Racial Diversity Matters: The Impact of Diversity-Related Student Engagement and Institutional Context

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This study addressed two questions: (a) Do different forms of campus racial diversity contribute uniquely to students' learning and educational experiences when they are simultaneously tested utilizing multilevel modeling? (b) Does a campus where students take greater advantage of those diversity opportunities have independent positive effects on students' learning? Consideration of racial diversity extended beyond student composition and included social and curricular engagement. Results suggest that benefits associated with diversity may be more far-reaching than previously documented. Not only do students benefit from engaging with racial diversity through related knowledge acquisition or cross-racial interaction but also from being enrolled on a campus where other students are more engaged with those forms of diversity, irrespective of their own level of engagement.

KEYWORDS: diversity, affirmative action, higher education policy, race relations, campus climate, educational equity

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When the U.S. Supreme Court ruled in favor of the University of Michigan in the 2003 *Grutter v. Bollinger* decision, contributors to campus diversity efforts viewed this as an affirmation of their ongoing work. Justice O'Connor, who wrote the majority opinion for that case, stated that "numerous studies show that student body diversity promotes learning outcomes, and better prepares students for an increasingly diverse workforce and society, and better prepares them as professionals" (*Grutter, et al. v. Bollinger, et al.*, 2003, p. 18). Indeed, the research supporting the educational benefits associated with having a more racially diverse student body was relatively unchallenged in the courts, but those who contributed to that body of research call for sustained attention (e.g., Chang, 2005; Hurtado, 2005).

Although the evidence supporting the benefits of being educated among a more racially diverse undergraduate student body is mounting, it is a relatively new area of educational research and, subsequently, can still be strengthened in a number of ways. With this in mind, this study addresses two basic questions. First, do different forms or expressions of campus racial diversity contribute uniquely to students' learning and educational experiences when they are simultaneously tested? The purpose here is to test previous findings using hierarchical linear modeling (HLM), which better addresses the hierarchical or nested structure of large national data sets.

The added strength of HLM is that it provides a better estimate of aggregated student data, which also make it possible to test the second question of interest. That is, does a campus where students take greater advantage of key racial diversity opportunities have independent positive effects on students' learning and educational experiences? Because of statistical limitations, many previous studies examining the benefits of diversity have focused on the student as the main unit of analysis, and thus, little can be confidently said about the higher-level institution or environment effects on students. It may be the case, for example, that even those students who report being disengaged from or hostile to diversity opportunities may still be positively affected simply by being in an environment where a larger proportion of other students are engaged in such opportunities. Given this possibility, we examined whether the effects of racial diversity might be even more far-reaching than previously documented by testing a few key institution-level variables based on aggregated student responses.

Research Background

Alongside the legal controversy regarding race-conscious admissions practices, a fairly recent body of research has emerged that has contributed to understanding the potential educational benefits of racial-ethnic diversity in 4-year colleges and universities. Most of this empirical work has focused on three distinct forms of racial diversity: *structural diversity* (student body racial composition), *curricular/co-curricular diversity* (programmatic efforts that expose students to content about race/ethnicity), and *interaction diversity* (informal student-student cross-racial contact). We briefly review below the key research along these three forms of diversity.

Perhaps of greatest interest to the University of Michigan affirmative action cases was the research concerning the effects of enrolling a more racially diverse group of students, or structural diversity. Ironically, of the three forms of diversity, structural diversity has received the least empirical attention. One of the most well-known studies is Bowen and Bok's (1998) *The Shape of the River*. While the main findings focus on African Americans and their postcollege achievements, they found that *both* White and African American alumni report having benefited from structural diversity. In particular, they felt that diversity had helped them get along better with members of other races and held more positive attitudes toward affirmative action programs. Another study (Wells, Duran, & White, in press), while it focused on the effects of high school, also demonstrated long-term benefits of attending racially diverse schools. For example, graduates of racially mixed schools reported being more accepting of and comfortable with people of different racial-ethnic backgrounds, which in turn better prepared them for a global economy and society. Those graduates reported that this preparation was the most important outcome of their experiences of attending racially diverse schools.

Another (Antonio et al., 2004) that used a randomized assignment design tested psychological explanations of the impact of diversity by manipulating the race of a confederate participant (Black, White) in an all-White undergraduate discussion group. Drawing upon theories of minority influence, the researchers tested the hypothesis that when minority opinions and individuals are present in homogeneous groups, cognitive complexity is stimulated among majority members. The findings of the experiment show that the presence of a Black student in an otherwise all-White discussion group enhances complex thinking, particularly when group discussions involve an issue that is racially charged. The authors concluded that racial and ethnic compositional diversity can create richer and more complex social and learning environments than racially homogeneous ones, which subsequently can serve as an educational tool to promote all students' learning and development.

Not all studies examining structural diversity, however, report positive findings. For example, Rothman, Lipset, and Nevitte (2002) conclude that diversity had few positive and even many negative effects on attitudinal and educational outcomes. They found that the proportion of African Americans in the student body does nothing to improve student perceptions of campus life and in some cases affects them adversely. Specifically, they found that when structural diversity increased, student satisfaction and perceived quality of education decreased. Additionally, the higher the structural diversity, the more likely the students were to report having experienced discrimination themselves.

Other empirical studies that have examined structural diversity suggest that the student body composition is an insufficient condition *in and of itself* for maximizing educational benefits, but rather, its value appears to depend on whether or not it leads to greater levels of engagement in diversity-related activities, such as curricular diversity and cross-racial interaction. Indeed, several

studies have specifically examined this relationship and demonstrated that the structural diversity of an institution does indeed shape curricular diversity and/or opportunities to interact with diverse peers (Chang, 2001; Chang, Astin, & Kim, 2004; Gurin, 1999; Pike & Kuh, 2006). Given the above relationships, some researchers have argued that when there is a diverse student body, the environment enhances the chances that students will become more involved in diversity-related activities and socialize more often across racial groups; in turn, having these types of involvement and interaction can have a positive impact on students' development (Chang, 2001; Gurin, 1999).

Another form of diversity, curricular/co-curricular diversity, refers to institutionally structured and purposeful programmatic efforts to help students engage in diversity with respect to both ideas and people (Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001). Students encounter this form of diversity through course work and curriculum or through participation in activities such as racial-cultural awareness workshops and student organizations. Curricular/co-curricular diversity has been shown to be positively associated with outcomes such as intergroup attitudes (Lopez, 2004); racial prejudice and intergroup understanding (Chang, 2002); attitudes toward campus diversity (Springer, Palmer, Terenzini, Pascarella, & Nora, 1996); critical thinking skills (Nelson Laird, 2005; Pascarella, Palmer, Moye, & Pierson, 2001); cognitive and affective development (Astin, 1993a); learning and "democracy" outcomes (Gurin, Dey, Hurtado, & Gurin, 2002); civic, job-related, and learning outcomes (Hurtado, 2001); academic self-confidence and social agency (Nelson Laird, 2005); social action engagement outcomes (Nelson Laird, Engberg, & Hurtado, 2005); and action-oriented democratic outcomes (Zúñiga, Williams, & Berger, 2005).

Lastly, there is also strong evidence that interaction diversity, or the frequency of cross-racial interaction that occurs during the normal course of undergraduate life, contributes to students' learning and educational experiences. Interaction diversity has been shown to be positively associated with outcomes such as intergroup attitudes (Lopez, 2004); cultural knowledge and understanding and leadership skills (Antonio, 2001); cognitive and affective development (Astin, 1993a); student learning and personal development (Hu & Kuh, 2003); learning and democracy outcomes (Gurin et al., 2002); civic, job-related, and learning outcomes (Hurtado, 2001); critical thinking skills (Nelson Laird, 2005; Pascarella et al., 2001); academic self-confidence and social agency (Nelson Laird, 2005); action-oriented democratic outcomes (Chang et al., 2004; Zúñiga et al., 2005); intellectual and social self-confidence and student retention (Chang, 2001; Chang et al., 2004); and student satisfaction with their overall college experience (Chang, 2001).

The recent growth in empirical knowledge concerning the educational benefits of diversity can be largely attributed to pressing debates framed by earlier U.S. Supreme Court decisions, which have constrained the defense of race-conscious admissions practices (Chang, 2005). Even though the Court supported the constitutionality of such practices in 2003, more research is still needed to understand better the scope and depth of those related

educational benefits. To improve understanding, this study addresses two limitations with the existing body of knowledge.

Limitations in Analytic Approach

Although a variety of methodological approaches have been applied to examine the educational benefits of diversity in higher education, many of those that analyzed large national data sets (e.g., Astin, 1993a, 1993b; Gurin et al., 2002; Hurtado, 2001) have employed single-level linear modeling. Those approaches, however, do not accurately model the hierarchical nature of most national data sets. Whereas HLM is commonly applied in other areas of education research (e.g., K-12 literature), it is not as widely utilized in higher education research. To address this common methodological shortcoming among previous studies, we applied HLM (Raudenbush & Bryk, 1986, 2002) to more accurately model the structure of a multilevel longitudinal data set. In short, through this approach, we are able to more accurately assess the impact of the different forms of diversity at both the student and institution levels.

