverberg, and Hall, 1996). However, as women now comprise over half of the student population within colleges and universities (Freeman, 2004), some question if gender is still an issue. In the past decade, studies examining gender have yielded inconsistent results. Depending on the outcomes measured, some have found the campus environment to be less supportive for women than for men, while other have found few if any gender differences (Drew & Work, 1998; Pascarella et al., 1997; Rice, 1991; Salter & Persaud, 2003; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999).

As demonstrated above, most of the previous research indicates that students' perceptions of campus environments can be shaped by interactions with diversity and can vary by race and gender. However, none of that prior work indicated whether the effect of diverse interactions on students' perceptions varied by these social groups, even though previous research found, for

example, that the effects of peer interaction on other valuable outcomes, such as intellectual engagement, motivation, and citizen engagement, vary for Whites, African Americans, and Latino students (Gurin, 1999). Further, Chang, Astin, and Kim (2004) concluded that while diverse interactions have positive effects on students' civic, social, and intellectual development, the effect is not necessarily consistent among White students and students of color. And, although diversity experiences can also influence students' critical thinking skills, the effect can vary at different points during the college career depending on students' race and/or gender (Pascarella, Palmer, Moye, & Pierson, 2001). Given these findings, it is imperative to determine how the effects of students' interactions with diverse peers vary by race and gender when perceptions of the campus environment are the outcomes of interest. The present study seeks to address this along with questions about how student interactions across difference affect faculty.

#### *Faculty Role in Students' Interactions across Difference*

Faculty can play a major role in encouraging students to engage in diverse interactions. A limited amount of research has examined how issues of diversity are incorporated or addressed in the classroom (Gonzalez & Padilla, 1999; Hurtado, 2001; Maruyama et al, 2000; Milem, 2001) and factors that influenced faculty's incorporation of diversity-related content in their courses (Mayhew & Grunwald). While a number of studies have shown that students are positively affected by having diverse interaction in the classroom (e.g., Nelson Laird, 2005), little is known about the influence on faculty.

By encouraging or observing diverse interactions in the classroom setting, faculty members' perceptions of their campuses may be influenced. The logic for the faculty is the same as it is for students, only the faculty members are, potentially, in a more passive, observational role. As argued by Gurin et al. (2002), diverse interactions, through the challenges they present,



promote learning and development. Going through that learning process, as students do, or observing or encouraging that process, as faculty do, will affect how the settings in which those diverse interactions take place are viewed.

### Purpose of the Study

While research has shown a positive relationship between interactions across difference and student perceptions of their campus environments, relatively little has been done to examine whether this effect is consistent across different subgroups of students and little or no work has been done to test the effect faculty facilitation or observation of student interactions across difference has on faculty perceptions of the campus environment. Consequently, drawing on data from the National Survey of Student Engagement (NSSE) and the Faculty Survey of Student Engagement (FSSE), this study aimed to determine the effects of student interactions across difference on perceptions of the campus environment by examining how much the effect varies by racial/ethnic group and gender among both students and faculty members.

### Methods

#### *Data Sources and Instruments*

The data used in this study come from colleges and universities that participated in the 2006 administrations of both NSSE and FSSE. Drawing on randomly selected samples of first-year and senior students at baccalaureate degree-granting institutions, NSSE measures students' participation in educational activities, like active and collaborative learning and peer interactions across difference, empirically linked to valued outcomes (Chickering & Gamson, 1987; Kuh, 2001, 2003; Pascarella & Terenzini, 2005). Relying on institutionally selected samples of faculty—primarily samples of all undergraduate teaching faculty—FSSE measures the value and emphasis faculty members place on many of the same effective educational practices captured

with NSSE. To see the 2006 NSSE and FSSE survey instruments visit their respective Web sites ([www.nsse.iub.edu](http://www.nsse.iub.edu) and [www.fsse.iub.edu](http://www.fsse.iub.edu)).

The 111 institutions that participated in both NSSE and FSSE in 2006 represent a wide cross-section of U.S. colleges and universities. In particular, 14% were doctoral, 39% were master's institutions, 13% were liberal arts colleges, 23% were baccalaureate general institutions, and 12% fit under other categories in the 2000 Carnegie classification. Close to 56% were private institutions.

### *Samples*

*Students.* After deletion for missing data, the student respondents consisted of 17,141 first-year students (46%) and seniors (54%) from the 111 colleges and universities. The size of the undergraduate population and an institution's chosen mode of administration (online, paper, or a combination of online and paper questionnaires) determined the number of students sampled at each institution. Response rates varied across institutions from 13% to 81%, with an average of 37%. Approximately 68% of the student respondents were women and 82% were White (6% African American, 3% Asian American, 6% Hispanic American, 1% Native American, and 2% multi-racial or ethnic. Non-US citizens were removed from the sample since their understandings of interactions across difference could be rooted in their country of origin. Over one third (35%) were first-generation college students, 27% transferred from another institution, 52% lived on or near campus, about 10% were members of a social fraternity or sorority, and 90% were full-time students.

