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CROSS-RACIAL INTERACTION AMONG UNDERGRADUATES: Some Consequences, Causes, and Patterns

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This study utilized a national longitudinal data set of college students to examine the educational relevance of cross-racial interaction and how campuses can best structure such opportunities. The general pattern of findings suggests that cross-racial interaction has positive effects on students' intellectual, social, and civic development. The results show that institutions could enhance such experiences by enrolling larger proportions of students of color and by offering students more opportunities to live and work part-time on campus. While these findings apply uniformly to white students, the frequency of cross-racial interaction does not always follow an expected path of steady gains for students of color as the student body becomes increasingly more diverse. Implications of the findings are discussed.

KEY WORDS: race; diversity; campus climate; student development; equity; affirmative action.

INTRODUCTION

Much attention has recently been given to the question of whether, and how, racial diversity in the undergraduate student body affects the educational development of the college undergraduate. This question has been particularly important for the courts because they have had to decide on the constitutional permissibility of accounting for an applicant's racial background in college admissions. Presently, the legal foundation for race-conscious admissions practices rests on the U.S. Supreme Court's 1978 *Regents of the University of California v. Bakke* decision. Although the Supreme Court was deeply splintered over this landmark case, the general outcome was that the Court prohibited racial quotas but allowed race to be used as a "plus factor." Because Justice Lewis Powell played

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a pivotal role in this decision, his opinion on *Bakke* is now cited regularly to defend race-conscious admissions practices. Justice Powell essentially reasoned that because there are educational benefits associated with a diverse student body, and that the First Amendment allows a university the freedom to make its own judgments as to education, consideration of race is permissible when admitting students.

This opinion, however, has been the focus of intense legal and public debate. More recent lower court decisions regarding separate race-conscious admissions practices, for example, have both supported and rejected Powell's educational argument about the benefits of diversity (see Liu, 1998, and Olivas, 1997, for a discussion of these cases). Although this controversy is very much an educational issue, educational research has been curiously absent from court deliberations, except in those cases involving The University of Michigan. At the same time, because this controversy revolves around researchable educational assumptions, researchers have begun to conduct more studies to inform this debate. Accordingly, several recent findings have shed new light on the question of whether, and how, undergraduate students might potentially benefit from a racially diverse student body.

From these studies, it has become increasingly evident that cross-racial interaction plays a key role in achieving the educational benefits associated with racial diversity. A set of studies has linked higher levels of cross-racial interaction to greater cognitive development (Astin, 1993a; Gurin, Dey, Hurtado, and Gurin, 2002; Hurtado, 2001), more positive academic and social self-concept (Chang, 1999; Gurin et al., 2002), higher graduation rates (Bowen and Bok, 1998; Chang, 1999), growth in leadership skills and cultural awareness/understanding (Antonio, 2001b; Astin, 1993a; Milem, 1994), higher levels of civic interest (Gurin et al., 2002; Hurtado, 2001), and college satisfaction (Astin, 1993a; Chang, 1999). These findings support a well-established premise regarding student development, namely, that students' interpersonal interaction with peers is one of the most powerful educational resources in higher education (Astin, 1993b; Kuh, 1995; Milem, 1994; Pascarella and Terenzini, 1991; Terenzini, Pascarella, and Blimling, 1996).

It is perhaps self-evident that racial diversity is a necessary condition for cross-racial interaction to occur. To be sure, a number of studies have shown that students who attend campuses that are more racially diverse report higher frequencies of cross-racial interaction (Chang, 1999; Gurin et al., 2002; Hurtado, Carter, and Sharp, 1995; Hurtado, Dey, and Treviño, 1994). Given these relationships, some have argued that when there is a diverse student body, the environment enhances the chances that students will socialize across racial groups, and having this type of interaction can in turn have a positive impact on students' development (Chang, 1999, 2002; Gurin et al., 2002). This argument suggests that the educational potential of "diversity" is not reducible simply to

the mere presence of underrepresented students, but, rather, its value appears to depend on whether or not it leads to greater cross-racial interaction. The relationship between racial diversity and cross-racial interaction, however, is far from clear. Presently there is a shortage of information about this relationship and the conditions that generally help to maximize cross-racial interaction among undergraduate students.

Because such interaction seems to play a central role in how a racially diverse student body might potentially add value to students' learning and educational experiences, as claimed by Justice Powell, this study seeks to examine both the educational effects of cross-racial interaction and the conditions that affect it. Specifically, we first examine the effects of cross-racial interaction found in previous studies by testing to see whether those positive effects can be replicated on a more comprehensive set of student outcome measures. Second, we examine the conditions that help to promote cross-racial interaction, paying special attention to the racial composition of institutions.

While this study builds on the handful of other studies that have tested either the effects of cross-racial interaction or the conditions that promote interaction, it also distinguishes itself in several ways. First, unlike other studies, this one examined the effects of cross-racial interaction on a broader range of student outcomes. Specifically, we used 6 outcome measures reflecting a range of both cognitive and affective outcomes as well as psychological and behavioral measures. Second, this study utilized a data set that has more contemporary students (from the late 1990s) and a more diverse sample of institutions with respect to the racial composition of the student body. Previous studies (Astin, 1993a; Bowen and Bok, 1998; Chang, 1999; Gurin et al., 2002; Hurtado et al., 1995; Hurtado et al., 1994; Milem, 1994) have either drawn from national longitudinal data sets that were nearly a decade older than the one that we used or relied mainly on data collected from a single institution (Antonio, 2001a, 2001b). Lastly, unlike previous studies, this one examined different forms of cross-racial interaction (i.e., studying with, dining with, or dating someone from a different racial/ethnic group) and also combined them as a generic composite measure. Because of these important differences, this study attempted to make a unique contribution to understanding better the educational relevance of cross-racial interaction and how campuses can best structure such opportunities.

