



Research Report

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Researching the Educational Benefits of Diversity

Emily J. Shaw

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Abstract

Researching the educational benefits of diversity is necessary in order to offer evidence to judges, attorneys, and policymakers to uphold and support the consideration of race in college admissions. It is also important so that campuses continue to develop and refine diversity initiatives aimed at improving the success of all students. There are many different ways to research the educational benefits of diversity. Studies have examined student and faculty perceptions of the educational benefits of diversity, the links between monetary and nonmonetary returns to students, schools, and society and their diversity experiences in college, as well as the links between diversity experiences in college and various benefits. Experimental research has also been conducted in this area. Most of the findings from the research in this field suggest that experiences with diversity in higher education result in significant benefits on learning and democracy outcomes. This paper offers several examples of previous studies, as well as recommendations and considerations for institutions interested in designing and carrying out their own research studies on the educational benefits of diversity.

Introduction

A number of controversial court cases in recent years have challenged the use of race in admission to institutions of higher education, sparking a great deal of research on the impact of racial or ethnic diversity on college and university campuses throughout the United States. Several well-respected researchers at the University of Michigan, for example, produced expert reports, including some empirical research (Gurin, 1999), to verify the educational benefits of diversity (University of Michigan, 1999). While some of this diversity research has been conducted in an effort to defend certain institutional policies, other research has been carried out based on the notion that the world we are living in is an increasingly diverse society in which the expected demographic trends will likely result in a minority population that will be equivalent to more than half of the country's population in the year 2080 (Pascarella, Edison, Nora, Hagedorn, and Terenzini, 1996; see also Antonio, 2001; Hu and Kuh, 2003; Hurtado, Milem, Clayton-Pedersen, and Allen, 1999). Still other research has been conducted in order to examine the minority experience and attendance at primarily white campuses (Allen, 1992; Allen, Teranishi, Dinwiddie, and Gonzalez, 2000). Regardless of the purpose or intent of the research in this area, it seems both natural and necessary to study and understand the educational benefits of diversity in

higher education in order to maximize these benefits and better prepare students for the diverse and multifaceted world they will be living in, and eventually leading.

The purpose of this paper is to summarize the major methods and ways of approaching this type of research so that other institutions and organizations may initiate their own effective research programs to study the educational benefits of diversity in the most appropriate and valuable fashion. Several research designs will be explored, and other practical considerations for initiating such research are discussed.

The importance of conducting research on the educational benefits of diversity is grounded in previous diversity research findings that note that the provision of opportunities for quality interaction, and a supportive environment, result in a more positive racial climate, and also, in important learning outcomes for students (Hurtado et al., 1999). Smith and Schonfeld (2000) also write that upon their review of the research in this area, the impact of diversity on students suggests that increasing diversity leads to the possibility of an enriched and engaging academic environment, where greater learning and growth can take place.

Describing Previous Research

Baez (2004) found three distinct types of studies on the educational benefits of diversity in the literature. The first is the empirical study that verifies the educational benefits of diversity. The second is the review of the literature that summarizes the empirical findings on the educational benefits of diversity. The third type of study is the legal study that emphasizes the importance of the empirical research in this area. This particular paper focuses primarily on the empirical studies in this field. However, as in almost all studies on the educational benefits of diversity, the term *diversity* must be elaborated on before it can be further explored.

There are three major ways that studies investigating the educational outcomes of the impact of diversity define diversity (Gurin, Dey, Hurtado, and Gurin, 2002; Hu and Kuh, 2003; Terenzini, Cabrera, Colbeck, Bjorklund, and Parente, 2001; Umbach and Kuh, 2002). One way is by treating students' contact with others who are racially/ethnically different from them primarily as a function of the numerical or proportional racial/ethnic mix of students on campus. This is sometimes referred to as *structural* diversity. While structural diversity is consistently described as not being "enough" for students to maximize the potential educational benefits of campus diversity (Antonio, 2001; Chang, 1999; Chang, 2002a;

Gurin et al., 2002; Gurin, Nagda, and Lopez, 2004; Hurtado, Milem, Clayton-Pedersen, and Allen, 1998), it is also considered to be a start (Gurin, Dey, Gurin, and Hurtado, 2004; Hurtado et al., 1998).

A second approach to defining diversity looks at how students encounter diversity by examining institutionally structured programs or curricula that aid students in engaging in or learning about racial/ethnic/gender-diverse experiences (e.g., course work, multicultural awareness workshops). This is sometimes called *curricular diversity* (Gurin et al., 2002).

A third approach, sometimes called *diversity interactions* or *informal interactional diversity*, assumes that there is some amount of diversity on the campus and operationalizes students' encounters with diversity using the frequency or nature of their reported relations and interactions with peers who are racially/ethnically different from themselves (Umbach and Kuh, 2003). This takes into account more of the informal interaction between individuals of different racial/ethnic backgrounds. Terenzini et al. (2001) comment that the various methods used to study the effects of diversity on a wide range of student outcomes, regardless of the type of diversity being studied, have consistently found that students in diverse communities, or those engaged in diversity-related activities, reap a number of educational benefits.

Gurin et al. (2002) expand on the description of the literature in this field by noting that there are four major approaches to researching the educational benefits of diversity. These approaches can be thought of as broad research designs that may be adapted and elaborated on to best serve the needs and interests of the researchers and institutions utilizing them. These four approaches include: (1) using students' subjective assessments of the benefits they perceive from interacting with diverse peers; (2) faculty assessments examining the role of diversity in student learning or other outcomes important to the university; (3) analyses of monetary and nonmonetary returns to students, the school, and/or society; and (4) analyses linking diversity experience during college to various educational outcomes. This paper presents the research designs of several studies within each of these four domains. One additional category, experimental research, was included in the organization of this paper. Gurin et al. (2002) write, similarly to Terenzini et al. (2001), that despite the number of ways to research the educational benefits of diversity, most of the approaches arrive at similar results showing that diversity experience in college is tied to many individual, institutional, and societal benefits.