*Faculty.* The faculty sample for this study, after deletion for missing data, consisted of 9,668 faculty members. Institutions that participate in NSSE can choose to participate in FSSE and select their own sample of faculty to survey. Given that the focus of the survey is on

undergraduate teaching and learning, institutions are encouraged to submit contact information only for those faculty members who teach undergraduates. The vast majority of institutions survey all undergraduate teaching faculty. Response rates varied across institutions from 26% to 86%, with an average of 51%.

About 47% of the faculty respondents were women; 88% were White, 3% African American, 3% Asian American, 4% Hispanic American, 1% Native American, 1% Multi-racial or ethnic. Again, non-US citizens were removed from the sample. Most faculty members (84%) were working full-time. In addition, about 26% were lecturers or instructors, 25% were assistant professors, 24% were associate professors, and 25% were full professors. The average faculty member in the sample had taught at the college level for about 16 years prior to the 2005-06 academic year.

### *Measures*

We use two different measures of participants' perceptions of the campus in our study (Table 1). The institutional supportiveness scales measure, respectively, the amount students feel that their institutions emphasize support in their academic and non-academic lives and the amount faculty feel their institutions emphasize those kinds of support for students. The supportive relationships scales capture, respectively, the amount students feel supported by different groups on campus (other students, faculty, and administrative personnel and offices) and how much faculty members feel those same groups are supportive of students.

To measure student interactions across difference we use a two-item scale for both students ( $\alpha = 0.81$ ) and faculty ( $\alpha = 0.87$ ). Students were asked how often in the 2005-06 academic year they had serious conversations (1) with students of a different race or ethnicity than their own and (2) with students different from them in terms of religious beliefs, political

opinions, or personal values. Faculty were asked, after selecting a particular course section taught during the 2005-06 academic year, how often students in that course had the same kinds of serious conversations.

We used standard measures of race/ethnicity and gender. We also controlled for student, faculty, and institutional characteristics. See Appendix A for a description of all independent variables.

### *Data Analyses*

To estimate whether the effect of student interaction across difference on perceptions of the campus environment differed by race/ethnicity and gender, we ran four separate regression models, one each for the two supportiveness scales within each sample. Each model contained a student interaction across difference measure, a measure of gender, a measure of race/ethnicity, interaction terms, and control variables. Continuous variables, including the dependent measures, were standardized prior to entry into the models. All dichotomous independent variables were mean centered prior to running the analyses. The interaction terms were products of the standardized student interaction across difference indicator and each of the centered race/ethnicity and gender measures within each sample.

We standardized or mean-centered the independent variables (except for the interaction terms) in order to simplify the meaning and interpretation of the coefficients in the models and to reduce multicollinearity (Cohen, Cohen, West, & Aiken, 2003). By standardizing the dependent measures and leaving the dichotomous variables, such as discipline variables, with a one-unit separation, the unstandardized regression coefficients are akin to effect sizes with pooled standard deviations. Otherwise, as Cohen et al. (2003) point out, the standardized regression

coefficients for dichotomous measures are generally of little use because they are difficult to interpret.

### *Limitations*

This study has four primary limitations. First, it is limited by the fact that institutions self select to participate in NSSE and FSSE and that only first-year students and seniors are sampled. In addition, students and faculty with certain characteristics (e.g., female and White) tend to respond at higher rates. This combination of self-selected students and institutions requires some caution be used when generalizing our findings to all students and faculty at these institutions of higher education or all U.S. baccalaureate degree-granting institutions. At the same time, the institutions included in this study represent a wide cross-section of U.S. four-year colleges and universities and students and faculty mirror the populations at their respective institutions in many ways (NSSE, 2006).

Second, the number of respondents from most of the racial/ethnic groups other than White is relatively small. This affects the standard errors of the regression coefficients in our analyses for certain groups, particularly Native Americans, and raises concerns about the stability of the estimated effects. In our judgment, our numbers were small but sufficient (the smallest group, Native American faculty, had 57 respondents). It was important to retain as many groups in our analyses as possible so that groups like Native Americans and multi-racial/ethnic students and faculty were represented in the findings. These groups are too often missing from this type of empirical work due to sample size issues. We encourage future work to oversample these groups to improve the stability of these findings.

Third, the models used to predict student and faculty perceptions of campus support are limited in their scope. For example, some known predictors of perceptions of the environment,

like the quality of interactions, were not available to the researchers. As a result, this study should be viewed as exploratory. Future work in this area should attempt to capture a more complete predictive set of variables.

The final limitation deals with the scope of some of the variables in the study. In particular, the student interaction across difference measure is limited in scope in three important ways. It focuses solely on “serious conversations,” which are an important component of meaningful peer contact, but does not tap other aspects such as friendship across difference. In addition, the measure deals strictly with the amount of interaction and not the quality of those interactions, something other studies have found to be important when predicting student outcomes (e.g., Nelson Laird, 2005). Finally, for the faculty measure, it deals only with student interactions within class and not faculty interactions across difference. Similarly, the measures of student and faculty perceptions of the environment narrowly focus on the support being given to students. It is important for future studies to explore the differential effect of alternate peer interaction measures by race and gender on other measures of campus climate, including student and faculty perceptions of the racial climate as well as perceptions of how supported faculty feel.