METHOD

The longitudinal data used in these analyses came primarily from the Cooperative Institutional Research Program (CIRP) operated by the Higher Education Research Institute (HERI) in the Graduate School of Education and Information Studies at the University of California, Los Angeles (UCLA). Student survey data were collected at two time points: at the time of initial entry to college and

4 years later. For the purposes of the CIRP, the targeted population was all institutions of higher education listed in the 1994 Opening Fall Enrollment files of the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). It should be noted that most proprietary, special vocational, or semiprofessional institutions were not included in the population. An institution was considered eligible if it had a first-time full-time (FTFT) freshman class of at least 25 students. All eligible institutions were invited to participate. Of the approximately 2,700 eligible institutions in 1994, 670 agreed to participate.

In 1994, the CIRP Freshman survey (Astin, Korn, Sax, and Mahoney, 1994) was administered to entering college freshmen during orientation programs and in the first few weeks of fall classes. In short, students were surveyed before they had any substantial experience with college life. This survey elicited information on students' personal and demographic characteristics, high school experiences, and expectations about college, as well as values, life goals, self-concepts, and career aspirations. Generally speaking, an institution was included in the data set if it provided a representative sample of its FTFT freshman class. Moreover, the minimum student response rate required of a sample is based on the type of institution from which it was collected (85% for 4-year colleges and 75% for universities). Institutions whose sample proportions were less than but close to those cutoffs were included if the method used to administer the survey showed no systematic biases in freshman class coverage. Overall, the 1994 Freshmen data set included survey information from approximately 237,777 students from 461 colleges and universities. This information mainly served as a pretest for longitudinal assessment of the educational impact of cross-racial interaction.

A follow-up survey was conducted in 1998, which included questions on students' college experience, their perceptions of college, and posttests of many of the items that appeared on the 1994 Freshmen survey. The follow-up sample used in this study was selected from the original 237,777 first-year students, through stratified random sampling that was designed to best reflect the national distribution of students across different institutional types. The 1998 follow-up survey yielded a response rate of approximately 22.3%, resulting in a final matched sample of 16,078 students from 154 colleges and universities. Liberal Arts institutions were slightly overrepresented in this sample. Because we excluded 2-year institutions, historically black colleges and universities (HBC&Us),[1] institutions with fewer than 15 follow-up respondents, and respondents with missing data, the longitudinal sample used in this study was comprised of approximately 9,703 students who entered 134 different 4-year colleges and universities.

Using Astin's conceptual framework (1991, 1993b) as a guide, six outcome measures that targeted cognitive, psychological, behavioral, or affective developmental areas were selected for analysis. This set of student outcomes was selected because it represented some of the broad goals of undergraduate liberal

education (Astin, 1985; Bowen, 1977). To improve parsimony and to establish independence of outcome measures, exploratory factor analyses were conducted (Table 1) using principal component factoring and varimax rotation methods. Factor loadings that contained a score of at least .75 or higher were retained in the development of each of the three subsequent summated rating scales.

The principal independent variables of interest concern the student's level of cross-racial interaction. This was measured by a set of 1998 survey questions about how often the student engaged in the following activities at the college (all coded as a 3-point scale; 1 = not at all, 2 = occasionally, and 3 = frequently):

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,
interacted in class with someone from a different racial/ethnic group.

TABLE 1. Factor Loadings and Reliabilities for Dependent Variables (all surveyed in 1998)

Factor and Survey Items	Factor Loading	Internal Consistency (alpha)
Intellectual Ability[a]		.65
Compared with when you entered college as a freshman, how would you now describe your general knowledge.	.86	
Compared with when you entered college as a freshman, how would you now describe your ability to think critically.	.80	
Social Ability[a]		.62
Compared with when you entered college as a freshman, how would you now describe your ability to get along with people of different races/cultures.	.82	
Compared with when you entered college as a freshman, how would you describe your ability to work cooperatively.	.79	
Civic Interest[b]		.72
Indicate the importance to you personally of helping to promote racial understanding.	.88	
Indicate the importance to you personally of participating in a community action program.	.87	

[a] Five-point scale: from 1 = much weaker to 5 = much stronger. Recent research by Anaya (1999) indicates that those measures that ask students to compare themselves to when they were freshmen have validity when compared against pre/post changes on cognitive measures.

[b] Four-point scale: from 1 = not important to 4 = essential; itemshave corresponding pretests.

To assess cross-racial interaction more broadly, a composite variable was created by combining each student's score on the above four diversity experiences (values ranged from 4 to 12, with higher values indicating more frequent cross-racial interaction). This variable was used as the key dependent variable to examine the conditions that promote cross-racial interaction.

Other key variables were also included in the analyses to minimize the effect of self-selection bias and other institutional characteristics in testing the direct effect of cross-racial interaction on student outcomes (Appendix A). Although a modification of Astin's conceptual framework (1991, 1993b) was used to group these variables as either student background (input) or institutional (environmental) characteristics, these independent variables were also chosen based on previous research concerning cross-racial interaction (Antonio, 2001a, Antonio, 2001b; Astin, 1993a; Hurtado, 2001; Hurtado et al., 1995; Hurtado et al., 1994; Milem, 1994) and impact of racial composition (Bowen and Bok, 1998; Chang, 1999; Gurin et al., 2002). In addition to identical freshman pretests or reasonable proxies on many of the outcome measures, entering freshman (input or control) variables included mother's educational level, race/ethnicity (coded as five dichotomous variables), high school grade point average (GPA), gender, highest academic degree planned at any institution, and enrollment status. Concerning institutional characteristics, the selected independent environmental variables included the percentage of students of color (African Americans, Asian Americans, Latinos, and Native Americans), size, selectivity, control, and location of the student's freshman college, as well as the student's living arrangement.