Students' Subjective Assessments of the Benefits of Interacting with Diverse Peers

One way to research the educational benefits of diversity may be to simply survey the students as to the benefits they perceive of learning in a diverse environment. Whitla, Orfield, Silen, Teperow, Howard, and Reede (2003) examined the role of diversity in medical education by assessing students' perceptions of the educational merits of a diverse student body at Harvard Medical School and the University of California: San Francisco (UCSF) School of Medicine. The Gallup Organization was hired to complete the phone interviews.

A committee of specialists in questionnaires and medical education developed the survey. The instrument consisted of five-point Likert-type questions asking students to rate the value of diversity (racial and ethnic) in different areas. The first set of questions covered the frequency of students' contact with people of different races or ethnicities during their formative years, in secondary school, in college, and in medical school. Students were also asked about the impact of the diversity of students on the way topics were discussed in class, and whether diversity in classrooms was more or less likely to change the nature of discussions through examples used, viewpoints examined and discussed, the level of intellectual challenge, and deeper understanding of medical conditions and treatments among racial and ethnic groups. Questions about students' overall experiences in medical school, as well as the extent to which discussions with students from different racial and ethnic backgrounds had affected their thinking, were included. Diversity in the student body, the basic science faculty, and the clinical faculty were all considered in this study.

Two major findings resulted from this study. One is that the students at these schools had much less contact with people of different races or ethnicities during their formative years (50 percent had contact with other groups), as compared to their college years (67 percent had contact with other groups). In medical school, cross-cultural and cross-racial interactions increased even more (85 percent had contact with other groups). Also, students at both Harvard and UCSF (see Appendix A for an explanation of all acronyms in this paper) reported that the interaction with a diverse student body greatly enhanced their educational experiences in medical school. Whitla et al. (2003) write that this enhanced experience is due to the close personal and professional relationships formed with individuals of different racial/ethnic backgrounds that students believe

improve their ability to relate to and understand the cultural experiences and values of the patients they will be treating and serving in a multicultural society. The vast majority of students (86 percent) also stated that diversity provided for more intellectually challenging class discussions, encouraging the consideration of various viewpoints. Fifty-seven percent of students strongly supported strengthening current affirmative action policies in admissions at their schools.

The Civil Rights Project, located at Harvard University, has conducted a series of studies across the country on what students in more diverse and more segregated schools learn in certain content areas, as well as in preparation for life after high school. Kurlaender and Yun (2002) studied the twelfth-grade students at the high school in the Cambridge, Massachusetts, school district in order to better understand students' experiences with racial and ethnic diversity. Cambridge public schools are considered to be "extremely diverse" and have been integrated for many years (Kurlaender and Yun, 2002, p.1). The researchers used the Diversity Assessment Questionnaire (DAQ), a survey instrument developed by experts in school desegregation research. The survey is made up of 70 items developed to test several different dimensions of experiences and attitudes regarding diversity (see Appendix B for sample items from the DAQ). It was administered to 379 high school seniors during school hours.

The study found that students consistently indicate a high degree of comfort in living and working with individuals from different racial/ethnic backgrounds, feel well prepared for functioning as adults in a very diverse community, and report that their school experiences have increased their level of understanding of points of view that are different from their own (Kurlaender and Yun, 2002). The students also stated that they have an enhanced understanding of the background of other groups, feel prepared to work in job settings with people who are different from themselves, and that their school experiences will help them work with and better understand people from different groups than their own. The study also found that there are still certain kinds of unequal treatment of different racial/ethnic groups in the school that could likely be improved with appropriate school leadership and staff training.

Interviewing is another useful method for examining students' perceptions of the educational benefits of diversity. Light (2001) and his research team interviewed more than 1600 undergraduates to determine how students can make the most out of their college experience. In-depth interviews were chosen as the methodology for this project in order to be able to report more detailed findings, as opposed to only summary statistics. As a result of these interviews, Light arrived at several conclusions surrounding the benefits of diversity. One broad theme that arose from Light's research is that the impact of racial

and ethnic diversity on a campus is strong and that the overwhelming majority of students report this impact to be quite positive. Students enjoy learning from people of different racial, ethnic, religious, geographic, or economic backgrounds, but comment that this learning process does not always occur naturally; it often requires facilitation on the part of the faculty or administrators. It is noteworthy to mention that when Light asked students to give an example of something they had learned because of the diversity of the undergraduates at their school, about 20 percent gave examples from classroom discussions, while about 80 percent gave examples from events, interactions, and conversations outside of the classroom. From this research, it appears that students are benefiting more from diversity experiences outside of the classroom; however, most of the positive experiences with diversity outside of the classroom are still very much connected to campus life and other university-directed areas.

The students that Light (2001) interviewed believed that a few preconditions must be met in order for students to experience the benefits of diversity. One precondition offered was that the different racial or ethnic groups share certain fundamental values or skills in order to live and learn together most effectively. This precondition is not necessarily difficult to achieve given that students, regardless of race or ethnicity, are inclined to attend institutions that are in keeping with their own skills and values (e.g., hard work or open-mindedness). Another precondition mentioned was that the school create a safe environment, both inside and outside of the classroom, where students are encouraged to express their opinions and healthy debate is supported.