Limitations of Theoretical Framework

Another limitation with the existing body of knowledge is related to current explanations about how students might theoretically benefit from diversity. Since the vast majority of research has focused mainly on students as the unit of analysis, much progress has been made in explaining student-level effects by drawing from psychological theories. For example, Gurin et al. (2002) argue that at a campus with a more diverse student body, a student has a better chance of coming across opinions and situations different from her or his home environment. When they engage in this difference, according to Gurin et al. (2002), it can lead to a mental process of "accommodating" and "assimilating" new information or what psychologist Piaget (1975/1985) called "cognitive disequilibrium." This processing of new information or experience affects students' learning and cognitive growth. Thus, when there are more opportunities to engage in difference, there is greater potential for learning (Gurin et al., 2002).

Moreover, Gurin et al. (2002) draw from other established psychological concepts, such as Erikson's (1946, 1956) notion of "psychosocial moratorium," to make the case that diversity is even more educationally appropriate for undergraduate students. According to this notion, undergraduates are typically at a developmental stage where they are freer to explore new ideas, social roles, and relationships. Combining this developmental moment with a racially diverse environment that exposes students to surroundings that are dissimilar or incongruent with their home environments raises the potential for deeper and more critical thinking. Drawing from established psychological theories, Gurin et al. (2002) have provided a better understanding about how students benefit educationally from being a member of a racially diverse student body.

One limitation, however, with explaining the benefits in only psychological terms that tend to focus mostly on student-level effects is that the educational benefits of diversity may extend beyond psychological explanations. The environmental effects on students are well documented in higher education research (e.g., Astin, 1993b; Pascarella & Terenzini, 1991, 2005), suggesting that the context in which learning takes place can have a measurable impact on students, *independent* of a student's own behaviors and experiences. With respect to diversity, two recent studies that employed HLM have tested diversity-related *environmental* effects on undergraduate students.

Chang, Denson, Sáenz, and Misa (2006) tested both student- and institution-level effects associated with cross-racial interaction. They found that even though a student's own level of cross-racial interaction is a more direct and powerful way to realize developmental gains associated with openness to diversity, cognitive development, and self-confidence, students also benefit uniquely from being enrolled in an institution that sustains positive race relations. They used HLM to examine an identical set of variables reported at both the student and institution levels. This allowed them to better differentiate between the effects of a student's own behavior and the effects of the broader context associated with that behavior.

Another recent study also demonstrated benefits for four institutional measures of diversity. Although their study primarily focused on students attending liberal arts colleges, Umbach and Kuh (2006) found numerous positive benefits of (a) the "diversity density index" (the probability that a student will interact with a student from another race), (b) institutional "climate for diversity" (students' perceptions of the emphasis their institution places on encouraging contact among students from different backgrounds), (c) "diversity in coursework" (the extent to which students reported their classes included readings or discussions related to diversity), and (d) "diversity press" (a scale made up of the three other diversity measures: structural diversity, the extent to which students perceive that diversity is valued and important, and curricular diversity) on a variety of outcomes that included measures of student engagement, perceptions of a supportive campus environment, gains in learning and intellectual development, and gains in social awareness. While all four institutional measures of diversity were positively associated with many of the outcomes, the strongest positive effects were seen for engagement in diversity-related activities and gains in understanding of people from other backgrounds and cultures. Umbach and Kuh also used HLM, which allowed them to more accurately assess the effects of these institution-level diversity "contexts." While their study did not differentiate between the effects of a student's own behavior and the effects of the broader context associated with that behavior, they did simultaneously test the three forms of institutional diversity contexts against each other, which demonstrated unique effects (although to varying degrees) of each.

If similar contextual or normative effects associated with the various forms of diversity can be replicated, it would suggest that the effects of diversity are even more far-reaching. That is, having a larger percentage of students who

participate in diversity opportunities may contribute uniquely to learning that extends beyond psychological explanations and may perhaps require organizational or sociological lenses to explain. With respect to organizational impact, for example, Berger (2000) found that different patterns of organizational behavior do indeed affect outcomes in various ways for different students. He claims that although there are many viable theories to explain how organizations affect students in higher education, one important effect he found in his study was that high levels of an organizational behavior create intense organizational environments that exert stronger uniform effects on student outcomes. He regards this finding as support of Clark, Heist, McConnell, Trow, and Yonge's (1972) assertion that "campuses exert a more powerful impact on student outcomes when those colleges have clear visions that are articulated through congruent and consistent sets of policies, procedures, traditions, and espousal of values in everyday campus life" (p. 191). From a sociological perspective, Antonio and Muñiz (2007) refer to this effect as the "transformative potential" of higher education. In their review of the "sociology of diversity," they also conclude that impact or transformation is dynamic, so while colleges can exert an impact on students, students can also change institutions, for example, by intensifying the obligation to offer more and better diversity-related courses and/or activities.

The cursory discussion above suggests that organizational or sociological lenses can be useful in explaining the contextual effects associated with diversity. It appears that shifts in student populations or needs can have a transformative effect on a college's vision and organizational behavior. If that vision includes diversity and is articulated in a cohesive and consistent way, then higher levels of organizational behavior as measured by a student body's engagement with diversity, for example, can create more intense environments that exert stronger uniform effects on all students' capacity to engage in diversity. So, if institutional-level effects can be further documented in this study, it would add to how diversity is considered both practically and theoretically.

The purpose of this study is to examine further and in greater depth the benefits of campus racial diversity by addressing the two limitations noted above. To do this, we consider two primary research questions: (a) Do different forms or expressions of campus racial diversity contribute uniquely to students' learning and educational experiences when they are simultaneously tested? (b) Does a campus where students take greater advantage of those racial diversity–related opportunities have independent positive effects on students' learning and educational experiences?

Method

Data Source

The data for this study were drawn from the Cooperative Institutional Research Program (CIRP) at the University of California, Los Angeles (UCLA), Higher Education Research Institute (HERI). This study utilized two student surveys that were collected at two different time points. The Student

Information Form was administered to full-time 1st-year entering students and was intended to gather background information prior to their having any substantial experience with college. The students were subsequently administered the College Student Survey (CSS) at the end of their 4th year, which queried students about many of the same topics on the Freshman Survey but also asked them about various college experiences that they may have had over the past 4 years.

The initial sample consisted of 21,651 students nested within 272 institutions. From this sample, we created a subset sample that excluded 2-year colleges and universities, historically Black colleges and universities, and students and institutions with preestablished thresholds of missing cases or items.[1] This yielded a final total sample of 20,178 students nested within 236 institutions. Depending on the outcome, the final sample of students ranged from 19,794 to 19,978 students due to pairwise deletion.

Dependent Variables

To examine the relationship between diversity and student development, we focused on three outcomes similar to those used in the Gurin et al. (2002) study. We assessed the personal (self-efficacy and general academic skills) and social (racial-cultural engagement) domains. Our social outcome—racial-cultural engagement—is identical to the one used by Gurin et al. However, the two personal outcomes—self-efficacy and general academic skills—were not identical to those constructed by Gurin et al. because the items that they used to construct their measures failed to achieve strong reliability when using our more current data set. So, we constructed comparable personal outcomes that we termed self-efficacy and general academic skills. Factor analysis with maximum likelihood (ML) estimation of the 11 individual items (with promax rotation) produced three factors, confirming the three outcomes (Table 1).

Primary Independent Variables of Interest

The principal independent variables of interest were those that represent the three targeted forms of racial diversity (at both the student and institution level): curricular diversity, cross-racial interaction (or CRI), and structural diversity. At the student level (Level 1), items for the curricular diversity and CRI measures were drawn from the CSS. Curricular diversity was a composite of three items on the survey that asked the students if they participated in the following activities (0 = no; 1 = yes): taken an ethnic studies course, attended a racial-cultural awareness workshop, or participated in an ethnic-racial student organization since entering college. The CRI measure was a composite of student responses on five items from the CSS that tap into a student's level of engagement in the following activities with someone from a different racial-ethnic group at the college: studied, dined, dated, interacted, and socialized (α = .79).

Table 1

Factor Loadings and Reliabilities for Outcome Variables and Their Pretests

Factor and Survey Items	Factor Loading	Internal Consistency (Alpha)
Dependent variables		
Self-efficacy		.703
Self-ratings of drive to achieve[a]	.565	
Self-ratings of intellectual self-confidence[a]	.707	
Self-ratings of competitiveness[a]	.466	
Self-ratings of academic ability[a]	.655	
Self-ratings of writing ability[a]	.499	
General academic skills		.736
Self-change assessments in general knowledge[b]	.599	
Self-change assessments in analytical/problem-solving skills[b]	.741	
Self-change assessments in ability to think critically[b]	.794	
Self-change assessments in writing skills[b]	.476	
Racial-cultural engagement		.722
Self-change in knowledge of people from different races/cultures[b]	.603	
Self-change in ability to get along with people of different races/cultures[b]	.941	
Pretests of the dependent variables		
Self-efficacy		.686
Self-ratings of drive to achieve[a]	.566	
Self-ratings of intellectual self-confidence[a]	.715	
Self-ratings of competitiveness[a]	.432	
Self-ratings of academic ability[a]	.660	
Self-ratings of writing ability[a]	.447	
General academic skills		.510
Self-ratings of academic ability[a]	.821	
Self-ratings of writing ability[a]	.821	
Racial-cultural engagement		.528
Importance of promoting racial understanding[c]	.824	
Importance of helping others who are in difficulty[c]	.824	

[a]Five-point scale from 1 = *lowest 10%* to 5 = *highest 10%*; items have corresponding pretests.
[b]Five-point scale from 1 = *much weaker* to 5 = *much stronger*.
[c]Four-point scale from 1 = *not important* to 4 = *essential*.