The basic statistical approach used for these analyses was a form of hierarchical linear multiple regression, in which blocks of variables are entered in accordance with their assumed temporal ordering of occurrence (Astin and Dey, 1996). The general model can be expressed as follows:

$$Y_{ic} = a_0 + a_1 I_{ic} + a_2 E_c + a_3 CR_{ic} + e_{ic}.$$

For these analyses, Y_{ic}, CR_{ic} and I_{ic} represent the levels of a final outcome variable, of the cross-racial interactions, and of the background characteristics, respectively, for the *ith* student at the *cth* college. E_c represents general institutional characteristics at the *cth* college. Thus, for this model, variables reflecting student background characteristics (I_{ic}) were entered in the first block, followed by college characteristics (E_c) in the second block, and last, the variables that measured students' level of cross-racial interaction (CR_{ic}) were entered in the final block after all other variables were tested.

Student background characteristics were entered in a first block because they are usually associated with both students' propensity to interact cross-racially and outcome measures. If relevant background characteristics are not controlled

early in the analysis, spurious effects of cross-racial interaction on outcomes might be observed when there are, in fact, no significant effects on outcomes (Appendixes B and C). Only by controlling for such related characteristics in the first block of our analyses can we minimize the chances of making wrong inferences about the effects of cross-racial interaction. Within each block, variables were entered one at a time in a stepwise fashion until no additional variable within that block was capable of producing a significant ($p < .005$) reduction in the residual sum of squares. At this point, the analysis proceeded to the next block, where the variables within that block were again entered in stepwise fashion.

A separate stepwise regression analysis was conducted with each of the outcome factors listed in Table 1. A similar model was used to test the hypothesized relationships for predicting students' frequency of cross-racial interaction. Here, however, the variables in the final block were not included in the model, but were instead combined to generate a composite measure that served as the dependent outcome.

RESULTS

Table 2 shows the "beta in" coefficients for all four types of cross-racial interaction at the step immediately prior to the entry of the first interaction measure in each of the three regression analyses. In other words, each coefficient shows the beta weight that a particular variable would have received if it had been the first in this set of diversity experiences to enter the regression. Only coefficients that were statistically significant ($p < .005$) are shown. If a variable actually entered the regression equation, its coefficient is shown with an asterisk in Table 2. The reason why a variable with a statistically significant beta in would not enter the regression equation is due largely to multicollinearity: because each variable measures some form of cross-racial interaction, there is a certain degree of redundancy among these variables.

TABLE 2. Effects of Cross-Racial Interaction on Four Areas of Development ($N \approx 9{,}149$)

	Partial Beta[a] with Form of Cross-Racial Interaction			
Student Outcome	Dated	Dined	Studied	Interacted in Class
Intellectual Ability	—	.03	.05	.07*
Social Ability	.06	.09	.14*	.11*
Civic Interest	.11*	.10	.11*	.10*

[a]All coefficients listed are significant at the .005 level of confidence.
*Entered the regression equation.

What strikes one immediately on examining Table 2 is the fact that most diversity experiences are positively associated with most student outcomes. This pattern replicates earlier findings obtained in an independent sample collected nearly a decade earlier (Astin, 1993a). Indeed, with the exception of interracial dating, which was significantly associated with two of the three outcomes, all measures of cross-racial interaction are significantly associated with all three outcomes. Also, taken as a whole, those diversity-related experiences that entered the regression explained an additional 0.5%–1.9% of the variance in each of the three outcomes, even after controlling for relevant student background and institutional characteristics.

Additionally, three of the four cross-racial experiences contributed independently to at least one student outcome—that is, three of the four types of interaction entered at least one regression analysis. Interacting in class with someone of a different race entered all of the three regressions and tended to be a robust predictor, even after all other relevant variables were statistically controlled. That the more generic measure of classroom cross-racial interaction entered more regressions than did the other three cross-racial interaction measures is not surprising, given that these latter three measures are much more specific and target higher levels of social intimacy. Of particular importance is the fact that three of the four measures of cross-racial interaction contributed independently to growth in "civic interest." This finding is particularly noteworthy because it is unusual that a group of variables that are so highly correlated with each other (as will be demonstrated later by the composite measure) would individually show a significant independent effect on a given outcome.

In short, the findings shown in Table 2 once more underscore the fact that experiencing cross-racial interaction during the undergraduate years can affect positively a range of student outcomes, including intellectual ability, civic interest, and social skills. Among other things, this pattern of results suggests strongly that college faculty and administrators should support efforts to include more opportunities for cross-racial interaction, in all of its forms, across the campus. To inform such efforts, the next section examines how institutions can better structure cross-racial interaction.

Conditions That Promote Cross-Racial Interaction

For this analysis, as discussed earlier, we generated a composite measure of cross-racial interaction by summing the student's responses to the four relevant variables: dated, dined, studied, and interacted in class with students from other races/ethnicities. We combined these variables because we were interested here in the conditions that influenced all forms of cross-racial interaction, rather than just a specific form. This composite measure generated a Cronbach alpha; of .76. This measure served as the dependent variable in a blocked, stepwise re-

gression that included two hierarchically ordered blocks: student background (control) variables and college characteristics. Except for the new dependent variable and the elimination of the final block of cross-racial interaction measures, this analysis was identical to the previous ones. The results are reported in Table 3.

Before discussing the effect of institutional characteristics on this composite outcome, it is worth mentioning some of the findings with respect to the input (student background) variables. The most potent freshman (input) predictor of

TABLE 3. Factors That Contribute to Cross-Racial Interaction ($N = 9,254$)