Faculty Assessments of Impact of Diversity

Another way to research the educational benefits of diversity is by assessing faculty perceptions of these benefits to students, and to the campus as a whole. In a monograph published by the American Council on Education and the American Association of University Professors, Maruyama, Moreno, Gudeman, and Marin (2000) presented three research studies that contribute to the literature on the impact of diversity in the classroom, particularly as perceived by the faculty and administrators of different colleges. The thought behind exploring the beliefs of college faculty and administrators is that it is important to question the experts as to whether they have found that diversity produces positive outcomes.

Marin (2000) designed a qualitative, multiple-case study for the above-mentioned report that examined three interactive, multiracial/multiethnic classrooms at the University of Maryland, College Park, in order to better

understand the educational benefits of diversity. Classes at the University of Maryland were chosen because nearly one-third of the undergraduate population is of color, and because the school requires undergraduates to take one of the approved diversity core courses.

Marin analyzed data that was obtained over the course of a semester from interviews, focus groups, classroom observations, and documents in order to reveal themes regarding faculty and student experiences in racially and ethnically mixed classes that utilize nonlecture teaching methods. The classrooms selected for the study were chosen purposefully, as the intent was to study unique cases in depth. Selection criteria such as institutional and class characteristics, faculty characteristics, pedagogical techniques, student characteristics, and course content were all taken into consideration. The selected courses for the study were chosen for a number of reasons. First, they enrolled primarily upper-class students, reflecting the research that notes that younger students tend to be more easily influenced by their peers than upper-class students. Second, they were taught by faculty members who had been at the school for at least nine years and had seen the school evolve from an overwhelmingly white institution to include a more significant minority population. Also, it was important that these faculty members had taught in racially/ethnically homogeneous classrooms, as well as multiracial or multiethnic classrooms throughout their careers. Marin also attempted to select as diverse a group of faculty for this study as possible. The classes analyzed in the study were in the humanities, education, and social sciences, and had 30 or fewer students. The professors all used active learning techniques and incorporated issues of race and ethnicity in their curricula.

The data collected over the semester included in-depth interviews with each participating professor, focus groups consisting of students from these classes, a focus group involving the participating faculty members, classroom observations, document reviews of course materials, and student evaluations. Lincoln and Guba's (1985) method of qualitative analysis was used to explore the data (as cited in Marin, 2000). The qualitative research methods used were not intended to produce generalizations, but to result in information to be examined for similarity to the reader's experiences and to determine whether the findings and their implications can be transferred to similar situations elsewhere.

Three broad themes seemed to result from Marin's (2000) analyses of the data. The first theme is that racial and ethnic diversity is necessary but not sufficient for structuring the most effective educational environment. Faculty and students believe that the most effective learning takes place in a multiracial/multiethnic classroom that is both supportive and inclusive, where students are encouraged to state their views and are made to feel that their opinions are valued. The second theme is that racial and ethnic diversity increase the educational possibilities

of the classroom environment. Increasing the educational possibilities is accomplished because faculty members bring limited experiences to the classroom and students from a variety of backgrounds can "broaden the range of authorities that can be brought to bear on subject matter" (Marin, 2000, p. 66). The third theme to result from the analyses of the data is that racially and ethnically diverse classes enhance educational outcomes by broadening students' views, stimulating critical thinking, increasing students' awareness of their own biases, as well as advancing their cognitive and personal growth and development.

While Marin's (2000) research demonstrates the importance of interviewing or surveying faculty regarding the educational benefits of diversity, it is equally important that the faculty be made aware of how the research in this area can improve instruction and shape the benefits of diversity (Cabrera, Crissman, Bernal, Nora, Terenzini, and Pascarella, 2002; Cabrera and Nora, 1994; Terenzini et al., 2001; Tinto, 1997). Two specific examples from the research make this point clear. First, Cabrera and Nora (1994) have found that minority students are quite resilient and can withstand a certain amount of prejudice before feeling completely alienated, but this is not the case when minority students experience prejudice or discrimination in the classroom setting. This finding has implications for administrators, staff, and particularly faculty in higher education. Focusing on interventions and sensitive instructional practices in the classroom may serve to limit or eradicate minority students' feelings of being singled out, or discouraged from participating, which could eventually lead to the amelioration of minority students' feelings of alienation.

Another finding of great value to educators is that collaborative learning as an instructional practice serves to improve the racial climate in the classroom and increase the educational benefits of diversity (Cabrera et al., 2002; Cabrera and Nora, 1994; Cabrera, Nora, Terenzini, Pascarella, and Hagedorn, 1999). Cabrera et al. (2002) discovered that after controlling for precollege academic ability, gender, ethnicity, quality of academic effort, socioeconomic status, and racial composition of the high school, collaborative learning had the highest effect on college students' openness toward diversity. Collaborative learning allows for greater educational opportunities where preconceptions are challenged through positive and productive communication between students of different backgrounds (Cabrera et al., 2002). Such learning may incorporate group work, breaking down stereotypes, developing listening or interpersonal skills, or simply gaining exposure to a variety of different people. Using collaborative learning techniques, students become actively engaged in the learning process and the social and educational benefits of this are exhibited far beyond the classroom walls.