At the institution level (Level 2), we examined diversity with respect to an institution's percentage of underrepresented minority (URM) students (i.e., the combined proportional representation of African Americans, Latinos/Latinas, and American Indians), average level of curricular diversity, and average level of CRI. The percentages of students from the URM groups within institutions were obtained from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) enrollment figures. The institutional peer levels of curricular diversity and institutional peer levels of CRI were the average curricular diversity and average CRI scores of all respondents for that institution, respectively.

Control Variables

Key control variables identified by previous studies were included in the analyses (see Appendixes A and B). In addition to the pretest measures listed in Table 1, we included student background characteristics (e.g., gender, race) and also controlled for college experiences (e.g., living and working arrangements). Additionally, enrollment size, level of selectivity, control (public-private), and the aggregate measures of all the student-level control variables were included in the models so that the student- and institution-level effects can be properly differentiated. While the control variables are not of primary substantive interest, they were included in the analyses because they represent characteristics, predispositions, and college experiences of students that, unless taken into account, could lead to a miscalculation of the effects of diversity, as implied by the literature reviewed earlier.

Analytic Approach

The HLM approach and statistical software used for this study are thoroughly explained in Raudenbush and Bryk (2002). We computed three separate sets of HLM analyses, one for each outcome variable. Within each set, we developed seven models, but due to space limitations, we can present only the first and final HLM models to describe our analyses.

The first model. The first model was a *fully unconditional* model because no predictors were specified at either the student level (Level 1) or institution level (Level 2). This model, represented by Equations 1 and 2 below, provides useful preliminary information about how much variation in each of the outcome lies within and between institutions and also about the reliability of each institution's sample mean as an estimate of its true population mean.

Level 1: $\quad Y_{ij} = \beta_{0j} + r_{ij} \qquad r_{ij} \sim N(0, \sigma^2),$ $\hfill (1)$

where $i = 1, 2, \ldots, n_j$ students in institution j, and $j = 1, 2, \ldots, j$ institutions. In Equation 1, each student's score on the outcome measure, Y_{ij}, is

characterized as a function of his or her institutional average on the outcome measure, β_{0j}, and a random effect, r_{ij}, which is unique to each individual. The r_{ij} represents random error, which is typically assumed to be normally distributed with a mean of zero and variance σ^2. The variance of the random effects (σ^2) represents the within-institution variance.

Level 2: $\quad \beta_{0j} = \gamma_{00} + u_{0j} \qquad u_{0j} \sim N(0, \tau_{00})$. $\hfill$ (2)

In Equation 2, the institutional average on the outcome measure, β_{0j}, is characterized as a function of the mean on the outcome measure for *all* institutions, γ_{00}, and a random effect, u_{0j}, which is unique to each institution. The random effect u_{0j} is also typically assumed to be normally distributed with a mean of zero and variance τ_{00}. The variance of the random effects (τ_{00}) represents the between-institution variance.

The final model. The final model was a *conditional* model because it contained both student-level (Level 1) and institution-level (Level 2) predictors. Before arriving at the final model, we developed intermediary conditional models (Models 2 through 6) whereby predictors were specified at Level 1 and/or Level 2 in an incremental fashion. By modeling these intermediary models, we were able to determine the incremental variance explained by each of the variables of interest (e.g., curricular diversity, CRI, structural diversity) once controlling for other student and institutional characteristics. The following equations (Equations 3 and 4) describe the model estimated in the final stage of the analyses (Model 7). All Level 1 predictors have been group-mean centered, and all Level 2 predictors have been grand-mean centered so that the intercept term (β_{0j}) represents the institutional average on the outcome measure (unadjusted mean) for institution j.

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j}$ (curricular diversity) $+ \beta_{2j}$ (CRI) $+ \beta_{3j}$ (part-time job on campus) $+$
β_{4j} (Pretest of outcome) $+ \beta_{5j}$ (HS GPA) $+ \beta_{6j}$ (SES) $+ \beta_{7j}$ (live on campus) $+$
β_{8j} (Native American) $+ \beta_{9j}$ (Asian) $+ \beta_{10j}$ (African American) $+ \beta_{11j}$ (Latino) $+$
β_{12j} (Female) $+ \beta_{13j}$ (level of involvement) $+ r_{ij}$

$$r_{ij} \sim N(0, \sigma^2)$$ $\hfill$ (3)

In the Level 2 model, the intercept (β_{0j}) was specified as random, while all other coefficients were specified as fixed. The coefficients β_{1j} and β_{2j} represent the institutional averages of the curricular diversity and CRI slopes, respectively, for institution j. Since the student-level effects of curricular diversity and CRI were *not* assumed to be constant across institutions, the variances of these coefficient were calculated, separating parameter variance from error variance, and were tested to determine whether these effects varied across institutions. Based on the results of chi-square tests, the β_{1j} and β_{2j} coefficients were then respectively specified as either fixed or random in the final Level 2 model (Equation 4).[2]

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}$ (% URM students) $+ \gamma_{02}$ (ln Size) $+ \gamma_{03}$ (Selectivity) $+ \gamma_{04}$ (Control: Private) $+ \gamma_{05}$ (AVG: curricular diversity) $+ \gamma_{06}$ (AVG: CRI) $+ \gamma_{07}$ (AVG: part-time job on campus) $+ \gamma_{08}$ (Pretest of outcome) $+ \gamma_{09}$ (AVG: HS GPA) $+ \gamma_{010}$ (AVG: SES) $+ \gamma_{011}$ (AVG: live on campus) $+ \gamma_{012}$ (AVG: female) $+ \gamma_{013}$ (AVG: level of involvement) $+ u_{0j}$

$$u_{0j} \sim N(0, \tau_{00})$$

$\beta_{1j} = \gamma_{10} + \gamma_{11}$ (% URM students) $+ \gamma_{12}$ (AVG: curricular diversity) $+ \gamma_{13}$ (AVG: CRI) $[+ \gamma_{14}$ (AVG: part-time job on campus)] $(+ u_{1j})$

$$u_{1j} \sim N(0, \tau_{11})$$

$\beta_{2j} = \gamma_{20} + \gamma_{21}$ (% URM students) $+ \gamma_{22}$ (AVG: curricular diversity) $+ \gamma_{23}$ (AVG: CRI) $[+ \gamma_{24}$ (AVG: HS GPA)] $(+ u_{2j})$

$$u_{2j} \sim N(0, \tau_{22})$$

$$\beta_{3j} = \gamma_{30}$$

$$::$$

$$::$$

$$\beta_{13j} = \gamma_{130} \tag{4}$$

Limitations

As with most studies, this one is not free of limitations. First, as mentioned previously, the data for this study came from UCLA's HERI. Although they seek to survey the full population of 4-year institutions and students, not all institutions participate or administer the surveys as prescribed. Thus, the study's sample is limited in that the data are from only those institutions that participated between 1994 and 1998, and differences in survey administration may affect the results. To address this problem, we controlled for a range of both institution- and student-level characteristics that may bias the sample. Second, our study incorporated a longitudinal design, which offers numerous advantages in determining causality. However, even with our longitudinal study design, the data remain correlational (i.e., nonexperimental) in nature. Despite our periodical use of the term *effect*, as with any correlational data, cause-and-effect relationships should be interpreted cautiously. Third, all of the data collected from students are based on self-reports. Although this is a widely used and generally valid approach for obtaining student information (Pike, 1995), students may be using differing baselines when they are asked to report their own growth during college (Pascarella, 2001). The large sample size in the current study helps to offset threats to validity inherent in self-report measures by capturing a more accurate overall population average rather than relying on a few individual students' own point of reference.

Lastly, selection bias is always a major concern for any study that does not utilize random assignment. In other words, can we be confident that the effects we observe are attributable to the institutions themselves? Or do certain types of students go to certain types of institutions? Our analyses rely on nonexperimental statistical techniques to either examine or reduce the likelihood that any given association is due to self-selection (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). To examine the threat of self-selection bias, we created a diversity pretest that was measured at the point of college entry.[3] We then correlated the student-level score on this pretest with the institutional-level pretest score (the average entering score of the respondents' peer group or institutional average). The relatively weak correlation ($r = .26$) between the student- and institutional-level scores on this pretest suggests that students choose their institutions on the basis of a variety of other factors, and not only on the basis of their diversity inclination alone.

Additionally, our statistical modeling also reduces the possibility that our observed effects were due to selection bias. Specifically, in testing the effects of our diversity-related variables, we included a number of other key variables in the HLM analyses to minimize self-selection bias and to control for the effect of critical institutional characteristics (see Appendix A). We selected these variables based on their noted importance in previous studies cited earlier, and we used them to rule out alternative explanations for findings. Most importantly, in all three outcomes, we included a pretest for the dependent measure as a control variable in our analyses. Thus with respect to each pretest measure, any significant relationship that may exist between a diversity variable of interest and the outcome can be interpreted as a unique effect *above and beyond* that of the pretest. Other limitations with this study are discussed with reference to the findings.