				Beta at step*			
Step	Variable Entering	R^2	Simple r	1	13	14	21
	Student Background						
1	Race: White	.11	−.33	−.33	−.15	−.13	−.13
2	Value: promote racial understanding	.13	.22	.17	.14	.14	.13
3	Highest degree planned	.15	.16	.13	.08	.06	.04
4	Race: Asian American	.16	.26	.11	.16	.12	.12
5	Discussed politics	.16	.13	.14	.10	.09	.08
6	Talked with teachers	.17	.12	.11	.06	.06	.06
7	Race: Latino	.17	.16	.04	.08	.06	.06
8	Intellectual self confidence	.18	.10	.09	.06	.04	.04
9	Gender	.18	.06	.06	.04	.04	.03
10	Keep up with political affairs	.18	.08	.08	−.06	−.06	−.05
11	Studying or doing homework	.18	.12	.10	.03	.02**	.00**
12	Performed volunteer work	.18	.11	.10	.03	.03	.03
13	Race: African American	.18	.13	−.02**	.04	.03**	.03**
	Institutional Characteristics						
14	% of students of color	.23	.34	.27	.23	.23	.25
15	% of students working part-time on campus	.24	.13	.12	.09	.08	.04
16	% of students working part-time off campus	.24	−.09	−.09	−.06	−.08	−.02**
17	Living on campus (student level)	.24	.06	.08	.06	.07	.05
18	Location: West	.24	.15	.10	.08	−.04	−.04
19	# of full-time undergraduate	.24	−.06	−.06	−.05	−.05	−.04
20	Institutional selectivity	.25	.18	.16	.11	.07	.07
21	Private university	.25	.06	.03	.01**	−.04	−.05

*For variables not yet in the equation, the coefficient shown in this "beta in," is the coefficient that variable would receive if it were to be entered at the next step.

**Not statistically significant ($p > .005$).

the student's subsequent frequency of cross-racial interaction in college is being white, which shows a simple correlation of −.33. While one could interpret this result to mean that white students have a lower propensity to interact with students outside of their own racial group, this negative correlation could also be interpreted in strictly probabilistic terms. That is, given that white students comprise a substantial majority on most college campuses, students of color would have many more opportunities to interact cross-racially than would white students. In other words, if students' interracial interaction were strictly random—that is, if students neither preferred nor avoided interactions based on race—white students would end up having fewer interracial interactions than students of color would because of numerical constraints. It is also worth noting that, while being Asian American produced the second-largest simple correlation with cross-racial interaction ($r = .26$) among freshman predictors, this racial variable did not enter the regression until the fourth step. The reason for this delayed entry, of course, is the substantial drop in the beta in coefficient for Asian American (from .26 to .11) that occurred when race:white entered at step 1. In other words, part of the reason why Asian Americans (and Latinos; see step 7) are relatively likely to engage in cross-racial interaction during college is that they are not white. The fact that being African American never entered the regression equation suggests that Asian Americans and Latinos are relatively more likely than are African Americans to engage in cross-racial interaction. We shall return to discuss these racial differences in more detail later in this section.

Another entering characteristic of considerable interest shown in Table 3 is the value question reflecting the student's commitment to "promoting racial understanding." This variable entered the regression at the second step and remained significant throughout the analysis. Clearly, those students who are more committed to this value at the time they enter college as freshmen will be more likely to seek out cross-racial interactions during college than will students who are not as strongly committed.

We now turn our attention to those institutional characteristics that promote cross-racial interaction. We focus primarily on those characteristics that have some practical relevance for institutions. Even though being private, selective, located in the west, and having a large enrollment can significantly affect students' likelihood of experiencing cross-racial interaction, institutions cannot realistically do much about these aspects of their campus.[2] In contrast, some of the other findings have more obvious and realistic practical implications.

First, the results shown in Table 3 clearly indicate that the diversity of the student body affects the likelihood that students will experience cross-racial interaction. The percentage of students of color in the student body shows a highly significant simple correlation of .34 with the composite cross-racial interaction outcome; the coefficient shrinks only partially (to .23) as a result of

controlling for other entering student characteristics. The strength maintained by this variable throughout the analysis suggests that increasing the proportion of students of color in the student body can have a substantial positive effect on cross-racial interaction. By far the largest drop in the simple correlation occurs at step one (from .34 to .27) when being white enters the regression. In other words, since whites are less likely to interact across race than students of color are, and given that white students are, by definition, less numerous in institutions with more diverse student bodies, part of the positive correlation between diversity and cross-racial interaction is attributable to the nonwhite student's greater likelihood of interacting cross-racially. However, even when the confounding effects of the individual student's race and other entering characteristics are controlled (step 13), a substantial positive relationship between diversity and cross-racial interaction remains intact. Furthermore, this relationship is not further reduced when other college environmental measures are controlled (steps 14–21), but instead the partial beta coefficient actually increases slightly, from .23 to .25. Given the sustained and relatively stable effect of diversity in this analysis, racial diversity of the student body clearly has a direct positive effect on cross-racial interaction: the larger the proportion of students of color in the student body, the more cross-racial interaction.

Beyond the composition of the student body, several other factors that institutions can reasonably shape also significantly affect students' levels of cross-racial interaction. Two of these concern working part time for pay. Students who attend those institutions where a larger percentage of the student body work on campus report greater frequency of cross-racial interaction. The reverse occurs for students who attend institutions that have a larger proportion of students who work off campus. When there are large proportions of students working off campus, students are less likely to interact across race. Lastly, students who live on campus are more likely to report higher levels of cross-racial interaction. In short, these findings suggest that when there is the presence of a racially diverse student body, the more time students spend on campus, the greater their frequency of interaction with someone of a different race or ethnicity.

Effects of Diversity on Cross-Racial Interaction

Because efforts to enroll a more diverse student body are still being hotly debated and because our findings show that cross-racial interaction has a consistent positive effect on a range of educational outcomes, the relationship between the composition of the student body and cross-racial interaction deserves much more attention. Clearly, one of the most important institutional characteristics for promoting cross-racial interaction is the presence of a racially diverse student body. The percentage of students of color alone explained an additional 5% of the variance in cross-racial interaction, after controlling for relevant student

background characteristics. The other seven institutional characteristics, taken together, only helped to explain an additional 2% of the variance.