Monetary and Nonmonetary Returns to Students, Schools, and Society Linked to Diversity Experience in College

Some researchers have examined the educational benefits of diversity by linking monetary and nonmonetary returns to students, schools, and society to students' diversity experiences in college. Bowen and Bok (1998), in their book, *The Shape of the River*, discussed the large-scale study they conducted on how race-sensitive admissions policies have been used in the past 30 years and the consequences of employing such policies on a number of variables. The data from this study were from the College and Beyond (C&B) database built by the Andrew W. Mellon Foundation. The part of the database used for this study contained in-depth information on students who matriculated at 28 selective colleges and universities in the fall of 1951, fall of 1976, and fall of 1989. It also included information on students' academic performance and extracurricular participation in their colleges or universities, as well as subsequent histories (advanced degrees earned, occupation, involvement in civic activities, etc.) for many of the students from extensive survey data. Also, for the students who matriculated in the fall of 1989, the survey gathered information on the extent to which they interacted (both during and after) with individuals of different races, political outlooks, socioeconomic backgrounds, and geographic origins.

In order to analyze the data, Bowen and Bok (1998) primarily used multivariate regressions to sort out the many different influences that jointly affect student performance in college, the receipt of graduate degrees, and later-life outcomes. They determined that minority students from the C&B schools graduated at very high rates as compared to national benchmarks and have done very well, financially and otherwise, on a variety of outcome measures. Bowen, Bok, and Burkhart (1999) note that these findings not only have implications for the benefits of diversity in higher education, but also for the benefits of diversity in business.

Linking Diversity Experience in College to Various Benefits

Numerous studies have been designed to link different student experiences with diversity in higher education with positive outcomes. Some of these studies have examined general diversity experiences in college (Astin, 1993; Pascarella et al., 1996; Gurin, 1999, 2002; Pascarella et al., 2001; Umbach and Kuh, 2003), while some have focused mainly on structural diversity (Chang, 1999; Terenzini et al., 2001), curricular or classroom diversity (Chang, 2002b; Springer et al., 1996), and others on informal or interactional diversity (Antonio, 2001, 2004; Gurin et al., 2004; Hu and Kuh, 2003).

General Diversity Experiences

Gurin et al. (2002) designed a study to determine the impact of diversity experiences at the University of Michigan, as well as other types of institutions of higher education, on learning and democracy outcomes, while controlling for certain student background characteristics and institutional characteristics. They used two longitudinal databases, one from the Michigan Student Study (MSS) from the University of Michigan and one from the Cooperative Institutional Research Program (CIRP), which is a national sample of college students, in order to parallel Michigan's data and allow for the greater generalizability of results.

The MSS was instituted to monitor the student response to the University of Michigan's diversity focus and is a survey of students who entered the University of Michigan in 1990 and a follow-up survey of them four years later. This particular sample included 1,129 white students, 187 African American students, and 266 Asian American students (Native American and Latino/a students were not included due to their small sample sizes). At the time of this study, 92 percent of white students and 52 percent of African American students came from segregated communities where they represented the majority ethnic group.

The CIRP is a national survey conducted by the Higher Education Research Institute (HERI) at the University of California: Los Angeles (UCLA). Data from the CIRP for this study included 10,465 white students, 216 African American students, 496 Asian American students, and 206 Latino/a students who were surveyed upon entering college in 1985, and again, four years later. These students attended predominantly white, four-year institutions. Examining MSS and CIRP data enables researchers to identify overarching patterns of educational benefits of diversity within the University of Michigan, as well as

across different types of institutions.

Gurin et al. (2002) measured the effect of student experiences with diversity on a college campus on important learning and democracy outcomes of a college education. The learning outcomes that were examined focused on active thinking and engagement in learning. Active thinking in the MSS was measured using seven items from a longer scale (Fletcher, Dailovics, Fernandez, Peterson, and Reeder, 1986) that was defined as the motivation to understand human behavior, a preference for complex rather than simple explanations, and the tendency to think about underlying processes involved in causal analysis (as cited in Gurin et al., 2002). An example of an item from this measure is: "I enjoy analyzing reasons for behavior." The same seven questions were included in the entrance questionnaire and were used as controls in analyses, so that diversity effects could be thought of as affecting active thinking. The other learning outcome measure, which assessed intellectual engagement and motivation, asked students to evaluate the extent to which they had gained a broad, intellectually stimulating education at Michigan and their level of satisfaction with the intellectual quality and challenge of their classes.

The MSS used three measures of democracy outcomes, including perspective-taking, racial/cultural engagement, and views on the compatibility of difference and democracy. A four-item index from a longer scale of empathy (Davis, 1983) measured perspective-taking (as cited in Gurin et al., 2002). Racial/cultural engagement was measured with a one-item question asking students how much they have learned in college about the contributions of different racial/ethnic groups to American society. The compatibility of difference and democracy index was measured partly by assessing commonality in values by asking students how much difference in values regarding things such as work and family they perceived between their own racial/ethnic group and other groups upon entrance to the University of Michigan and four years later. The compatibility of difference and democracy index was also arrived at by examining perceptions of nondivisiveness, which asked the extent to which students agreed or disagreed with four statements, such as "The university's commitment to diversity fosters more intergroup division than understanding" (Gurin et al., 2002).

The CIRP assessed learning outcomes in two different ways. Intellectual engagement was examined by using self-rated aspirations for postgraduate education, the drive to achieve, intellectual self-confidence, and the importance placed on original writing and creating artistic works. Academic skills were also assessed by looking at self-rated academic ability, writing ability, and listening ability, as well as self-reported change in general knowledge, analytic and problem-solving skills, ability to think critically, writing skills, and foreign language skills. In addition to focusing on learning outcomes, this study included self-

assessments of democracy outcomes that may result from experience with diversity during college. It is thought that students with the most experience with diversity would demonstrate greater participation within an increasingly diverse democratic society.