Results

The First Model

Table 2 presents results from the first models. The table shows the ML point estimate for the grand mean and the estimated values of the within-institution variance (σ^2) and between-institution variance (τ_{00}) for all three outcomes. The ML point estimates for the grand means are 19.34 for self-efficacy, 17.16 for general academic skills, and 7.63 for racial-cultural engagement. Overall, the students in our sample tended to rate themselves on the higher end of the continuum on the self-efficacy (ranging from 5 to 25), general academic skills (ranging from 4 to 20), and racial-cultural engagement (ranging from 2 to 10) measures.

Table 2 also reports the within-institution and between-institution variances, but these numbers alone do not provide a good sense of the proportion of total variance that is due either to individual differences or to institutional differences. So, as recommended by Raudenbush and Bryk (2002), we computed the intraclass correlation (ICC) to assess the proportion of variance in each

Table 2
Estimation of One-Way Random-Effects ANOVA Base Models

Fixed Effects	Coefficient	*SE*	*t* Ratio	Reliability
Factor 1: Self-Efficacy				
Intercept (γ_{00})	19.34	.05	412.99***	.74
Factor 2: General Academic Skills				
Intercept (γ_{00})	17.16	.03	620.64***	.68
Factor 3: Racial/Cultural Engagement				
Intercept (γ_{00})	7.63	.02	380.52***	.68

Random Effects	Variance Component	*df*	Chi-Square
Factor 1: Self-Efficacy			
Between institution (τ_{00}) (variance of intercepts)	0.38	235	1146.73***
Within institution (σ^2)	7.30		
Factor 2: General Academic Skills			
Between institution (τ_{00}) (variance of intercepts)	0.12	235	931.29***
Within institution (σ^2)	3.23		
Factor 3: Racial-Cultural Engagement			
Between institution (τ_{00}) (variance of intercepts)	0.06	235	1164.78***
Within institution (σ^2)	1.77		

***$p < .001$.

outcome that is due to between-institution differences.[4] The presence of a significant ICC indicates the need for HLM. For our set of outcomes, we found that only 4.9% of the variance in self-efficacy, 3.6% of the variance in general academic skills, and 3.3% of the variance in racial-cultural engagement was due to between-institution differences. These ICC findings suggest that the majority of the variance in each of the three outcomes is due mostly to within-institution differences. At the same time, however, differences between institutions still accounted for a statistically significant ($p < .001$) portion of the variance, indicating a need for utilizing multilevel modeling.

The Final Model

Table 3 reports the results of the final HLM model for each of the three outcome measures. Given space constraints, we will focus our discussion mainly on the key independent variables of interest with respect to each outcome.

Self-efficacy. As shown in the first two columns of numbers in Table 3, the coefficients for the curricular diversity slope base ($\gamma_{10} = .08$, $t = 4.01$) and

CRI slope base (γ_{20} = .14, t = 7.39) are statistically significant, suggesting that these two student-level characteristics have a significant positive effect on this self-efficacy measure. In other words, students who were more involved in workshops or classes that incorporated issues concerning diversity, or who interacted more with others of another race, tended to also report higher levels of self-efficacy. By contrast, none of the institutional measures of diversity had any statistically significant effect.

General academic skills. The second set of results in Table 3 shows the findings for the general academic skills measure. Again, focusing on the key variables of interest, the student-level characteristics of curricular diversity (γ_{10} = .17, t = 10.40) and CRI (γ_{20} = .16, t = 9.74) exerted significant positive effects on the general academic skills measure. That is, students who participated in more workshops or diversity-related classes or who interacted more often with students of another race tended to also report higher levels of general academic skills. Additionally, the student body's *average* level of curricular diversity engagement (γ_{05} = .31, t = 3.84) also had a significant positive effect on this measure. So students who attended institutions where more students participated in workshops or classes that considered diversity issues tended to also report higher levels of general academic skills, *regardless* of their own personal involvement.

Lastly, the random effects results for this measure reported at the bottom of Table 3 shows that the CRI slope varies across institutions for this measure (τ_{22} = .01, χ^2 = 274.27, p < .05). This means that some institutions have steeper CRI–general academic skills slopes, whereas other institutions have flatter CRI–general academic skills slopes, suggesting differential effects across institutions. In other words, CRI at some institutions has a greater positive effect on students' general academic skills than at other institutions.

Racial-cultural engagement. The last set of results reported in the two columns of numbers on the far right in Table 3 shows that both curricular diversity (γ_{10} = .22, t = 18.57) and CRI (γ_{20} = .35, t = 32.28) had significant positive effects on the racial-cultural engagement measure. In addition, both *average* level of institutional curricular diversity (γ_{05} = .24, t = 4.09) and *average* level of institutional CRI (γ_{06} = .32, t = 5.47) had significant positive effects on students' racial-cultural engagement, even after controlling for a student's own level of participation in those diversity-related activities. These institution-level findings suggest that students who attended institutions where students as a whole were more engaged with diversity tended to also report higher levels of self-change in knowledge of and ability to get along with people of different races or cultures, *independent* of their own personal involvements and interactions.

Another interesting finding concerns the influence of institutional-level CRI on the relationship between individual CRI and racial-cultural engagement.

Table 3

Estimation of the Final Hierarchical Linear Modeling Model

Fixed Effects	Self-Efficacy		General Academic Skills		Racial/Cultural Engagement	
	Coefficient (*SE*)	*t* Ratio	Coefficient (*SE*)	*t* Ratio	Coefficient (*SE*)	*t* Ratio
Institutional mean						
Base (γ_{00})	19.31 (0.03)	712.00***	17.15 (0.02)	736.10***	7.64 (0.02)	466.65***
Control: Private (γ_{01})	0.07 (0.10)	0.66	0.20 (0.09)	2.37*	−0.02 (0.06)	−0.32
Natural log of size (γ_{02})	−0.05 (0.04)	−1.19	−0.07 (0.04)	−2.05*	0.01 (0.03)	0.22
Selectivity (γ_{03})	0.00 (0.00)	1.79	−0.00 (0.00)	−0.26	−0.00 (0.00)	−2.14*
% URM students (γ_{04})	−0.00 (0.01)	−0.28	0.00 (0.00)	0.10	0.00 (0.00)	0.12
AVG: Curricular diversity (γ_{05})	0.05 (0.09)	0.53	0.31 (0.08)	3.84***	0.24 (0.06)	4.09***
AVG: CRI (γ_{06})	0.15 (0.10)	1.44	−0.09 (0.09)	−0.97	0.32 (0.06)	5.47***
AVG: Gender: Female (γ_{07})	−0.03 (0.21)	−0.16	−0.21 (0.17)	−1.25	−0.04 (0.12)	−0.31
AVG: High school GPA (γ_{08})	−0.47 (0.26)	−1.80	−0.08 (0.21)	−0.39	−0.12 (0.12)	−1.04
AVG: Lived on campus (γ_{09})	0.05 (0.25)	0.19	−0.04 (0.21)	−0.17	0.06 (0.15)	0.42
AVG: Had part-time job on campus (γ_{010})	−0.77 (0.23)	−3.34**	−0.03 (0.20)	−0.13	0.13 (0.14)	0.96
AVG: Parental education (γ_{011})	−0.07 (0.07)	−0.94	0.15 (0.06)	2.36*	−0.13 (0.04)	−3.01**

(continued)

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Table 3 (continued)

Fixed Effects	Self-Efficacy		General Academic Skills		Racial/Cultural Engagement	
	Coefficient (SE)	t Ratio	Coefficient (SE)	t Ratio	Coefficient (SE)	t Ratio
AVG: Campus involvement (γ_{012})	0.26 (0.08)	3.12**	0.01 (0.07)	0.20	0.01 (0.05)	0.13
AVG: Pretest (γ_{013})	1.71 (0.17)	10.15***	0.29 (0.14)	2.10*	0.19 (0.10)	1.98*
Curricular diversity slope						
Base (γ_{10})	0.08 (0.02)	4.01***	0.17 (0.02)	10.40***	0.22 (0.01)	18.57***
% URM students (γ_{11})	-0.00 (0.00)	-0.33	0.00 (0.00)	0.14	0.00 (0.00)	1.72
AVG: Curricular diversity (γ_{12})	0.00 (0.06)	0.07	0.05 (0.05)	0.91	0.01 (0.04)	0.39
AVG: CRI (γ_{13})	-0.03 (0.06)	-0.48	0.06 (0.05)	1.18	-0.03 (0.03)	-0.79
AVG: High school GPA (γ_{14})			-0.17 (0.08)	-2.02*		
CRI slope						
Base (γ_{20})	0.14 (0.02)	7.39***	0.16 (0.02)	9.74***	0.35 (0.01)	32.28***
% URM students (γ_{21})	0.00 (0.00)	1.11	0.00 (0.00)	0.68	-0.00 (0.00)	-1.18
AVG: Curricular diversity (γ_{22})	-0.07 (0.06)	-1.07	-0.05 (0.05)	-0.93	-0.01 (0.04)	-0.17
AVG: CRI (γ_{23})	0.09 (0.06)	1.33	0.02 (0.05)	0.42	-0.07 (0.04)	-2.09*
AVG: Had part-time job on campus (γ_{24})	0.32 (0.12)	2.60**				