Of particular interest are the relationships between this necessary condition, student diversity, and other conditions that promote cross-racial interaction. Simple correlation analyses show that some of the ideal institutional conditions for promoting cross-racial interaction are less likely to be found on the most racially diverse campuses. The percentage of students of color is positively correlated ($p < .005$) with the number of undergraduate students ($r = .04$), the proportion of students who work part time off campus ($r = .05$), and is negatively correlated with the proportion of students who live on campus ($r = -.04$). In other words, more diverse campuses tend to have larger undergraduate enrollments and a larger proportion of students who work and live off campus—three conditions that blunt cross-racial interaction.

The above relationships explain in part why the beta coefficients for the measure of student body diversity increased from .23 at step 13, when it entered the regression equation, to .25 in the final step of the analysis. That the coefficient for a particular variable gets larger when a mediating variable is controlled illustrates the so-called "suppressor effect" (Astin, 1991). Here, the positive effects of racial composition were actually being partially "masked" by certain institutional characteristics, such that the "true" (stronger) effect emerged once the masking variables were controlled. For example, when the proportion of students who work off campus was controlled at step 16, the coefficient for the percent of students of color grew from .23 to .24. After all significant variables entered the regression at step 21, the coefficient became even larger (from .24 to .25). This suggests that the composition of the student body would have an even stronger effect on cross-racial interaction if it were not for certain circumstances that tend to be found on more diverse campuses (i.e., larger enrollments, western location, and higher proportions of students who work and live off campus).

If more racially diverse institutions tend to possess certain characteristics that arrest cross-racial interaction, how might this affect the incremental gains in levels of cross-racial interaction that would be expected to occur as levels of diversity increases? To examine more closely the relationship between student body diversity and cross-racial interaction, we divided our institutions into five different levels of diversity, with each level accounting for roughly 20% of the sample. We then cross-tabulated diversity against the percentage of students for each of the four racial groups (African American, Asian American, Latino, and White) who indicated they "frequently" experienced each of the four types of cross-racial interaction (Table 4). In the case of dating students from different racial/ethnic groups, we also included those who reported "occasionally" because there were too few students who reported "frequently."

The results of those cross-tabulations can be summarized here as follows:

TABLE 4. Cross-Racial Experience by Level of Diversity by Race

Level of Diversity (% students of color)	Percentage Who Reported "Frequently" Concerning: Studied with Students from Different Racial/ Ethnic Groups				Dined with Students from Different Racial/ Ethnic Groups				Dated Students from Different Racial/ Ethnic Groups				Interacted in Class with Students from Different Racial/ Ethnic Groups			
	W	AA	APA	LAT	W	AA	APA	LAT	W	AA	APA	LAT	W	AA	APA	LAT
1 (0–6.9%)	6	*	48	55	16	57	72	59	4	*	*	*	29	76	69	59
2 (7–7.9%)	9	52	69	29	17	57	82	40	3	*	44	*	28	67	84	46
3 (8–10.9%)	10	51	53	44	20	53	66	54	4	19	53	35	38	83	79	56
4 (11–18.9%)	18	40	60	50	32	44	74	69	7	14	40	44	51	76	86	80
5 (>19%)	28	40	60	54	44	50	69	61	10	20	34	31	65	84	81	77

Note: W = Whites ($n = 8{,}689$); AA = African American ($n = 249$); APA = Asian Pacific Americans ($n = 463$); LAT = Latinos ($n = 302$).
*Sample too small ($n < 10$) to compare reliable percentage.

- For white students, the effects of racial diversity on cross-racial interaction are uniformly positive for all forms of interaction: at each successively higher level of diversity, white students are increasingly likely to engage in cross-racial interaction, regardless of the type of interaction.
- Regardless of the type of interaction or the level of diversity, students of color are uniformly more likely to engage in cross-racial interaction than are white students.
- African American students, compared to Asian and Latino students, are substantially less likely to engage in interracial dining and dating, regardless of the level of diversity in the student body. There was only one exception to this pattern: cross-racial dining at level two. Furthermore, African Americans who are enrolled at institutions in the two highest diversity levels (4 and 5) are substantially less likely than their Asian American and Latino classmates and their same-race counterparts at less diverse institutions to study with students from different racial/ethnic groups.
- The frequency across all forms of cross-racial interaction uniformly decreased for African Americans between levels 3 and 4, but tend to increase between levels 4 and 5.
- Unlike African American students, Asian American and Latino students do not show consistent gains across all forms of cross-racial interaction between levels 4 and 5. Instead, with the exception of studying, the frequency of cross-racial interaction actually drops for Asian American and Latino students at the highest level of diversity.
- African American, Asian Americans, and Latinos all show a decline in cross-racial dating between the third and fourth (highest) levels of diversity, and the downward trend continues through the fourth and fifth levels for Asian Americans and Latinos.

The above findings suggest that increased proportional enrollment of students of color—as defined in this study—has very different effects on patterns of interracial interaction among whites as contrasted with students of color. Furthermore, the effects of diversity on cross-racial interaction vary somewhat from one minority group to the other. One of the critical questions not addressed by this research is the extent to which these different groups exert direct control over these particular patterns. For example, while the pattern for whites suggests strongly that the degree of interracial interaction is a function of the availability of students from other racial/ethnic groups, the differential patterns for students of color suggest that something else may be operating. That is, if interracial interaction were simply a matter of the availability of students from different racial/ethnic groups, one would expect to find declining rates of interracial interaction for African Americans, Latinos, and Asian Americans with increasing proportions of students of color. Instead, the patterns for students of color are

quite mixed across different levels of diversity and different types of interactions. When we look at interaction patterns just at the extremes of diversity (e.g., level 5 compared with level 1) for students of color on the whole, higher rates of cross-racial interaction do not always occur in the highest diversity level. Of the 12 such comparisons that can be made, 6 favor the highest level and 6 favor the lowest level. Despite this, students of color show generally higher levels of interracial interaction in the top levels of diversity (4 and 5) than they do in the lower levels (1 and 2).