The CIRP measured citizen engagement by examining students' motivation to participate in activities that influence society and the political structure. Racial and cultural understanding was assessed using students' self-ratings of how much they changed in "cultural awareness and appreciation," for example, since they began college.

A number of variables were controlled for in this study, including the ethnic/racial composition of the high school and precollege neighborhood of the student, gender, high school grade point average, total SAT[®] scores, and parental education as a measure of socioeconomic status. In the multi-institutional analyses, researchers controlled for institutional features such as percentage of minority enrollments in order to delineate the effects of classroom and informal diversity interactions from just the presence of diverse students on campus. Faculty responses also indicated the importance of controlling for an index of academic emphasis on diversity (obtained by asking faculty the extent to which they emphasize diversity in their teaching, writing, and research), as well as an index representing institutional emphasis on diversity (obtained by measuring faculty perceptions of the importance of diversity to the institution as a whole). Also, all analyses of multi-institutional data controlled for characteristics of institutions that are usually controlled for in such studies as the CIRP, including whether the school is private or public, a university or four-year college, and the selectivity of the school (Pascarella and Terenzini, 1991 as cited in Gurin et al., 2002).

Multiple regression analyses were performed on the MSS and CIRP data. Regressions were conducted on the MSS data to explore the relationships between three types of diversity experiences (interactional diversity, classroom diversity, and events/dialogues) and the five dependent variables (active thinking, intellectual engagement, compatibility of differences, perspective-taking, and racial/cultural engagement). Multiple regression procedures allow researchers to determine what values of the dependent variable(s) they would expect to see given certain diversity experiences (Vogt, 1999). Separate regressions were run for African American, Asian American, and white students. Regression analyses were also conducted on the multi-institutional CIRP data to examine the relationship between the two types of diversity (classroom and informal interactional diversity) and the four dependent variables (intellectual engagement, academic skills, citizenship engagement, and racial/cultural engagement).

The findings from this study indicate that the actual experiences that college students have with diversity consistently and significantly affect important learning

and democracy outcomes in college. In both the MSS and the national study, diversity experiences and learning outcomes were positively related, even after adjusting for students' precollege differences that may predispose them to participate in diversity experiences on campus. In the MSS, all three of the types of diversity experiences were influential for at least one of the groups, and for at least one measure of learning outcomes. In the national study, informal interactional diversity was particularly influential in accounting for greater levels of intellectual engagement and self-assessed academic skills for the four groups of students.

Also, the prediction of Gurin et al. (2002) that diversity experiences would help students develop the skills to participate and lead in a diverse democracy was supported for all groups. In the MSS, all three types of diversity experiences had significant positive effects on the compatibility of difference and the racial/cultural engagement outcomes for white students. For African American and Asian American students, the impact of the three diversity experiences on democracy outcomes was less consistent. For these two groups, informal interaction with diverse peers was related to an understanding that difference and democracy can be compatible, and classroom diversity had a positive effect on racial and cultural engagement. Participation in multicultural events only had a significant effect on the perspective-taking of African Americans. In the national study, informal interactional diversity was significantly related to citizenship engagement and racial/cultural engagement for all four groups. In contrast, the effects of classroom diversity varied by group.

Similarly, in an expert report for the cases of *Gratz v. Bollinger* and *Grutter v. Bollinger*, Gurin (1999) designed research and conducted analyses using CIRP and MSS data to show how diversity on college or university campuses affects student learning and democracy outcomes at the national, institutional, and classroom levels in three separate but related empirical studies. She defined diversity in three different ways. The *structural diversity* of an institution represented the racial and ethnic composition of the student body. *Classroom diversity* represented the integration of research and knowledge about diverse groups into course curricula, and *informal interactional diversity* included on-campus opportunities outside of the classroom intended for students from diverse backgrounds to interact with each other. Results indicated that students who experienced the most racially/ethnically diverse interaction, both informally and in the classroom, showed the greatest engagement in active thinking processes, growth in intellectual engagement and motivation, as well as growth in intellectual and academic skills. These students also showed the most engagement during college in different forms of citizenship, the most engagement with people of other races/ethnicities, and

they were the most likely to acknowledge that group differences were compatible with and valuable to the interests of the broader community. Gurin's three studies also demonstrated that students' experiences with diversity in college could have a significant positive impact on the amount of racial/ethnic integration in their lives after college.

Astin (1993a, 1993b) conducted an in-depth empirical study of how students are affected by campus policies and practices, which included seven environmental measures of diversity. The purpose of this research was to learn how different student outcomes are affected by environments. This study examined 25,000 students who entered college as freshmen in 1985, from 217 different four-year colleges and universities. These students were followed up with, four years later in 1989. There were 82 different student outcomes used in this study that included attitudes, values, beliefs, aspirations, career plans, measures of graduate achievement, and many others. More than 190 measures of the students' environmental experiences were looked at, seven of which were directly relevant to examining diversity.