(continued)

Table 3 (continued)

Fixed Effects	Self-Efficacy			General Academic Skills			Racial/Cultural Engagement		
	Coefficient (SE)		t Ratio	Coefficient (SE)		t Ratio	Coefficient (SE)		t Ratio
Gender: Female (γ_{30})	-0.56 (0.03)		-15.96***	-0.04 (0.03)		-1.45	-0.08 (0.02)		-4.24***
Had a part-time job on campus (γ_{40})	-0.01 (0.03)		-0.16	0.08 (0.03)		2.68**	0.04 (0.02)		1.83
Level of campus involvement (γ_{50})	0.06 (0.02)		3.21**	0.03 (0.02)		2.31*	0.02 (0.01)		1.93
African American (γ_{60})	-0.32 (0.11)		-2.85**	-0.10 (0.09)		-1.10	-0.21 (0.06)		-3.25**
American Indian (γ_{70})	-0.07 (0.15)		-0.46	-0.31 (0.12)		-2.58*	-0.34 (0.08)		-4.03***
Asian (γ_{80})	-0.47 (0.08)		-5.64***	-0.36 (0.07)		-5.22***	-0.28 (0.05)		-5.74***
Latino (γ_{90})	-0.30 (0.10)		-3.12**	-0.01 (0.08)		-0.08	-0.24 (0.05)		-4.28***
High school GPA (γ_{100})	0.55 (0.04)		13.47***	0.00 (0.03)		0.09	0.02 (0.02)		1.02
Parental education (γ_{110})	0.08 (0.01)		7.74***	-0.00 (0.01)		-0.46	-0.04 (0.01)		-5.99***
Lived on campus in fall 1994 (γ_{120})	-0.27 (0.07)		-4.03***	-0.14 (0.05)		-2.60**	0.13 (0.04)		3.33**
Pretest (γ_{130})	1.46 (0.02)		81.57***	0.20 (0.01)		14.18***	0.05 (0.01)		6.03***

Random Effects	Var (df)	Chi-Square	Var (df)	Chi-Square	Var (df)	Chi-Square
Between institution (τ_{00}) (variance of intercepts)	0.09 (222)	555.95***	0.07 (222)	628.28***	0.03 (222)	696.63***
CRI slope (τ_{22})	0.01		0.01 (222)	274.27*		
Within institution (σ^2)	4.77		3.12		1.57	

Note. URM = underrepresented minority; AVG = average; CRI = cross-racial interaction; GPA = grade point average; Var = variance.
*p < .05. **p < .01. ***p < .001.

Whereas there is a strong positive association between individual engagement with CRI and knowledge of and ability to get along with people of different races or cultures, the institutional-level CRI appears to have an attenuating effect on the same outcome. That is, the positive association between individual CRI and racial-cultural engagement tends to be weaker at those institutions where the broader student body is interacting more frequently across racial lines. Put in another way, the effect of a student's own level of cross-racial interaction on this outcome is stronger at an institution with lower average levels of CRI among students than at one with higher levels. So with respect to achieving racial-cultural engagement, students' own level of cross-racial interaction is even more significant when there is a general absence of such interaction among the larger student body.

Practical Significance

To assess the practical significance of the statistically significant findings above, we followed Raudenbush and Bryk's (2002) suggestion and compared the variance estimates within institutions (σ^2) and between institutions (τ_{00}) for each type of significant engagement, then calculated the proportion of variance explained at Level 1 and also the proportion of variance explained at Level 2 in the final model.[5] These proportion-of-variance-explained indices provide another way of gauging the results. That is, variables that are stronger predictors tend to also account for a greater amount of variance in the outcome and are considered to have greater practical significance.

As shown in Tables 4 and 5, the practical significance of diversity measures varied by outcome. For the self-efficacy measure, the diversity variables accounted for only a small percentage of the total variance explained, suggesting that they have weak practical significance on this measure. By comparison, the diversity variables contributed to a larger proportion of the overall variance explained for the general academic skills outcome. At the student level, curricular diversity explained 0.8% and CRI explained 0.5% of the within-institution variability, whereas all other student-level variables explained 3.2% of the within-institution variance. At the institution level, the student body average level of curricular diversity engagement accounted for 4.7% of the total institution-level variance in general academic skills, compared to 41.8% of the between-institution variance by all of the other institution-level variables. These percentages-of-variance-explained indices for the diversity variables (at both levels) suggest modest practical significance.

The diversity variables yielded the most impressive practical significance on the racial-cultural engagement measure. Here, curricular diversity alone accounted for 2.9% of the total student-level variance, while CRI accounted for 5.2% of the variance. Comparatively, the student-level diversity-related activities account for a total of 8.1% of the variance explained whereas the student-level variables taken together explained 12.6% of the within-institution variance for racial-cultural engagement. When the institution-level variables were added in the model, the aggregate measure of curricular diversity accounted for 14.7%,

Table 4
Percentage of Variance Explained at Level 1

Within Institutions (σ^2)	Curricular Diversity	Cross-Racial Interaction	All Student-Level Variables
Self-efficacy	0.1	0.2	34.2
General academic skills	0.8	0.5	3.2
Racial-cultural engagement	2.9	5.2	12.6

Table 5
Percentage of Variance Explained at Level 2

Between Institutions (τ_{00})	% URM Students	Peer Average Level of Curricular Diversity	Peer Average Level of CRI	All Institutions Level Variable
Self-efficacy	3.0	0.0	0.0	76.9
General academic skills	0.0	4.7	0.0	41.8
Racial-cultural engagement	0.0	14.7	14.1	30.8

Note. URM = underrepresented minority; CRI = cross-racial interaction.

and the aggregate measure of CRI accounted for 14.1%, of the total institution-level variance in racial-cultural engagement. Those two variables taken together explain 28.8% of the total between-institution variance, compared to 30.8% by all other institution-level variables. From these findings, it can be said that both student- and institution-level diversity engagement have practical significance for promoting students' self-change in their knowledge of and ability to get along with people from different races and culture.

Student Body Racial Composition

As shown above, there are positive benefits students accrue by just being in an *environment* where other students have higher levels of engagement with racial diversity, either through curricular activities or cross-racial interaction. Curiously, the percentage of URMs in the student body did not have a statistically significant effect on any of the outcomes tested. It is, however, premature to suggest that the racial composition of the student body does not matter. Intuitively, it would seem that having larger proportions of underrepresented students in the student body would increase diversity-related engagement among students. Indeed, institutions with larger proportions of underrepresented students tend to also have a student body that has higher average levels of both cross-racial interaction and participation in diversity-related courses and/or activities. The relationship between the proportion of underrepresented students and student body level of cross-racial interaction is particularly strong ($r = .46, p < .001$).
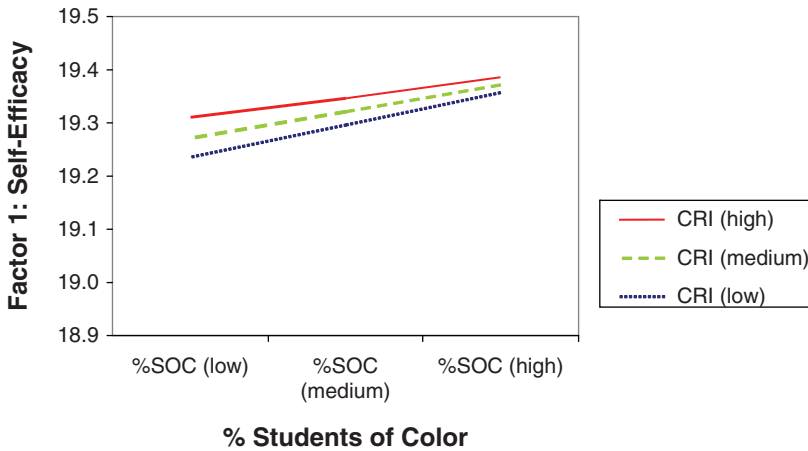
Figure 1. **Interaction plot of structural diversity by average levels of cross-racial interaction (CRI) for self-efficacy.**

Note. SOC = students of color.

Given the interrelated nature of these three variables, our study does not test the possibility that student body racial composition might moderate the positive effects associated with both student body cross-racial interaction and student body participation in diversity-related courses and/or activities. We found some evidence of moderating potential when we plotted the percentage of underrepresented students by student body cross-racial interaction on self-efficacy.[6] Figure 1 suggests that the effect of the institution-level cross-racial interaction on self-efficacy tends to be stronger on campuses that have larger proportions of underrepresented students. We recommend conducting multilevel structural equation modeling (SEM) to test how racial composition might moderate the effects of student body cross-racial interaction on students' development, which is beyond the scope of this study.

Discussion

This study examines issues critical to ongoing debates concerning race-conscious admissions practices in higher education. Even though the U.S. Supreme Court ruled in its 2003 decision to allow colleges and universities to consider race in making admissions decisions, the ruling has not yet fully settled this controversy. This study builds on a growing body of research related to those debates by examining two key research questions.