These puzzling patterns clearly do not conform to the "availability" hypothesis that seems to be supported by the data for white students. Even though there is the "greatest availability" for students of color to have cross-racial interactions on the least diverse campuses (i.e., to interact with white students), as diversity increases, the frequency of cross-racial interaction generally tends to increase among students of color, particularly when it comes to interactions in the classroom. In other words, even though their opportunities for within-group interaction increase, by definition, with increasing diversity, students of color tend to show the least cross-racial interaction in the least diverse institutions. Perhaps the increased frequency of cross-racial interaction for students of color in the more diverse institutions is better explained by the enhanced opportunity to interact with other students of color rather than with white students. For example, more diverse campuses offer more opportunities for Asian American students to interact with Latino students. This general pattern, however, tends to be disrupted on the most diverse campuses for Asian American and Latino students, when the frequency of cross-racial interaction for them actually either levels off or drops slightly. Thus, unlike white students, the frequency of cross-racial interaction for students of color cannot be explained simply by the availability of students from other races (particularly white students), it is rather a function of something more complex that cannot be completely understood here.

The above results raise a list of questions. To what extent are the differential patterns of cross-racial interaction that characterize a particular minority group a result of the varying predilection of individuals in that group for cross-racial contacts? Similarly, to what extent are the patterns attributable to the differential willingness or openness of students from other groups to participate in such contacts? To what extent are the drop-offs in interracial interaction involving Asian Americans and Latinos at the very highest diversity levels and African Americans at the second highest level a function of the declining availability of students from other groups, as contrasted to what has come to be called "balkanization" of certain racial/ethnic groups? Could balkanization become more probable at higher levels of diversity as a particular underrepresented group—say, Latinos—reaches a "critical mass" in terms of enrollment, and that this tends to establish a pattern of balkanization, which is imitated by other groups? Such complex questions obviously cannot be answered with the current

data set, but they nevertheless merit much more intensive study and future research, especially given the educational benefits associated with cross-racial interaction in general.

DISCUSSION

The results from this study basically show that cross-racial interaction has several developmental benefits that accrue to students. With the exception of dating, all the other cross-racial measures were significantly related to every one of the three outcomes we tested. The more generic interaction in the classroom had the most robust positive effect across all three outcomes. Even though other types of cross-racial interaction that require greater social intimacy (particularly dining and dating) occur less frequently, they also add value to undergraduate students' social skills, intellectual capacity, and level of civic interest. Since the more generic interaction in the classroom is highly correlated with the other cross-racial experiences and more likely to occur at higher levels than those other experiences, it tends to have a more consistent affect on the outcomes.

Even after controlling for students' background, institutional characteristics, and diversity experiences, at least two cross-racial measures still show a significant individual effect on two of the three outcomes. This general pattern of findings suggests that even though the cross-racial measures are highly interrelated, they may not be interchangeable because each one may well tap into a unique form of interaction that is especially relevant for a particular outcome. However, it is premature to recommend more specific policies linking a certain type of interaction with a specific outcome because the limitations of the data and analyses used in this study, as discussed elsewhere in this article, do not permit for a precise understanding of the unique effects of each individual form of interaction. Nevertheless, the findings are consistent with those of previous studies that have empirically documented similar educational benefits associated with cross-racial interaction (Antonio, 2001b; Astin, 1993a; Bowen and Bok, 1998; Chang, 1999; Gurin et al., 2002; Hurtado, 2001; Milem, 1994).

Why is it that cross-racial interaction produces such a wide range of educational benefits? Ironically, it may well be due in large part to the persistence of racial segregation and discrimination in the United States, which results in divergent experiences for different racial groups (Farley and Frey, 1992; Massey and Denton, 1993; Orfield, 1983). Given this, it should not come as a surprise that individuals of different racial groups can sometimes have strikingly different perceptions, values, and beliefs. Indeed, significant differences in perspectives between racial groups have been documented on college campuses (Bowen and Bok, 1998; Lopez, Holliman, and Peng, 1995). Cross-racial interaction, therefore, may well heighten the possibility that students will encounter someone who does not share his or her experiences, views, or values.

According to some developmental theorists (Festinger, 1965; Langer, 1978; Piaget, 1985), this type of encounter may enhance cognitive functioning by facilitating the critical and analytical thinking that can lead to changes in values and beliefs. Simply stated, when a student is exposed to thoughts and ideas different from his or her own, it tends to produce cognitive disequilibrium, dissonance, or incongruity. The student may address this new information in a number of ways to re-achieve cognitive congruence or equilibrium. If the student does not devalue the incongruent information or reject it outright, cognitive functioning may be enhanced because the student will feel the need to further process the new data, either by gathering additional information or by adopting revised viewpoints that reduce or resolve the dissonance. Thus, cross-racial interaction might conceivably enhance the three areas we tested by stimulating students to reexamine their assumptions and beliefs in ways that facilitate active, complex thinking. Certainly more research will be needed to help clarify exactly how cross-racial interaction enhances student development.

In light of the apparent widespread educational benefits associated with cross-racial interaction, we also examined what institutions can do to enhance such experiences for students. Enrolling sufficient numbers of students of color is an important and necessary condition. The presence of a racially diverse student body provides the type of complex environment that enables crucial encounters with difference to occur. Other ways institutions can enhance cross-racial interaction include providing the means and opportunities to enable students to spend more time on campus. Judging from the findings, two particularly effective ways of doing this are to offer to a larger percentage of students more opportunities to live and work part time on campus. When students are steered away from spending time on campus, either because of work and/or living arrangements, it decreases their chances and frequency of having cross-racial interaction. If this occurs, students may miss out on the added benefits that cross-racial interaction brings to their learning and educational experience.

When we examined more closely the relationship between student body racial composition and cross-racial interaction, it became increasingly clear that enrolling more students of color does not necessarily produce consistently higher levels of cross-racial interaction for nonwhite students. In other words, the frequency of cross-racial interaction in all of its different forms does not seem to always follow an expected path of steady gains but is much more nuanced for students of color as the student body becomes increasingly more diverse. Students of color, of course, are generally more likely than their white counterparts to engage in cross-racial interaction. For Asian Americans and Latinos, there was a consistent drop in the frequency of all forms of cross-racial interaction at the highest level of diversity. For African Americans, a similar uniform drop in frequency occurred in the next-to-highest level of diversity. Thus, even though the percentage of students of color has a positive effect on cross-racial interac-

tion as a whole, this effect is accounted for most often through the experiences of white students, rather than those of students of color.