These seven environmental experiences can be placed into three broad categories: Institutional Diversity Emphasis, Faculty Diversity Emphasis, and Student Diversity Emphasis. The measures of the first two categories of experience are based on faculty responses from the 217 schools to a lengthy questionnaire that was scored and then factor analyzed in order to determine items that should be clustered together. For example, the Institutional Diversity Emphasis represents the extent to which faculty believe that their institution is committed to each of the following five goals: (1) increasing the number of minority faculty, (2) increasing the number of minority students, (3) creating a diverse multicultural environment, (4) increasing the number of women faculty, and (5) developing an appreciation for multiculturalism. Faculty Diversity Emphasis was defined in terms of other clusters resulting from factor analysis, including: (1) incorporates instructional techniques that utilize readings on racial and ethnic issues, (2) conducts research or writing focused on women or gender, and (3) conducts research on racial or ethnic minorities. Student Diversity Experiences were measured by five items from the follow-up questionnaire that the students completed in their fourth year of college. These items, each of which was treated separately in the analysis, included: (1) took ethnic studies courses, (2) took women's studies courses, (3) attended racial/cultural awareness workshops, (4) discussed racial or ethnic issues, and (5) socialized with someone from another racial/ethnic group.

The results of Astin's (1993a, 1993b) analyses show that emphasizing diversity either as a matter of institutional policy or in faculty research and teaching, as well as providing students with in-class and out-of-class opportunities to discuss issues of race and culture, are all

associated with widespread beneficial effects on students' cognitive and affective development.

Pascarella, Palmer, Moye, and Pierson (2001) conducted a longitudinal study of the net effect of 10 specific diversity experiences on a standardized measure of critical thinking at the end of the first year of college for students from 18 four-year institutions and in five community colleges, grouped by gender and race. They also followed students in the four-year institutions through the end of their third year of school to ascertain which of the 10 diversity experiences influenced end-of-third-year critical thinking for students in different race and gender groupings. The institutional sample was chosen from the National Center on Postsecondary Education Data System data to represent differences in colleges and universities across the country on a number of characteristics including type of institution, public or private control, size, location, ethnic distribution of undergraduate student body, selectivity, and others. The students in the sample were participants in the National Study of Student Learning (NSSL), which is a large, federally funded longitudinal study that examines the factors affecting learning and cognitive development in college. The sample was selected randomly from the incoming first-year class at each of the participating institutions.

During the initial data collection, students were given a precollege survey on their demographic characteristics and background information, their aspirations and expectations of college, as well as their orientation toward learning. They also completed Form 88A of the Collegiate Assessment of Academic Proficiency (CAAP), developed by the American College Testing Program (ACT) to assess selected skills that are typically thought to develop during the first two years of college. The CAAP consists of five 40-minute multiple-choice test sections. The section assessing critical thinking was the focus of this study, although students also completed the reading comprehension and math sections during the initial data collection, as well as the writing skills and reasoning sections in the second follow-up data collection. The CAAP critical thinking test consists of 32 items that measure the ability to analyze and evaluate arguments. There are four passages that are designed to represent different issues dealt with in a college curriculum, and are followed by a set of multiple-choice items.

Students in the sample participated in three follow-up data collections at the end of their first, second, and third years (conducted only at the four-year institutions) of college, which included the completion of the critical thinking, reading comprehension, and math sections of Form 88B of the CAAP, the College Student Experiences Questionnaire (CSEQ) (Pace, 1984, 1990), and a follow-up instrument created for the NSSL (as cited in Pascarella et al., 2001). The CSEQ and the NSSL follow-up instrument were used to gather information about students' experiences

inside and outside of the classroom.

The dependent variables in the study were the students' end-of-first-year and end-of-third-year scores on the CAAP critical thinking tests. The independent variables consisted of 10 specific diversity experiences that were selected based on the existing literature on diversity experiences and general cognitive development (see Appendix C for a list of these diversity experiences). Students' participation in these diversity experiences is taken from either the CSEQ or the NSSL follow-up instrument at the end of each year of study. In order to predict end-of-first-year critical thinking, the students' level of involvement or participation in each experience was taken from their responses on the CSEQ or NSSL follow-up instrument during the first follow-up of the sample. In order to predict end-of-third-year critical thinking, students' level of involvement or participation in each of the diversity experiences across all three years of student responses on the CSEQ or NSSL follow-up instrument were summed. To control for confounding influences on the relationship between involvement in diversity experiences and critical thinking, Pascarella et al. included a number of control variables in the study (e.g., precollege critical thinking level, a measure of precollege academic motivation, age, family socioeconomic status, and patterns of course work taken at college). The researchers also included an estimate of aggregate student academic or cognitive ability as a control variable due to the notion that the overall cognitive ability of an institution's student body can influence the climate of an institution.

The analyses for four-year college students were conducted separately for four groups (white men, white women, men of color, and women of color), because preliminary analyses indicated that the net effects of the 10 diversity experiences on first and third critical thinking scores for four-year college students differed in magnitude by race and gender. For two-year college students, the difference in magnitude was only by gender, so the analyses for two-year colleges were conducted separately for men and women. For each of the subgroups, analyses were carried out using ordinary least-squares regression. The appropriate measure of critical thinking was regressed on the different individual-level and institutional-level control variables, as well as the 10 diversity experiences. Therefore, the net effect of each diversity experience on students' critical thinking in the first or third year was estimated with statistical controls for the 10 control variables as well as each of the other nine diversity experiences.