First, we asked, "Do different forms or expressions of campus racial diversity contribute uniquely to students' learning and educational experiences when they are simultaneously tested, while accounting for the nested structure of multilevel data?" The findings of our study overcome some important limitations of

previous research yet still confirm previous findings based on single-level statistical approaches. Using multilevel modeling, we confirmed the positive educational benefits associated with involvement in workshops or classes geared toward diversity and interaction with others of another racial-ethnic group. Specifically, the findings from our study demonstrate that a student's own frequency of engagement in diversity through curricular activities or CRI is associated with positive ratings of his or her own self-efficacy, academic skills, and self-change in his or her capacity to engage with racial-cultural differences.

Our student-level findings are particularly impressive because the effects of curricular diversity and CRI were consistently and significantly positive across all three outcomes, even after controlling for a range of relevant student and institutional characteristics, including pretests of the outcome measures. These results suggest that when students interact more frequently across race or engage with diversity by taking ethnic studies courses, participating in racial-cultural awareness workshops, or joining ethnic-racial student organizations, they also tend to report higher levels of self-efficacy and self-change concerning general academic skills and racial-cultural engagement. Both curricular diversity and CRI explained a significant proportion of the differences within institutions for all these outcomes. The positive educational benefits of curricular diversity and CRI are most remarkable for improving students' capacity to engage in racial-cultural difference, as those two activities explained *most* of the within-institution differences.

For our second research question, we asked, "Does a campus where students take greater advantage of those racial diversity–related opportunities have independent positive effects on students' learning and educational experiences?" By using HLM, we were able to assess the *contextual* effects of both curricular diversity and CRI, which previous studies have not adequately undertaken. We found that being in an *environment* where students are more engaged with diversity had significant positive educational effects. Specifically, the peer group *average* measure of curricular diversity had a significant positive effect on a student's general academic skills and racial-cultural engagement. Additionally, the peer group *average* measure of CRI had a significant positive effect on racial-cultural engagement. Interestingly, the peer group *average* measure of CRI also attenuated the *relationship* between individual CRI and racial-cultural engagement. The positive association between individual engagement with CRI and improving one's knowledge of and ability to get along with people of different races or cultures gets stronger as an institution's *average* level of CRI drops. In other words, the benefits of interacting with others of another race or ethnicity on racial-cultural engagement seem to be even more significant for students when their campus peers are interacting less frequently.

Although our measure of student body racial composition did not yield statistically significant effects on any of the outcomes, we suspect that having greater racial diversity in the student body may moderate in positive ways the benefits associated with diversity engagement, particularly, CRI. In any

case, our findings do not support claims (Rothman et al., 2002) that greater racial diversity in the student body harms students' educational experiences and learning.

Similar to the student-level findings, the institution-level findings concerning students' capacity to engage with diversity are educationally meaningful. The positive educational benefits of the peer group average measures of curricular diversity and CRI explained most of the relative between-institution differences for the racial-cultural engagement outcome. It seems when it comes to practical significance, the effect of being an undergraduate on a campus where the student body is more actively engaged with diversity is most robust for cultivating students' knowledge of and ability to get along with peoples of different races or cultures.

Implications and Conclusions

This study confirms previous findings but also suggests that the benefits associated with racial diversity may be even more far-reaching than previously documented. There are appreciable educational benefits associated with racial diversity, which are independent of a student's own level of engagement and point to normative effects. Campuses where students are more engaged with racial diversity through related knowledge acquisition or cross-racial interaction have measurable positive effects on all students irrespective of a student's own frequency of engagement with diversity. Although our institutional measures do not enable us to point to exactly what institutions are doing to facilitate greater racial diversity-related engagement among their student body, achieving higher levels of student body engagement does not occur by accident but requires intentional effort.

While all institutions should theoretically have the potential of exposing students to diversity throughout their college careers (Alger, 1997), we found in the case of our academic skills outcome that the positive effects of cross-racial interaction varies by institution. Other studies have also found variations related to diversity across institutions. Hu and Kuh (2003) found that students attending large doctoral-extensive universities and liberal arts colleges had more experiences with diversity than students at other institutional types. The first finding was not unexpected, given that larger universities tend to be more racially diverse. The second finding regarding liberal arts colleges, on the other hand, was somewhat surprising, given that they tend to be located in less racially diverse and more rural locations.

In a more recent study, Umbach and Kuh (2006) found that students attending liberal arts colleges were more likely to engage in diversity-related activities and to report higher gains in understanding people from diverse backgrounds than their peers at other types of colleges and universities. The authors suggest that while liberal arts colleges tend to be structurally less diverse themselves, "it appears that a distinctive dimension of contemporary liberal arts colleges is their ability to expose

students to diversity in educationally purposeful ways" (p. 172). Thus, it appears that there is a contextual effect that is unique to liberal arts colleges, which may be associated with their stronger liberal arts orientation and tradition.

Umbach and Kuh's (2006) findings suggest that certain types of institutions have a stronger capacity to realize the added educational benefits associated with diversity. In all likelihood, this capacity is not exclusive to just liberal arts colleges but can be intentionally developed. Richardson and Skinner (1990), for example, concluded in their study of nine 4-year institutions that the coordination of a wide variety of strategies is more critical than the implementation of a particular program or policy for determining the success of how institutions adapt successfully to diversity. According to Chang (2002), campus diversity efforts should move beyond striving toward superficial changes and seek to transform the normative context by addressing deeply held institutional values and practices. Campuses where students are offered more diversity-related opportunities and are encouraged to take advantage of them are also those that are likely to possess a unique normative context that embraces diversity and are serious about eradicating racism. From a practical standpoint, our findings suggest that students benefit from being educated in such a context.

Such findings also have theoretical implications. Although psychological theories advance understanding of how students benefit from diversity, they do not fully capture the broader normative benefits accrued by students. Those benefits can be explained by organizational and sociological frameworks that were discussed earlier (Antonio & Muñiz, 2007; Berger, 2000). If higher levels of student body engagement with diversity signal more cohesive and consistent positive organizational behavior toward diversity, then the positive effects of greater student body engagement can be interpreted as a result of a more intense environment shaped by institutional practices and shifting student needs, which enhances the benefits of diversity. If so, then our institution-level findings appear to support Clark et al.'s (1972) assertion that campuses will have a more powerful impact on students when those colleges have clear interests, in this case, with diversity, which are articulated through congruent and consistent sets of policies, practices, ideals, and communication of values in everyday campus life.

Hurtado, Milem, Clayton-Pederson, and Allen (1998) have specifically discussed the importance of similar institutional qualities in maximizing the educational benefits associated with diversity. Their conceptual framework, however, focuses on how those institutional qualities shape students' capacity to engage successfully with diversity, which in turn leads to educational benefits. The findings from this study extend that thinking by suggesting that the context that facilitates engagement can itself directly advance benefits for students, which are independent of a student's own frequency of engagement. Thus, as explained by certain organizational behavior and sociological frameworks, even students with low personal levels of involvement and

CRI also benefit from being educated in a context that facilitates higher *average* levels of involvement and CRI among all students.

One issue with contextual effects identified through HLM, however, is that they are open to widely varying interpretations (Raudenbush & Bryk, 2002). On the one hand, such contextual effects may occur because of the normative effects associated with an organization as described above. On the other hand, the contextual effect may instead be a proxy for other important institutional characteristics that were omitted from the statistical model (e.g., racial climate, resource allocation). Thus, even though this study demonstrates possible normative effects of curricular diversity and CRI, it is unclear as to what exactly is the source of these effects. Future research should attempt to examine more closely the actual *causes* (or sources) of these contextual effects. Additionally, future studies should also examine if and how involvement and interaction in diversity-related activities, as well as their contextual effects, exert long-lasting benefits for students even after they leave college. Although this study was able to assess the positive effects associated with different types of diversity-related activities near the end of a student's undergraduate studies, this line of inquiry would also benefit from longitudinal research that follows up on students in the years after graduation.

It would also be beneficial to explore the role of diverse administrators, staff, or educators in higher education as a related line of inquiry into contextual effects. There has been research that suggests that faculty of color are vital to American higher education for a number of reasons, such as providing students with diverse role models, providing support and mentoring to minority students, and being supportive of and engaging in nontraditional scholarship areas (Antonio, 2002; Brown, 2000). Future research should explore how faculty of color may contribute to the contextual effect of an institution.

It should also be noted that in a narrow consideration of the broader educational benefits associated with diversity, as is the case here, it is easy to lose sight of how different groups of students are differentially affected by various diversity-related efforts on campus. When it comes to implementing or dismantling institutional policies, practices, and programming, the stakes can be quite different depending on a group's vantage point. For example, Espenshade and Chung (2005) found that eliminating race as a factor for making admissions decisions could lead to a significant drop in admission offers for African American and Latino applicants yet no significant gains for White applicants. Although we consider diversity in terms of its added benefits for all students, clearly the educational stakes for URM students can be positioned as having less to do with "added" benefits and more to do with discrimination or equal access and opportunity. Thus, consideration of campus diversity should extend beyond a narrow educational rationale focus (Chang, 2002, 2005).