## Results

The regression models predicting student and faculty perceptions of the supportiveness of the campus environment explained a small, but non-trivial, amount of variance. The student models explained 13% ( $F_{(36,17,104)} = 69.28, p < 0.001$ ) and 8% ( $F_{(36,17,104)} = 42.29, p < 0.001$ ) of the variance in institutional supportiveness and supportive relationships, respectively. The fit of the faculty models was similar, explaining 11% ( $F_{(35,9,632)} = 35.59, p < 0.001$ ) and 9% ( $F_{(35,9,632)} = 26.95, p < 0.001$ ) of the variance in institutional supportiveness and supportive relationships, respectively.

Table 2 contains the regression coefficients for the key independent variables (student interaction across difference, race/ethnicity, gender, and the interaction terms). Student interaction across difference is a significant positive predictor of all of the campus supportiveness measures, race/ethnicity is a significant, though inconsistent, predictor in all of the models, and gender is a small but significant predictor in three of the four models. At least one interaction term is significant in three out of four of the models.

#### *Student Regression on Institutional Supportiveness*

For students, the more one interacted across difference, the more positive one perceived institutional supportiveness ( $B = 0.19, p < 0.001$ ). Holding all else constant, a one standard deviation change in interaction across difference would, on average, correspond to an increase of nearly two tenths of a standard deviation in one's perceptions of institutional supportiveness, a modest-sized effect. In this model, the interaction terms using race/ethnicity and student interaction across difference were not statistically significant. However, based on the gender interaction term, the effect of student interaction across difference is slightly weaker for women than men ( $B = -0.03, p < 0.05$ ). Figure 1, which illustrates this interaction, shows that women generally report more positive perceptions of the environment than men. However, the more students interacted across difference, the more that gap shrank. At 1.5 standard deviations below the mean, the gap between women and men was approximately one tenth of a standard deviation. Yet at 1.5 standard deviations above the mean, the model suggests that men and women had almost equal average scores.

#### *Student Regression on Supportive Relationships*

Similar to the model above, the more a student interacted across difference, the more likely that student reported higher levels of perceived support in their relationships with other

students, faculty, and administrative personnel and offices ( $B = 0.17$ ,  $p < 0.001$ ), even after controlling for the effect of the student variables in Appendix A. This effect however was found not to be consistent by race/ethnicity or gender. Figure 2 illustrates the gender differences in the effect of interaction across difference on the supportive relationships measure. Based on the model, we estimate the effect for women was about 0.15, while the effect for men was 0.21. Because of the difference in effect, among students who interact across difference at one standard deviation above the mean or more, the average man actually rated the supportiveness of their relationships higher than the average women.

The picture by race/ethnicity, as seen in Figure 3, is a bit more complicated. While the effect of interacting across difference was positive for all groups, it was quite small for Native Americans (0.05); modest for Hispanic Americans (0.16), Multi-racial/ethnic students (0.18), and White students (0.16); and a bit stronger for Asian Americans (0.22) and African Americans (0.26). The small effect for Native American students stands out in the figure as does the apparent confluence of African American, Asian American, Hispanic American, and White students' perceptions of their relationships at levels of interaction across difference about 1.5 standard deviations above the mean.

#### *Faculty Regression on Institutional Supportiveness*

For the average faculty member, the more students in one's class interacted across difference, the more highly one rated the institutional supportiveness for students ( $B = 0.10$ ,  $p < 0.001$ ), after controlling for certain faculty, course, and institutional characteristics (see Appendix A for faculty control variables). This effect, while nearly identical in size for men and women, was inconsistent across race/ethnicity. Figure 4 shows how the effect varied in size and direction across the groups. The two most noticeable lines in Figure 4 are those for Asian



Americans and Native Americans. For Asian American faculty, the more students in their courses interact across difference, the more likely they were to have slightly *less* positive perceptions of institutional supportiveness (estimated effect = -0.08). In stark comparison, the estimated effect for Native American faculty was relatively strong and positive (0.37). For the other four groups, the effect was small to modest, ranging from 0.08 for Hispanic Americans to 0.18 for African Americans.

#### *Faculty Regression on Supportive Relationships*

Faculty ratings of their perceptions of how supportive students' relationships with other students, faculty, and administrators were only weakly related to the amount they observed students interacting across difference ( $B = 0.05$ ,  $p < 0.001$ ), after controlling for the effects of the other variables in the model. In addition, the differences in effect by gender and racial groups were relatively small and not statistically significant, suggesting that the effect of observing students interact across difference was relatively consistent across groups.

### Discussion

In line with previous research (e.g., Chang, 1999; Nelson Laird, 2005) and contrary to the concerns raised by conservative scholars (e.g., D'Souza, 1991), our study found a positive effect for interactions across difference on important student outcomes. In particular, we found that students who interact across difference at higher levels tend to have more positive perceptions of the supportiveness of their institutions and their relationships with other students, faculty, and administrative personnel and offices.