Pascarella et al. (2001) found that students' involvement in diversity experiences during college had statistically significant positive effects on their scores on the CAAP critical thinking test. However, different diversity experiences influenced students grouped by gender and ethnic identity differently and at different points in their college experiences. For example, taking

diversity courses and having serious discussions with students whose religious beliefs were different from theirs during the first year of college had no significant effects on end-of-first-year critical thinking for any of the six subgroups. However, participation in racial or cultural awareness workshops resulted in a significant, positive impact on end-of-first-year critical thinking in white men in four-year colleges. Also, making friends with students whose race was different from their own had a significant, positive effect on first-year critical thinking for white women in four-year colleges, as did their participation in a racial or cultural awareness workshop (more so than for women of color in four-year institutions). Only one diversity experience, having discussions with students about different lifestyles and customs, had a significant, positive effect on first-year critical thinking for men of color in four-year schools. For the effects of cumulative diversity experiences across three years of college on end-of-third-year critical thinking, results indicated that having serious discussions with students whose political opinions were very different from theirs had significant positive effects for white men, as did having discussions with other students about major social issues such as peace, human rights, equality, and justice. Only having serious discussions with students from a different country had a significant positive effect on white women's third-year critical thinking. For men of color, having serious discussions with students whose philosophy of life or personal values were very different from theirs, and having serious discussions with students from a country different from theirs, had a significant effect on their third-year critical thinking.

Pascarella et al. (1996) designed a similar study to the one described above, although in this study, they used only four-year colleges in the sample and only one follow-up data collection with the CAAP and CSEQ. This study was designed to assess the impact of specific dimensions of the college experience on students' openness to diversity and challenge. In this study, the dependent variable was an eight-item Likert-type scale called the openness to diversity/challenge scale. This scale was developed through factor analysis in a longitudinal pilot study, and includes an assessment of an individual's openness to cultural, racial, and value diversity, as well as the extent to which an individual enjoys being challenged by different ideas or values (see Appendix D for items from this scale).

Four sets of independent variables were developed for this study: students' precollege characteristics, environmental emphases of the institution attended, students' first-year academic experiences, and students' first-year social/nonacademic experiences (see Appendix E). Pascarella et al. (1996) conducted the data analysis in two stages. The first stage used ordinary least-squares regression to estimate the net effect of each independent variable on end-of-first-year openness to diversity/

challenge, while controlling for the effects of the other independent variables. The second stage of analyses tested for the presence of conditional effects based on gender and ethnicity. A series of cross-product terms was calculated between gender and ethnicity as well as each of the other independent variables in the prediction model. These were then added to the regression model used in the first stage of analysis. A statistically significant increase in the explained variance attributed to the use of the set of cross-product terms indicated that the net effects of different influences on openness to diversity/challenge differ in amount by gender or ethnicity.

The findings from this study point to a wide variety of independent influences on students' development of openness to diversity and challenge during the first year of college, such as the courses they take, how much they study, where they live, and many other factors. Also, Pascarella et al. (1996) found that the level of student involvement in the school is a key determinant of college impact, and that a student's peer group is a particularly important influence on their growth and development in college.

Umbach and Kuh (2003) also looked at the nature of students' different experiences with diversity, but more specifically at liberal arts colleges. Using data from the National Survey of Student Engagement (NSSE), they examined how students at liberal arts colleges compared with students at other types of schools in terms of their diversity-related experiences, the organizational factors and conditions that are related to diversity experiences at liberal arts colleges, and the relationships between diversity experiences at liberal arts colleges and other important educational activities and outcomes. The NSSE is an annual survey of freshmen and senior students that measures the degree to which students participate in educational practices that are associated with college success (Kuh, 2003; Kuh, 2001). The NSSE survey, *The College Student Report*, questions students about their experiences in four areas: (1) the amount of time and effort they devote to certain in-class and extracurricular activities; (2) participation in enriching educational activities, such as study abroad programs or internship opportunities; (3) gains in personal and educational development; and (4) perceptions of the college environment, including satisfaction with the educational experience and quality of academic advisement.

Two samples were used in this study. The first sample was comprised of undergraduates from 349 institutions who responded to the NSSE survey in spring 2002. The second sample is a subset of the larger sample and is comprised of students at liberal arts colleges (first-year students and seniors). The dependent variables in this study included measures of student engagement, perceptions of the school environment (including satisfaction), and selected self-reported outcomes of attending college. Four scales were used to measure student engagement: (1) level of academic

challenge, (2) classroom activities that represent higher order thinking, (3) active and collaborative learning, and (4) diversity-related activities. Measures examining the supportive campus environment included a supportive campus environment scale, two subscales of supportive campus environment (interpersonal support and learning support), and an overall satisfaction with college scale. Students' academic gains were measured using two scales: gains in general education and gains in personal and social development. Also, three measures of social awareness were used to assess: gains in self-awareness, gains in desire to contribute to the community, and gains in understanding others.

Umbach and Kuh (2003) analyzed the data in three stages using hierarchical linear modeling (HLM). This method of analysis makes it possible to determine what is an individual-level effect and what is a group-level effect. In this study, the researchers first used HLM to examine the impact of differences in student engagement in diversity-related activities by institutional type according to the five different Carnegie institutional categories for four-year colleges and universities. To control for any possible confounding influences, Umbach and Kuh included several student-level variables in all of their models. Separate models were run for first-year students and seniors.

In the second stage, HLM was used to examine the college or university factors related to diversity and the effects of diversity experiences on student engagement at liberal arts colleges. In addition to student-level controls, this stage included institutional-level controls such as whether the school is public or private, the location, the number of undergraduate students, and the degree of selectivity. Umbach and Kuh (2003) modeled three institutional measures of different aspects of diversity. First, using a "diversity density index," they tested the influence of structural diversity. The diversity density index is the probability of interacting with a student of a different race and is calculated using percentages of different races on a campus and can be represented by the formula:

$$1 - (\%white^2 + \%African\ American^2 + \%Native\ American^2 + \%Latino/a^2 + \%Asian\ Pacific\ American^2)$$

Next, the researchers tested the effects of students' perceptions, based on the institutional average of the emphasis their school places on the interaction of students from diverse economic, social, racial, and ethnic backgrounds. Third, they tested the influence of "diversity in course work," which is the extent to which students reported their classwork or readings as related to issues of diversity. Lastly, they modeled a construct they termed "diversity press," by developing a scale made up of the three other diversity measures. Diversity press represents the "institution's commitment to and emphasis

on diversity as manifested by the proportional presence of students from different backgrounds attending the institution (structural diversity), the extent to which students perceive that diversity is valued and important, and the degree to which diversity is featured in the curriculum" (Umbach and Kuh, 2003, p. 12).