Why is the frequency of cross-racial interaction for students of color so mixed at different levels of diversity? Perhaps these mixed patterns of cross-racial interaction with students of color we observed might be interpreted as support for the critique that as campuses become more diverse they necessarily become more racially polarized or balkanized (D'Souza, 1991; Thernstrom and Thernstrom, 1997). Although our findings can neither substantiate nor refute this claim, its should be noted that the reported levels of all types of cross-racial interaction tend to be higher for all racial groups at the upper levels of diversity than at the lower ones. Additionally, students of color always have higher levels of cross-racial interaction than their white counterparts across every level of student body diversity. Thus, if level of cross-racial interaction is a good indicator of racial balkanization, our results suggest that racial balkanization is most likely to occur on the least diverse campuses and the group most likely to be balkanized are white students.

An alternative explanation to the balkanization hypothesis might focus on campus conditions rather than on individual or group proclivities. For example, Gordon Allport (1954) maintained in his classic book, *The Nature of Prejudice*, that positive and meaningful cross-racial interactions are more likely to occur under certain conditions. Although numerical representation of diverse groups is a necessary condition, the frequency and quality of cross-racial interaction are also enhanced by other conditions, including cooperative settings, common goals, equal status, and unambiguous institutional support. Allport's "contact theory" suggests that campus conditions that extend beyond numerical representation might further explain variations in frequencies of cross-racial interaction, particularly across different racial groups.

Indeed, even though we did not test those conditions described by Allport (1954), we found that institutional characteristics were associated significantly with levels of cross-racial interaction. For example, larger undergraduate enrollments and larger proportions of students who work and live off campus tend to reduce the frequency of cross-racial interaction. Ironically, these conditions tend to be found on more diverse institutions, which may help to explain why levels of interaction were not as high as one would expect at more diverse institutions. Thus, even though the more racially diverse institutions have the composition to maximize cross-racial interaction, they also tend to have certain campus conditions that make it more difficult for students to have such experiences.

An important next step for future studies is to understand why, as the student body becomes increasingly more racially diverse, campuses are more likely to possess certain characteristics that blunt cross-racial interaction. It will also be important to test some of the conceptual positions about the benefits and patterns of cross-racial interaction so that we can establish a firmer understanding of

their theoretical underpinning. Both lines of research are particularly important for providing institutions with better information on how to structure and enhance cross-racial interaction. It is becoming increasingly clear that higher levels of cross-racial interaction add significant value to students' learning and educational experiences. While findings from this study certainly add to this growing body of evidence, they also suggest that it will take even greater efforts on the part of more diverse campuses to foster meaningful and sustained opportunities for cross-racial interaction.

NOTES

1. Students who attended HBC&Us were not included in these analyses because the admissions practices and history of these institutions, especially as they pertain to educational access, are significantly different from those of traditionally white institutions.
2. While being private or selective, for example, may not in itself signal something that institutions can realistically change, these measures may be signaling other campus characteristics that are typical of either private or selective institutions, which may impact cross-racial interaction. Selective institutions, for example, may have a more intellectually charged environment whereby students are encouraged and feel better prepared to engage with difference. Even though those characteristics may prove to be important, the limitations of our measures would make such discussions quite speculative, so we chose instead to focus our limited space on those measures that we can discuss with more confidence.

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

Block 1: *Input Characteristics*

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

College enrollment status: Coded as 1 = part-time and 2 = full-time.

Race: Coded as 5 dummy variables indicating race of student (African American, American Indian, Asian American, Latino, and White); 0 = no and 1 = yes.

Highest degree planned at any institution: Coded as a 4-point scale from 1 = vocational and associate degree to 4 = Ph.D., M.D., or J.D.

Self-rating comparing with the average person the student's age on the following traits:
- *cooperativeness*
- *leadership ability*
- *intellectual self-confidence*
- *social self-confidence*
- *understanding of others*

Coded as a 4-point scale from 1 = lowest 10% to 4 = highest 10%.

Hours spent during a typical week in high school on the following activities:
- *Studying*
- *Volunteering*
- *Talking with teachers*

Coded as an 8-point scale from 1 = none to 8 = over 20.

Block 2: *Environmental Characteristics*

Percentage students of color of total student body:

%Asian American + %African Americans + %Latinos + %Native Americans. Figures drawn from 1994 IPEDS enrollment data.

High school GPA: Coded as an 8-point scale from 1 = D to 8 = A or A+.

Mother's educational level: Coded as an 8-point scale from 1 = grammar school or less to 8 = graduate degree.

Chances of participating in volunteer or community service work: Coded as a 4-point scale from 1 = no chance to 4 = very good chance.

Chances of being satisfied with present college: Coded as a 4-point scale from 1 = no chance to 4 = very good chance.

Opinion regarding importance of:
- *Participating in a community action program*
- *Influencing the political structure*
- *Influencing social values*
- *Developing a meaningful philosophy of life*
- *Helping to promote racial understanding*
- *Keeping up to date with political affairs*

Coded as a 4-point scale from 1 = not important to 4 = essential.

Frequency during the past year engaged in the following activities:
- *Discussed politics*
- *Performed volunteer work*
- *Asked a teacher for advice after class*

Coded as a 3-point scale from 1 = not at all to 3 = frequently

Control: Coded as 4 dummy variables (Public university, Public 4-year college, Private university, and Private 4-year college); 0 = no and 1 = yes.

APPENDIX A. (*Continued*)

Selectivity: Average SAT Verbal + SAT Math scores of entering freshmen.