Unlike much of the previous literature, however, our study explored whether those effects were consistent across racial/ethnic and gender groups. We found, that while diverse

interactions, on average, positively affect all groups of students, the size of the effect varied for certain groups in some of the models.

In terms of gender, the effect of interactions across difference seems to be compensatory for men. In other words, men tend to view the campus and their relationships as less supportive than their female peers, but those men that interact across difference a lot (at least a standard deviation above the mean), have perceptions about equal to and sometimes above women students.

The story for racial/ethnic groups is less consistent. For institutional supportiveness, the variation in effect was not significant, suggesting that all racial/ethnic groups represented in the study are effected about equally by interactions across difference. There was, however, significant variation by race/ethnicity on students' perceptions of the supportiveness of their relationships. Diverse peer interaction had the strongest effect on African American students and the weakest effect on Native American students. This finding presents important questions for further investigation. For example, what differences exist in the types of interactions had by different groups of students (e.g., African American and Native American)? Based on previous research (Nelson Laird, 2005; Nelson Laird et al., 2005), the relatively quality (positive or negative) of one's interactions does matter, but do other characteristics of the interactions (e.g., content, duration, and with whom the interactions take place) also matter to the outcomes those interactions produce? Additionally, given that Native Americans are often the smallest minority group on a campus, are forces (e.g. a lack of academic, social, and administrative resources) in place that impede the effect of diverse interactions for that group?

For African American, Asian, American, Hispanic American, White, and multi-racial/ethnic students, diverse peer interactions appear to be an avenue to reduce the disparities

that exist between students' perceptions of their relationships when little interaction is occurring across difference. At the highest levels of interaction, the differences between these groups are smaller than at the lowest levels. In fact, the scores for African American, Asian American, Hispanic American, and White students are nearly identical at 1.5 standard deviations above the mean.

Interestingly, our own findings do little to settle the inconsistencies about which groups of students rate their environments the highest. While, on average, Hispanic student ratings of institutional supportiveness and the supportiveness of relationships were the highest, White students were above all other groups on the relationship measure and above only two other groups on the institutional supportiveness indicator. This further underscores the complexity involved in understanding the influence of diversity and diversity experiences on the perceptions of college students.

This study took another step forward toward complicating our understanding the effects of students' interactions across difference by examining the effects of those interactions on faculty members' perceptions of the campus environment. Similar to the student analyses, we found that the faculty who observed more student interaction across difference in their courses tended to have more positive perceptions of the campus environment. Unlike with the students, we found no significant variation in the effect by gender. Why gender is an important modifier for students and not for faculty is something to pursue in future work. Perhaps the difference has to do with being the agents of the interaction (students) versus being the shapers and observers of the interactions (faculty). Further, while race/ethnicity was an important modifier of the effect of interactions for both students and faculty, it modified different outcomes for each, a finding without any clear explanation.

While gender did not modify the effect of diverse interactions among the faculty, race ethnicity did in one of the models. The effect of interactions across difference on faculty perceptions of institutional supportiveness varied dramatically by racial/ethnic group. While positive for most groups, the effect was slightly negative for Asian American faculty, an unanticipated result that raises important questions. First, this result, coupled with the fact that Asian American faculty observing the lowest amounts of cross-difference interactions have very high ratings of institutional supportiveness, raises questions about how Asian American faculty might shape their perceptions of the campus differently than other faculty. Second, the negative result for Asian American faculty raises questions about the types and quality of the interactions observed in their courses. Do Asian American faculty observe more negative interactions? It also raised questions about whether faculty from various groups interpret student interactions across difference in different ways. For example, are African Americans or Native Americans more likely to view interactions as positive educationally while Asian Americans are more likely to be apprehensive about such interactions? The answers to these types of questions have important implications for the instructional support and assistance of faculty. To illustrate, if peer interactions across difference tend to be more negative in Asian American faculty members' courses, finding ways to change this could have a profound impact on student and faculty perceptions as well as student learning and development.

### Conclusion

The findings of this study offer additional support for the notion that diversity and diversity experiences are important to the educational mission of higher education. Further, our study adds to the previous research by demonstrating how race/ethnic and gender can, but do not necessarily, modify the effects of diversity experiences on valued outcomes. As in the Gurin et

al. (2002) study, in some instances we found important differences in the effects of peer interactions by social group, but in others the differences were minimal. A key implication of this overall finding is that researchers need to pay attention to the possible moderating effects of race/ethnicity and gender when examining the effects of diversity experiences in future explorations of perceptions of campus environments as well as other outcomes.

Another implication of this work is that much more can and should be done to understand the instructional implications of students' diversity experiences. Past work has relied on data from students to suggest the benefits of certain instructional changes related to diversity practices (e.g., Nelson Laird, 2005). The findings of our study suggest that taking the potential effects of these changes on faculty into account, particularly the differential effects by race/ethnicity, may lead to nuanced approaches to encouraging the inclusion of diversity into courses.