In conclusion, it is becoming increasingly clear that the quality of undergraduate education is appreciably enhanced by diversity-related

efforts on colleges and universities. Those efforts appear to improve students' experiences and learning by cultivating key behaviors and knowledge and by providing a unique educational context. As we are now discovering, the effects associated with racial diversity are even more far-reaching because there are promising contextual effects that are independent of student-level engagement. Our findings suggest that organizational congruence and consistency make an appreciable difference in the educational process. Given this, the weakening of some diversity-related efforts, such as race-conscious programming and policies, will likely have a negative effect on an institution's organizational cohesiveness to address and support diversity, reducing its overall capacity to realize those related educational benefits for students. The issue concerning whether or not racial diversity adds value in higher education seems to be well settled in educational research. What is much less clear is whether or not future policy shifts will either improve or constrain the range of tools that institutions can utilize to maximize the educational benefits associated with diversity.

Indeed, the policy arena associated with those practices is rapidly shifting. In November of 2006, Michigan voters passed an initiative that banned public institutions from using affirmative-action programs that considered race, gender, color, ethnicity, or national origin for public employment, education, or contracting purposes. The language of this initiative resembles California's Proposition 209, which was passed in 1996. Also, the U.S. Supreme Court ruled in June 2007 that two separate voluntary school integration plans used in Seattle and Louisville, which considered students' race in admissions, were unconstitutional. The Supreme Court, however, did not overturn a prior ruling regarding the University of Michigan's law school, which allows for a narrow use of race in making admissions decisions in higher education. Even so, Justice Sandra Day O'Connor, who wrote the majority opinion in that 2003 ruling, does not believe that within 25 years of that decision, "racial preferences" will be necessary to further the educational interests that were upheld by the Court. Yet the findings from this study suggest that the elimination of race-conscious practices will likely have a detrimental effect on an institution's capacity to maximize those educational interests. More research, however, is needed to uncover the finer details regarding educational context, which will provide a clearer understanding of what institutions can actually do to apply diversity as an educational tool that supports student learning and development. After all, it appears that each campus, and not the courts, will in the end have the most control over and impact on whether and how those widely held educational interests will be realized.

Appendix A
List of Control Variables
(surveyed in 1994 unless noted otherwise)

Student Characteristics

Gender: Coded as 0 = male and 1 = female.

Race: Coded as five dummy variables indicating race of student (African American, Native American, Asian American, Latino, and White); 0 = no and 1 = yes.

Parental education: Mother's education and father's education coded on an 8-point scale from 1 = both have grammar school or less to 8 = both have graduate degrees.

High school GPA: Coded on a continuous scale from 1.0 = D to 4.0 = A or A+.

Lives on campus: Coded as 0 = no and 1 = yes.

Part-time job on campus (1998): Coded as 0 = not marked and 1 = marked.

Level of involvement (1998): Coded as 0 = not marked and 1 = marked (standardized). Index of student responses on three items about whether or not they joined a
> Fraternity or sorority
> Student government
> Racial-ethnic organization

Pretest for self-efficacy (standardized): Coded on a 5-point scale from 1 = lowest 10% to 5 = highest 10%. Index (α =.686) of self-rating comparing with the average person the student's age on the following traits (1994):
> Drive to achieve
> Self-confidence (intellectual)
> Competitiveness
> Academic ability
> Writing ability

Pretest for general academic skills (standardized): Coded on a 5-point scale from 1 = lowest 10% to 5 = highest 10%. Index (α = .510) of self-rating comparing with the average person the student's age on the following traits:
> Academic ability
> Writing ability

Pretest for racial-cultural engagement (standardized): Coded on a 4-point scale from 1 = not important to 4 = essential. Index (α = .528) of student responses on two items about the importance of
> Promoting racial understanding
> Helping others who are in difficulty

Curricular diversity (standardized) (1998): Coded as 0 = not marked and 1 = marked. Index of student responses on three items about whether or not they have participated in the following activities since entering college:
> Taken an ethnic studies course
> Attended a racial-cultural awareness workshop
> Participated in an ethnic-racial student organization

Cross-racial interaction (standardized) (1998): Coded on a 3-point scale from 1 = not at all to 3 = frequently. Index (α = .791) of student responses to the item, At the college you entered as a freshman, indicate how often you
> Interacted with someone of a different racial-ethnic group in class

(continued)

Appendix A (continued)

> Studied with someone from a different racial-ethnic group
> Dined with someone from a different racial-ethnic group
> Dated someone from a different racial-ethnic group
> Socialized with someone from a different racial-ethnic group

Institutional Characteristics

Control: Coded as 0 = public and 1 = private.
Selectivity: Average SAT Verbal and SAT Math scores of entering freshmen.
Size: Number of full-time undergraduate students enrolled at the institution.
% of underrepresented minority students: % Latino + % Black + % Native American.

Appendix B
Descriptive Statistics for All Variables

Variable	Minimum	Maximum	Mean	Standard Deviation
Student-level variables (N = 20,178 students)				
Gender: Female (0 = male and 1 = female)	0.00	1.00	0.63	0.48
American Indian (0 = no and 1 = yes)	0.00	1.00	0.01	0.11
Asian American (0 = no and 1 = yes)	0.00	1.00	0.04	0.20
African American (0 = no and 1 = yes)	0.00	1.00	0.02	0.15
Latino/Latina (0 = no and 1 = yes)	0.00	1.00	0.03	0.17
Parental education (1 = grammar school to 8 = graduate degrees)	1.00	8.00	5.56	1.62
High school GPA (1 = D to 4 = A or A+)	1.00	4.00	3.50	0.45
Lived on campus in fall 1994 (0 = no and 1 = yes)	0.00	1.00	0.92	0.28
Had a part-time job on campus (0 = no and 1 = yes)	0.00	1.00	0.64	0.48
Level of campus involvement (standardized)	−0.77	3.64	0.00	1.00
Pretest for Factor 1: Self-Efficacy (standardized)	−4.46	2.28	0.00	1.00
Pretest for Factor 2: General Academic Skills (standardized)	−4.36	1.95	0.00	1.00
Pretest for Factor 3: Racial-Cultural Engagement (standardized)	−2.32	2.12	0.00	1.00
Curricular diversity (standardized)	−0.99	2.22	0.00	1.00

(continued)

Appendix B (continued)

CRI (standardized)	−2.24	2.20	0.00	1.00
Factor 1: Self-Efficacy (5 = lowest 10% to 25 = highest 10%)	5.00	25.00	19.36	2.76
Factor 2: General Academic Skills (2 = lowest 10% to 10 = highest 10%)	4.00	20.00	17.20	1.83
Factor 3: Racial-Cultural Engagement (2 = not important to 8 = essential)	2.00	10.00	7.55	1.36
Institution-level variables (*N* = 236 institutions)				
Size (natural log of the number of full-time undergraduates)	5.95	10.35	7.64	0.90
Selectivity (average SAT Verbal + SAT Math of freshman)	756.00	1410.00	991.77	123.87
Institutional control: Private (0 = public and 1 = private)	0.00	1.00	0.84	0.36
% URM students	0.00	51.00	8.77	6.64
AVG: Gender: Female	0.00	1.00	0.65	0.16
AVG: American Indian	0.00	0.32	0.02	0.03
AVG: Asian American	0.00	0.44	0.04	0.06
AVG: African American	0.00	0.21	0.03	0.04
AVG: Latino	0.00	0.21	0.03	0.04
AVG: Parental education	3.79	6.86	5.41	0.63
AVG: High school GPA	2.89	3.93	3.47	0.20
AVG: Lived on campus in fall 1994	0.01	1.00	0.90	0.15
AVG: Had a part-time job on campus	0.00	0.96	0.65	0.17
AVG: Level of involvement	−0.61	1.15	0.01	0.36
AVG: Pretest for Factor 1	−0.94	1.14	−0.05	0.34
AVG: Pretest for Factor 2	−1.02	1.08	−0.04	0.36
AVG: Pretest for Factor 3	−0.75	0.61	0.01	0.22
AVG: Curricular diversity	−0.92	1.00	−0.01	0.39
AVG: CRI	−0.91	1.29	0.07	0.42
AVG: Factor 1: Self-Efficacy	17.52	21.91	19.33	0.73
AVG: Factor 2: General Academic Skills	15.91	18.76	17.14	0.43
AVG: Factor 3: Racial-Cultural Engagement	6.80	8.69	7.64	0.32

Note. GPA = grade point average; CRI = cross-racial interaction; URM = underrepresented minority; AVG = average.

Notes

[1]We excluded students who had missing data or marked *other* on race (506 students) or planned residence for fall 1994 (52 students). We also excluded 2-year institutions (12 students), historically Black colleges and universities (313 students), institutions with fewer than 15 respondents (168 students), and institutions with missing data on the number of full-time undergraduate enrollment or selectivity (422 students). For the remainder of the sample, we replaced missing data on variables with the mean of the respondent's race.