Living in college dormitory, *fraternity*, *or sorority house*: Coded as 0 = no and 1 = yes, surveyed in 1998.

Institutional mean score of:
Living on campus
Working part-time on campus
Working part-time off campus
Scale from 1 to 2, surveyed in 1998.

Location: Coded as 4 dummy variables (South, West, East, and Midwest); 0 = no and 1 = yes.

Number of undergraduate full-time enrollment: Number of enrolled undergraduate at an institution. Figures drawn from 1994 IPEDS enrollment data.

APPENDIX B. Estimates and Diagnostics of the Regression Model (N = 9,254)

	Coefficient	SE	Sig.	Tolerance	VIF
1. Race: White	–0.133	–8.297	0.000	0.319	3.139
2. Value: Promote racial understanding	0.134	13.095	0.000	0.779	1.284
3. Highest degree planned	0.043	4.527	0.000	0.884	1.131
4. Race: Asian American	0.122	9.409	0.000	0.486	2.060
5. Discussed politics	0.075	6.986	0.000	0.700	1.428
6. Talked with teachers	0.060	6.343	0.000	0.899	1.112
7. Race: Latino	0.058	5.225	0.000	0.655	1.526
8. Intellectual self-confidence	0.037	3.819	0.000	0.864	1.157
9. Gender	0.031	3.172	0.002	0.882	1.133
10. Keep up with political affairs	–0.053	–4.723	0.000	0.646	1.548
11. Studying or doing homework	0.004	0.360	0.719	0.851	1.176
12. Performed volunteer work	0.028	2.913	0.004	0.888	1.127
13. Race: African American	0.031	2.648	0.008	0.601	1.664
14. % of students of color	0.253	22.174	0.000	0.626	1.599
15. % of students working part-time on campus	0.041	4.035	0.000	0.785	1.274
16. % of students working part-time off campus	–0.021	–1.953	0.051	0.679	1.473
17. Living on campus	0.047	5.021	0.000	0.919	1.089
18. Location: West	–0.040	–3.739	0.000	0.703	1.422
19. # of full-time undergraduate	–0.043	–4.364	0.000	0.858	1.166
20. Institutional selectivity	0.065	5.327	0.000	0.543	1.843
21. Private university	–0.045	–3.989	0.000	0.640	1.562

APPENDIX C. Correlation Table (N = 9,254)

	Y	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10
Y	1.000										
b1	−0.322	1.000									
b2	0.219	−0.189	1.000								
b3	0.152	−0.082	0.113	1.000							
b4	0.257	−0.554	0.068	0.069	1.000						
b5	0.131	0.014	0.153	0.182	−0.020	1.000					
b6	0.120	−0.048	0.145	0.078	0.006	0.135	1.000				
b7	0.154	−0.387	0.088	0.040	−0.011	−0.011	0.038	1.000			
b8	0.097	−0.024	0.036	0.190	−0.001	0.243	0.042	0.030	1.000		
b9	0.056	−0.015	0.101	0.001	−0.004	−0.085	0.071	0.012	−0.189	1.000	
b10	0.078	−0.011	0.375	0.168	−0.021	0.495	0.105	0.007	0.186	−0.065	1.000
b11	0.119	−0.075	0.112	0.138	0.080	0.075	0.254	0.040	0.049	0.171	0.082
b12	0.110	−0.035	0.161	0.122	0.023	0.165	0.169	0.031	0.090	0.149	0.124
b13	0.127	−0.445	0.167	0.025	−0.011	0.008	0.043	−0.008	0.046	0.028	0.018
b14	0.335	−0.246	0.079	0.134	0.218	0.093	0.021	0.147	0.117	0.022	0.059
b15	0.130	−0.027	0.040	0.083	0.037	0.071	0.042	0.023	0.021	0.081	−0.011
b16	−0.085	−0.028	−0.032	−0.130	0.006	−0.090	−0.043	0.021	−0.065	0.007	−0.058
b17	0.058	0.043	0.036	0.056	−0.038	0.047	0.033	−0.005	0.005	0.056	0.048
b18	0.149	−0.166	0.011	0.058	0.170	0.039	0.002	0.115	0.073	−0.018	0.015
b19	−0.062	−0.007	−0.054	−0.032	0.006	−0.007	−0.045	−0.031	0.024	−0.037	−0.001
b20	0.179	−0.082	0.048	0.222	0.103	0.145	0.028	0.057	0.154	−0.042	0.129
b21	0.060	−0.093	0.010	0.069	0.095	0.031	0.006	0.098	0.092	−0.051	0.063

Notes: Y-dependent variable; b1 = race (White); b2 = promote racial understanding; b3 = highest degree planned; b4 = race (Asian American); b5 = discussed politics; b6 = talking with teacher; b7 = race (Latino); b8 = intellectual self-confidence; b9 = gender; b10 = keep up with political affairs; b11 = studying or homework; b12 = performed volunteer work; b13 = race (African American); b14 = % of students of color; b15 = % of students working part-time on campus; b16 = % of students working part-time off campus; b17 = living on campus; b18 = location (West); b19 = # of full-time undergraduate; b20 = institutitonal selectivity; b21 = private university.

b11	b12	b13	b14	b15	b16	b17	b18	b19	b20	b21
1.000										
0.185	1.000									
0.003	–0.010	1.000								
0.115	0.047	0.059	1.000							
0.068	0.044	–0.012	0.064	1.000						
–0.100	–0.049	0.009	0.052	–0.284	1.000					
0.034	0.072	–0.011	–0.040	0.147	–0.202	1.000				
0.053	0.031	–0.010	0.523	0.000	0.047	0.006	1.000			
–0.042	–0.023	0.018	0.035	–0.296	0.204	–0.035	–0.051	1.000		
0.196	0.106	0.008	0.246	0.090	–0.361	0.180	0.093	0.033	1.000	
0.106	0.056	0.000	0.236	–0.215	0.143	0.009	0.170	0.042	0.446	1.000

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