## References

- Ancis, J.R. Sedlacek, W.E. & Mohr, J.J. (2000). Student perceptions of campus cultural climate by race. *Journal of Counseling & Development, 78*, 180-185.
- Astin, A.W. (1968). *The college environment*. Washington, DC: American Council on Education.
- Astin, A.W. (1993). *What matters in college?: Four critical years revisited*. San Francisco: Jossey-Bass.
- Baird, L. & Hartnett, R.T. (1980). *Understanding student and faculty life*. San Francisco: Jossey-Bass.
- Bloom, A. (1987). *The closing of the American mind*. New York: Simon and Schuster.
- Chang, M. J. (1999). Does racial diversity matter? The educational impact of a racially diverse undergraduate population. *Journal of College Student Development, 40*, 377–395.
- Chang, M. J., Astin, A. W., & Kim, D. (2004). Cross-racial interaction among undergraduates: Some consequences, causes, and patterns. *Research in Higher Education, 45*, 529–553.
- Chickering, A. W. & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin 39*(7), 3-7.
- Clark, B. & Trow, M. (1966). *The organizational context*. In T. Newcomb & E. Wilson (Eds.), *College peer groups: Problems and prospects for research* (pp.17-70). Chicago: Aldine.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3<sup>rd</sup> edition). Mahwah, NJ: Lawrence Erlbaum.
- Cress, C.M. & Ikeda, E.K. (2003). Distress under duress: The relationship between campus climate and depression in Asian American college students. *NASPA Journal, 40*(2), 74-97.
- Cureton, S.R. (2003). Race-specific college student experiences on a predominantly White campus. *Journal of Black Studies, 33*(3), 295-311.
- Cuyjet, M.J. (1997). African American men on college campuses: Their needs and their perceptions. *New Directions for Student Services, 80*, 5-16.
- Davis, J. E. (1995). College in Black and White: Campus environment and academic achievement of African American males. *Journal of Negro Education, 63*, 620–633.
- D'Souza, D. (1991). *Illiberal education*. New York: Free Press.

- Drew, T. L. & Work, G. G. (1998). Gender-based differences in perception of experiences in higher education: Gaining a broader perspective. *Journal of Higher Education*, 69(5), 542-555.
- Fisher, B., & Hartmann, D. J. (1995). The impact of race on the social experience of college students at a predominantly White university. *Journal of Black Studies*, 26, 117-133.
- Freeman, C. (2004). *Trends in Educational Equity of Girls & Women: 2004* (NCES 2005-016). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Griffith, J.C. (1994). Open space preservation: An imperative for quality campus environments. *Journal of Higher Education*, 65, 645-669.
- Gurin, P. (1999). Expert Report of Patricia Gurin, in *The Compelling Need for Diversity in Higher Education*. Gratz et al. v. Bollinger, et al., No. 97-75321 (E.D. Mich.) Grutter et al. v. Bollinger, et al., No. 97-75928 (E.D. Mich.). Ann Arbor: University of Michigan.
- Gurin, P., Dey, E.L., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*, 72(3), 330-366.
- Hage, J. & Aiken, M. (1970). *Social change in complex organizations*. New York: Random House.
- Hall, R. M., & Sandler, B. R. (1982). *The classroom climate: A chilly climate for women?* Washington, DC: Association of American Colleges.
- Hu, S., and Kuh, G. D. (2002). Being (Dis)engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in Higher Education*, 43(5), 555-575.
- Hu, S., & Kuh, G. D. (2003a). Diversity experiences and college student learning and personal development. *Journal of College Student Development*, 44, 320-334.
- Hu, S., and Kuh, G. D. (2003b). Maximizing what students get out of college: Testing a learning productivity model. *Journal of College Student Development*, 44(2): 185-203.
- Hurtado, S. (2001). Linking diversity and educational purpose: How diversity affects the classroom environment and student development. In: Orfield, G., and Kurlaender, M. (eds.), *Diversity Challenged: Evidence on the Impact of Affirmative Action*, Harvard Education Publishing Group, Cambridge, MA, pp. 187-203.
- Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, 70, 324-345.