[2]Slope homogeneity was tested by examining the estimated institution-level variances for the random curricular diversity slope and the random cross-racial interaction slope using the following rationale:

Curricular diversity slope: H_0: $\text{Var}(u_{1j}) = \text{Var}(\beta_{1j}) = 0$;

and

Cross-racial interaction slope: H_0: $\text{Var}(u_{2j}) = \text{Var}(\beta_{2j}) = 0$.

    If the null hypothesis is rejected, it implies variation among institutions in the effect of curricular diversity and/or cross-racial interaction (CRI) on the outcome. For the measures of self-efficacy, $\chi^2(df = 235) = 266.54$, general academic skills, $\chi^2(df = 235) = 249.57$, and racial-cultural engagement, $\chi^2(df = 235) = 230.67$, all three chi-square tests for the *curricular diversity slope* were nonsignificant ($p > .05$), suggesting that the effect of curricular diversity on all three outcomes does not seem to vary across institutions. Given this, the variances of the curricular diversity slopes for all three outcomes were specified as zero. For the measures of self-efficacy, $\chi^2(df = 235) = 250.89$, and racial-cultural engagement, $\chi^2(df = 235) = 243.46$, the chi-square tests for the *CRI slope* were nonsignificant ($p > .05$), suggesting that the effect of CRI on these two outcomes does not seem to vary across institutions. Thus, the variances of the CRI slopes for these two outcomes were specified as zero. Conversely, the variance for the CRI slope was specified as random for the general academic skills measure because its effect varied significantly across institutions, $\chi^2(df = 235) = 279.62$, $p < .05$.

    [3]Since there was no identical pretest for curricular diversity or CRI, we used an index of two items: the importance of promoting racial understanding and view that racial discrimination is no longer a problem (reverse coded).

    [4]The intraclass correlation (ρ) is computed by the following formula: $\rho = \tau_{00}/(\tau_{00} + \sigma^2)$.

    [5]The proportion reduction in variance, or variance explained, at the student level (within institutions) is calculated as

$$\frac{\sigma^2(\text{unconditional model}) - \sigma^2 (\text{conditional model})}{\sigma^2(\text{unconditional model})}$$

The proportion reduction in variance, or variance explained, at the institution level (between institutions) is similarly calculated as

$$\frac{\tau_{00}(\text{unconditional model}) - \tau_{00}(\text{conditional model})}{\tau_{00}(\text{unconditional model})}$$

    [6]It is also quite plausible that increased structural diversity may give rise to campuses' being obligated to offer more diversity-related courses and/or activities. The correlation between percentage of underrepresented minority students and average level of curricular diversity is small ($r = .12$, $p > .05$). Thus, while this relationship seems plausible, our findings provide no support for this hypothesis.

References

Alger, J. R. (1997). The educational value of diversity. *Academe*, *83*, 20–23.

Antonio, A. L. (2001). The role of interracial interaction in the development of leadership skills and cultural knowledge and understanding. *Research in Higher Education*, *42*, 593–617.

Antonio, A. L. (2002). Faculty of color reconsidered: Reassessing contributions to scholarship. *Journal of Higher Education*, *73*, 582–602.

Antonio, A. L., Chang, M. J., Hakuta, K., Kenny, D. A., Levin, S., & Milem, J. F. (2004). Effects of racial diversity on complex thinking in college students. *Psychological Science*, *15*, 507–510.

Antonio, A. L., & Muñiz, M. M. (2007). The sociology of diversity. In P. J. Gumport (Ed.), *Sociology of higher education* (pp. 266-294). Baltimore: Johns Hopkins University Press.

Astin, A. W. (1993a). Diversity and multiculturalism on the campus: How are students affected? *Change*, *23*, 44–49.

Astin, A. W. (1993b). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Berger, J. B. (2000). Organizational behavior at colleges and student outcomes: A new perspective on college impact. *Review of Higher Education*, *23*, 177–198.

Bowen, W. G., & Bok, D. (1998). *The shape of the river: Long-term consequences of considering race in college and university admissions*. Princeton, NJ: Princeton University Press.

Brown, T. L. (2000). Gender differences in African American students' satisfaction with college. *Journal of College Student Development*, *41*, 479–487.

Chang, M. J. (2001). Is it more than about getting along? The broader educational relevance of reducing students' racial biases. *Journal of College Student Development*, *42*, 93–105.

Chang, M. J. (2002). Preservation or transformation: Where's the real educational discourse on diversity? *Review of Higher Education*, *25*, 125–140.

Chang, M. J. (2005). Reconsidering the diversity rationale. *Liberal Education*, *91*, 6–13.

Chang, M. J., Astin, A. W., & Kim, D. (2004). Cross-racial interaction among undergraduates: Some causes and consequences. *Research in Higher Education*, *45*, 527–551.

Chang, M. J., Denson, N., Sáenz, V., & Misa, K. (2006). The educational benefits of sustaining cross-racial interaction among undergraduates. *Journal of Higher Education*, *77,* 430–455.

Clark, B. R., Heist, P., McConnell, T. R., Trow, M. A., & Yonge, G. (1972). *Students and colleges: Interaction and change*. Berkeley, CA: Center for Research and Development in Higher Education.

Erikson, E. (1946). Ego development and historical change. *Psychoanalytic Study of the Child*, *2*, 359–396.

Erikson, E. (1956). The problem of ego identity. *Journal of American Psychoanalytic Association*, *4*, 56–121.

Espenshade, T. J., & Chung, C. Y. (2005). The opportunity cost of admission preferences at elite universities. *Social Science Quarterly*, *86*(2), 293–305.

Grutter, et al. v. Bollinger, et al., 539 U.S. (2003).

Gurin, P. (1999). Expert report: "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.). *Equity and Excellence in Education*, *32*(2), 36–62.

Gurin, P., Dey, E. L., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*, *72*, 330–366.

Hu, S., & Kuh, G. D. (2003). Diversity experiences and college student learning and personal development. *Journal of College Student Development*, *44*, 320–334.

Hurtado, S. (2001). Linking diversity and educational purpose: How diversity affects the classroom environment and student development. In G. Orfield (Ed.), *Diversity challenged: Legal crisis and new evidence* (pp. 187–203). Cambridge, MA: Harvard Publishing Group.

Hurtado, S. (2005). The next generation of diversity and intergroup relations research. *Journal of Social Issues*, *61*, 595–610.

Hurtado, S., Milem, J., Clayton-Pederson, A. R., & Allen, W. R. (1998). Enhancing campus climates for racial/ethnic diversity: Educational policy and practice. *Review of Higher Education*, *21*, 279–302.

Lopez, G. E. (2004). Interethnic contact, curriculum, and attitudes in the first year of college. *Journal of Social Issues*, *60*, 75–94.

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*, *46*, 365–387.

Nelson Laird, T. F., Engberg, M. E., & Hurtado, S. (2005). Modeling accentuation effects: Enrolling in a diversity course and the importance of social action engagement. *Journal of Higher Education*, 76, 448–476.

Pascarella, E. T. (2001). Using student self-reported gains to estimate college impact: A cautionary tale. *Journal of College Student Development*, *42,* 488–492.

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. (1991). *How college affects students*. San Francisco: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.

Piaget, J. (1985). *The equilibrium of cognitive structures: The central problem of intellectual development*. Chicago: University of Chicago Press. (Original work published 1975)

Pike, G. R. (1995). The relationship between self-reports of college experiences and achievement test scores. *Research in Higher Education*, *36*, 1–21.

Pike, G. R., & Kuh, G. D. (2006). Relationships among structural diversity, informal peer interactions and perceptions of the campus environment. *Review of Higher Education*, *29*, 425–450.

Raudenbush, S. W, & Bryk, A. S. (1986). A hierarchical model for studying school effects. *Sociology of Education*, *59*, 1–17.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Richardson, R. C., & Skinner, E. F. (1990). Adapting to diversity: Organizational influences on student achievement. *Journal of Higher Education*, *61*, 485–511.

Rothman, S., Lipset, S. M., & Nevitte, N. (2002). Does enrollment diversity improve university education? *International Journal of Public Opinion Research*, *15*, 8–26.

Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W. H., & Shavelson, R. J. (2007). *Estimating causal effects using experimental and observational designs* (Report from the governing board of the American Educational Research Association Grants Program). Washington, DC: American Educational Research Association.

Springer, L., Palmer, B., Terenzini, P. T., Pascarella, E. T., & Nora, A. (1996). Attitudes toward campus diversity: Participation in a racial or cultural awareness workshop. *Review of Higher Education*, *20*, 53–68.

Terenzini, P. T., Cabrera, A. F., Colbeck, C. L., Bjorklund, S. A., & Parente, J. M. (2001). Racial and ethnic diversity in the classroom: Does it promote student learning? *Journal of Higher Education*, *72*, 509–531.

Umbach, P. D., & Kuh, G. D. (2006). Student experiences with diversity at liberal arts colleges: Another claim for distinctiveness. *Journal of Higher Education*, *77*, 169–192.

Wells, A., Duran, J., & White, T. (in press). Refusing to leave desegregation behind: From graduates of racially diverse schools to the Supreme Court. *Teachers College Record*, *110*(12).

Zúñiga, X., Williams, E. A., & Berger, J. B. (2005). Action-oriented democratic outcomes: The impact of student involvement with campus diversity. *Journal of College Student Development*, *46*, 660–678.