- Hurtado, S., & Carter, D. F., & Kardia, D. (1998). The climate for diversity: Key issues in an institutional self-study. *New Directions for Institutional Research*, 98, 53-63.
- Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., & Allen, W. (1999). *Enacting diverse learning environments: Improving the climate for racial/ethnic diversity in higher education* (ASHE-ERIC Higher Education Report Volume 26, No.8). Washington, DC: George Washington University.
- Hurtado, S. & Ponjuan, L. (2005). Latino educational outcomes and campus climate. *Journal of Hispanic Higher Education*, 4(3), 235-251
- Johnson, D.R., Alvarez, P., Longerbeam, S., Soldner, M., Inkelas, K.K., Leonard, J.B., & Rowan-Kenyon, H. (2007). Examining sense of belonging among first-year undergraduates from different racial/ethnic groups. *Journal of College Student Development*, 48(5), 525-542.
- Johnson-Durgans, V. D. (1994). Perceptions of racial climates in residence halls between African- American and Euroamerican college students. *Journal of College Student Development*, 35, 267-274.
- Kolb, D. (1983). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Kuh, G. D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change*, 33(3), 10-17, 66.
- Kuh, G. D. (2003). What we're learning about student engagement from NSSE. *Change*, 35(2), 24-32.
- Kuh, G. D., and Hu, S. (2001a). The effects of student-faculty interaction in the 1990s. *Review of Higher Education*, 24(3): 309-332.
- Kuh, G. D., and Hu, S. (2001b). The relationships between computer and information technology use, selected learning and personal development outcomes, and other college experiences. *Journal of College Student Development*, 42(3): 217-232.
- Kuh, G. D., Hu, S., and Vesper, N. (2000). "They shall be known by what they do:" An activities-based typology of college students. *Journal of College Student Development*, 41(2): 228-244.
- Kuh, G.D., Kinzie, J., Buckley, J.A., Bridges, B.K., & Hayek, J.C. (2006, November). What matters to student success: A review of the literature. *Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success*. Symposium conducted at the meeting of the National Postsecondary Education cooperative, Washington, D.C.



- Langdon, E.A. (2001). Women's colleges then and now: Access then, equity now. *Peabody Journal of Education*, 76(1), 5-30.
- Maruyama, G., & Moreno, J. (2000). University faculty views about the value of diversity on campus and in the classroom. In *Does diversity make a difference?: Three research studies on diversity in college classrooms* (pp. 8–35). Washington, DC.: American Council on Education and American Association of University Professors (available on www.acenet.edu or www.aaup.org).
- Mayhew, M.J. & Grunwald, H.E. (2006). Factors contributing to faculty incorporating diversity-related course content. *The Journal of Higher Education*, 77(1), 148-168.
- Miller, M., & Banning, J. (1992). Campus design: Guidance from voices of the past. *The Campus Ecologist*, 10(2), 1-4.
- Milem, J.F. (2001). Increasing diversity benefits: How campus climate and teaching methods affect student outcomes. In G. Orfield (Ed.), *Diversity challenged: evidence on the impact of affirmative action*. Cambridge, Harvard Publishing Group, (pp. 233-249).
- Milem, J. F., & Hakuta, K. (2000). The benefits of racial and ethnic diversity in higher education. In D. Wilds (author), *Minorities in higher education: Seventeenth annual status report* (pp. 39–67). Washington, DC: American Council on Education.
- Moos, R.H. (1979). *Evaluating educational environments*. San Francisco: Jossey-Bass.
- Moos, R. H. (1986). *The human context: Environmental determinant of behavior*. Malabar, FL: Krieger.
- Moos, R.H. (1994a). *The social climate scales: A user's guide*. Palo Alto, CA: Consulting Psychologists Press.
- National Survey of Student Engagement (2006). *Engaged learning: Fostering success for all students*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- Nelson Laird, T. F. (2005). College students' experiences with diversity and their effects on academic self-confidence, social agency, and disposition toward critical thinking. *Research in Higher Education*, 26(4), 365-387.
- Nettles, M. T., & Johnson, J. R. (1987). Race, sex, and other factors as determinants of college students' socialization. *Journal of College Student Personnel*, 28, 512–524.
- Nora, A., & Cabrera, A. F. (1996). The role of perceptions in prejudice and discrimination and the adjustment of minority students to college. *Journal of Higher Education*, 67, 119–148.

- Orfield, G. (2001). Introduction. In G. Orfield & M. Kurlaender (Eds.), *Diversity challenged: Evidence on the impact of affirmative action* (pp. 1–30). Cambridge, MA: Harvard Education Publishing Group.
- Pace, C.R., & Baird, L. (1966). Attainment patterns in the environmental press of college subcultures. In T.M. Newcomb & E.K. Wilson (Eds.), *College peer groups*. Chicago: Aldine.
- Pascarella, E. T., Palmer, B., Moye, M., & Pierson, C. T. (2001). Do diversity experiences influence the development of critical thinking? *Journal of College Student Development*, 42, 257–271.
- Pascarella, E. T. & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.
- Pascarella, E.T., Whitt, E. J., Edison, M. I., Nora, A., Hagedorn, L. S., Yeager, P. M., et al. (1997). Women’s perceptions of a “chilly climate” and their cognitive outcomes during the first year of college. *Journal of College Student Development*, 38, 109-124.
- Patterson, A. M., Sedlacek, W. E., & Perry, F. W. (1984). Perceptions of Blacks and Hispanics in two campus environments. *Journal of College Student Personnel*, 25, 513–518.
- Pike, G.R. & Kuh, G.D. (2006). Relationships among institutional diversity, informal peer interactions, and perceptions of the campus environment. *The Review of Higher Education*, 29 (4), 425-450.
- Rankin, S.R. & Reason, R.D. (2005). Differing perceptions: How students of color and White students perceive campus climate for underrepresented groups. *Journal of College Student Development*, 46(1), 43-61.
- Reid, L.D. & Radhakrishnan, P. (2003). Race Matters: The relation between race and general campus climate. *Cultural Diversity and Ethnic Minority Psychology*, 9(3), 263–275.
- Rice, J. K. (1991). Separation and the education of women. *Initiatives*, 53(5), 5-15.
- Saenz, V.B. Ngai, H.N. & Hurtado, S. (2006). Factors influencing positive interactions across race for African American, Asian American, Latino, and White college students. *Research in Higher Education*, 48(1), 1-38.
- Salter, D. W., & Persaud, A. (2003). Women’s views of the factors that encourage and discourage classroom participation. *Journal of College Student Development*, 44, 831-844.
- Sandler, B. R., Silverberg, L. A., & Hall, R. M. (1996). *The chilly climate: A guide to improve the education of women*. Washington, DC: National Association for Women in Education.

- Smith, D. G., Gerbick, G. L., Figueroa, M. A., Watkins, G. H., Levitan, T., Moore, L.C., Merchant, P. A., Beliak, H. D., & Figueroa, B. (1997). *Diversity works: The emerging picture of how students benefit*. Washington, DC: American Association of Colleges and Universities.
- Stern, R.A. (1986). *Pride of place: Building the American dream*. New York: Houghton Mifflin.
- Strange, C.C. (1981). Organizational barriers to student development: Strategies for institutional change. *NASPA Journal*, 19, 12-20.
- Strange, C.C. (1983b). Human development theory and administrative practice in student affairs: Ships passing in the daylight? *NASPA Journal*, 21, 2-8.
- Sturner, W.F. (1973). The college environment. In D.W. Vermilye (Ed.), *The future in the making* (pp.71-86). San Francisco: Jossey-Bass.
- Thelin, J.R. & Yankovich, J. (1987). Bricks and mortar: Architecture and the study of higher education. In J.C. Smart (Ed.), *Higher education: Handbook of theory and research*, Vol.3 (pp.57-83). New York: Agathon Press.
- Umbach, P. D. & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education*, 46(2), 153-184.
- Walsh, W.B. (1973). *Theories of person-environment interaction: Implications for the college student*. Iowa City, IA: American College Testing Program.
- Whitt, E. J., Edison, M. I., Pascarella, E. T., & Terenzini, P. T. (1999). The 'chilly climate' for women and cognitive outcomes in the second and third years of college. *Journal of College Student Development*, 40, 163-177.
- Wood, T. E., & Sherman, M. J. (2001, April). Is campus racial diversity correlated with educational benefits? In *Race and higher education: Why Justice Powell's diversity rationale for racial preferences in higher education must be rejected (Part IV)*. Retrieved April 30, 2007, from <http://www.nas.org>.

Appendix A  
NSSE and FSSE Independent Variables

Name	Description
<i>Variables for Both Groups</i>	
Student interaction across difference	2-item scale ( $\alpha_{\text{student}} = 0.81$ ; $\alpha_{\text{faculty}} = 0.87$ )
Woman	0 = Man; 1 = Woman
Ethnicity <sup>a</sup>	African American, Native American, Asian American, White <sup>b</sup> , Hispanic, Multi-racial/ethnic
Field of study <sup>a</sup>	Arts and humanities <sup>b</sup> , Biological sciences, Business, Education, Engineering, Physical sciences, Professional, Social Sciences, Other, Undecided <sup>c</sup>
Carnegie Classification <sup>a</sup>	Doctoral - Extensive, Doctoral - Intensive, Master's Colleges and Universities I & II, Baccalaureate - Liberal Arts <sup>b</sup> , Baccalaureate - General, Other classification
Institutional control	0 = Public; 1 = Private
<i>Student Independent Variables</i>	
Age	Whole number of years old
Senior	0 = first-year student; 1 = senior
Transferred	0 = Did not transfer; 1 = Transferred
Full-time student	0 = Part-time; 1 = Full-time
Greek member	0 = Non-member; 1 = Member of a social fraternity or sorority
Student athlete	0 = Non-athlete; 1 = Student athlete on a team sponsored by the institution's athletic department
Live on campus	0 = Live off campus; 1 = Live on or near campus
First generation status	0 = Either father or mother completed at least an associate's degree, 1 = Neither father nor mother complete an associate's degree or higher
<i>Faculty Independent Variables</i>	
Full-time employment	0 = Part-time; 1 = Full-time
Upper division course	0 = Lower division, 1 = Upper division
Course load	Number of undergraduate and graduate courses taught in the 2005-06 academic year
Rank <sup>a</sup>	Lecturer/instructor <sup>b</sup> , Assistant professor, Associate professor, Full professor
Years of prior teaching	Whole number of years of prior teaching
Doctorate	0 = less than doctorate; 1 = doctorate

<sup>a</sup> Coded dichotomously (0 = not in group, 1 = in group)

<sup>b</sup> Reference group

<sup>c</sup> Undecided indicated students undecided about their major, this code was only used in the student sample.

Table 1.

*NSSE and FSSE Supportive Campus Environment Scales and Component Items*NSSE Institutional Supportiveness ( $\alpha = 0.79$ )

Providing the support you need to help you succeed academically<sup>a</sup>

Helping you cope with your non-academic responsibilities (work, family, etc.)<sup>a</sup>

Providing the support you need to thrive socially<sup>a</sup>

Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)<sup>a</sup>

NSSE Supportive Relationships ( $\alpha = 0.70$ )

Relationships with other students<sup>b,c</sup>

Relationships with faculty members<sup>b,d</sup>

Relationships with administrative personnel and offices<sup>b,e</sup>

FSSE Institutional Supportiveness ( $\alpha = .75$ )

Providing students the support they need to help them succeed academically<sup>a</sup>

Helping students cope with their non-academic responsibilities (work, family, etc.)<sup>a</sup>

Providing students the support they need to thrive socially<sup>a</sup>

Encouraging students to attend campus events and activities (special speakers, cultural performances, athletic events, etc.)<sup>a</sup>

FSSE Supportive Relationships ( $\alpha = .76$ )

Relationships with other students<sup>f,c</sup>

Relationships with faculty members<sup>f,d</sup>

Relationships with administrative personnel and offices<sup>f,e</sup>

<sup>a</sup> The question stem read, "To what extent does your institution emphasize each of the following?" Possible responses were 1=Very little, 2=Some, 3=Quite a bit, 4=Very much.

<sup>b</sup> Question stem read, "Mark the box that best represents the quality of your relationships with people at your institution."

<sup>c</sup> Responses ranged from 1=Unfriendly, Unsupportive, Sense of alienation to 7=Friendly, Supportive, Sense of belonging

<sup>d</sup> Responses ranged from 1=Unavailable, Unhelpful, Unsympathetic to 7=Available, Helpful, Sympathetic

<sup>e</sup> Responses ranged from 1=Unhelpful, Inconsiderate, Rigid to 7=Helpful, Considerate, Flexible

<sup>f</sup> Question stem read, "Select the response that you believe best represents the quality of student relationships with people at your institution."

Table 2.

*Effects of Discipline on Deep Approaches to Learning Scale and Sub-Scales*

	<u>Institutional Supportiveness</u>			<u>Supportive Relationships</u>		
	B	SE B	Sig. B	B	SE B	Sig. B
<i>Students (N = 17,141)</i>						
Constant	0.00	0.01		0.00	0.01	
Student interaction across difference	0.19	0.01	***	0.17	0.01	***
African American	0.10	0.03	**	-0.10	0.03	**
Native American	0.04	0.08		-0.10	0.08	
Asian American	-0.06	0.04		-0.03	0.04	
Hispanic American	0.18	0.03	***	0.07	0.03	*
Multi-racial/ethnic	-0.03	0.05		-0.14	0.06	*
Woman	0.06	0.02	***	0.06	0.02	***
African American x studentint	0.04	0.03		0.10	0.03	**
Native American x studentint	-0.04	0.08		-0.12	0.08	
Asian American x studentint	0.07	0.04		0.06	0.04	
Hispanic American x studentint	-0.04	0.03		0.00	0.03	
Multi-racial/ethnic x studentint	-0.01	0.05		0.02	0.05	
Woman x studentint	-0.03	0.02	*	-0.07	0.02	***
<i>Faculty (N = 9,668)</i>						
Constant	0.00	0.01		0.00	0.01	
Student interaction across difference	0.10	0.01	***	0.05	0.01	***
African American	0.05	0.06		-0.09	0.06	
Native American	-0.19	0.14		-0.21	0.14	
Asian American	0.20	0.06	**	0.11	0.06	
Hispanic American	-0.06	0.05		-0.09	0.05	
Multi-racial/ethnic	-0.21	0.10	*	-0.34	0.10	**
Woman	0.03	0.02		0.08	0.02	***
African American x student int	0.09	0.05		-0.05	0.05	
Native American x student int	0.28	0.12	*	0.03	0.12	
Asian American x student int	-0.18	0.06	**	-0.11	0.06	
Hispanic American x student int	-0.02	0.05		-0.05	0.05	
Multi-racial/ethnic x student int	0.03	0.09		0.11	0.09	
Woman x student int	0.00	0.02		-0.02	0.02	

Note. All continuous variables, including the dependent variables, were standardized prior to the analyses. All dichotomous measures were mean centered. Interaction terms were products of mean centered variables and the standardized Student interaction across difference variable. Coefficients for control variables excluded from this table for space are available from the authors upon request.

\*p<.05, \*\*p<.01, \*\*\*p<.001

Figure Captions

*Figure 1.* Effect of Student Interaction across Difference on Students' Perceptions of Institutional Supportiveness by Gender (Line Slope in Parentheses)

*Figure 2.* Effect of Student Interaction across Difference on Students' Perceptions of Supportive Relationships by Gender (Line Slope in Parentheses)

*Figure 3.* Effect of Student Interaction across Difference on Students' Perceptions of Supportive Relationships by Race/Ethnicity (Line Slope in Parentheses)

*Figure 4.* Effect of Student Interaction across Difference on Faculty Perceptions of Institutional Supportiveness by Race/Ethnicity (Line Slope in Parentheses)