In the third and last stage of analysis in this study, the researchers built a series of hierarchical linear models to explore the relationships between students' engagement with diversity-related activities and experiences at liberal arts colleges and measures of student engagement in educationally purposeful activities and their self-reported gains in personal and academic growth. They also looked at the impact of diversity-related activities on perceptions of student environment and satisfaction.

In this study, Umbach and Kuh (2003) found that both first-year and fourth-year students at liberal arts colleges were, on average, more likely than their peers at other types of colleges to participate in diversity-related activities. These students also reported statistically significantly higher gains in understanding diversity than did students at other types of colleges. Students at liberal arts schools that participated in diversity-related activities report higher levels of academic challenge, participated more often in active or collaborative learning, reported greater gains in personal or education growth, and were more satisfied with their college experience. They also viewed their campus environment as more strongly supporting their academic and social needs. At liberal arts schools, the encouragement to interact with students from different backgrounds was positively related to almost all of the engagement and gains measures. Diversity in course work, or the degree to which students were exposed to diverse perspectives in their course work, was also positively related to many of the dependent measures.

Structural Diversity

Terenzini et al. (2001) note that part of the importance in studying the impact of structural diversity on college campuses is linked to the notion that judges require this type of research in order to support the consideration of race in admissions. Terenzini et al. designed a study that focused on the influence of varying levels of classroom diversity on students' learning outcome "above and beyond the effects of other variables that may also influence learning" (such as students' characteristics prior to taking the course and instructors' teaching methods) (Terenzini et al., 2001, p. 512). The sample in this study consisted of 1,258 engineering students enrolled in seven Engineering Coalition of Schools for Excellence in Education and Leadership (ECSEL). Courses and students were not selected randomly, but were chosen by ECSEL evaluators at each campus. The evaluators were told to identify courses that were using active and collaborative learning

techniques to teach design. These courses were then termed “ECSEL” courses. “Non-ECSEL” courses were selected for comparative purposes based on their having similar educational goals as the ECSEL courses and their use of traditional lecture and discussion techniques as the primary mode of instruction.

The survey distributed to the students in this study is the Classroom Activities and Outcomes Survey, a pencil-and-paper, multiple-choice questionnaire. Surveys were administered to a total of 49 classrooms, which included 29 ECSEL classes and 20 non-ECSEL classes, and were filled out at the conclusion of the course. The survey consisted of three sections: (1) students’ personal and academic background information and demographic characteristics, (2) course characteristics and activities of the course the students were enrolled in when completing the questionnaire, and (3) the extent to which the students’ believe they have made progress in various learning and skill development areas as a result of taking this particular course.

The control variables in this study included background characteristics such as gender, race/ethnicity, and SAT score. Three independent variables were arrived at based on the second section of the Classroom Activities and Outcomes Survey: collaborative learning, instructor interaction and feedback, and clarity and organization. The major independent variable investigated in this study, classroom diversity, was operationalized using a “diversity index” arrived at by dividing the number of students who reported their racial/ethnic identity as nonwhite by the total number of students in the class. For the two Historically Black Colleges and Universities included in this study, the index was calculated so that classrooms with a diversity “mix” approaching 50 percent were considered the most diverse. Because a preliminary examination of the distribution of the diversity index resulted in a curvilinear relationship, the diversity index was used to arrive at five categories of “classroom diversity”: no diversity, low diversity, medium-low diversity, medium diversity, and high diversity. The dependent variables in this study, problem-solving skills and group functioning skills, are based on the third part of the Classroom Activities and Outcomes Survey.

This study utilized ordinary least-squares multiple regression analyses in a series of hierarchical analyses. To determine whether the diversity of the classrooms had any association with the two dependent variables (self-reported gains in problem-solving and group skills), each of the dependent variables was regressed on four of the levels of classroom diversity (students in the courses with no diversity constituted the reference group). Next, reported gains in problem-solving and group skills were regressed again on classroom diversity, after controlling for students’ race/ethnicity, gender, and academic ability. Then, each learning outcome was regressed hierarchically on: 1) students’ race/ethnicity, gender, and ability, 2) the

three scales reflecting the instructional methods used in the classroom, and 3) four levels of classroom diversity. Lastly, to evaluate the extent to which classroom diversity’s effects may vary depending on the instructional methods used, a set of four cross-product interaction terms was created by cross-multiplying each of the levels of classroom diversity by students’ scores on the Collaborative Learning scale, which were entered as a set into an ordinary least-squares regression.

Results from this study indicated that the level of classroom diversity was related at small but statistically significant levels to students’ reported gains in both their problem-solving and group skills. These relations persisted even in the presence of statistical controls for students’ race/ethnicity, gender, and academic ability. The findings also suggest that the relationship between racial/ethnic composition of a classroom and students’ learning gains may not be a simple, linear one. Consistently, “medium” levels (30–40 percent) of classroom diversity are positively, and usually significantly, related to students’ learning gains. However, it also appears that low or high levels of diversity may be negatively related to learning gains. Terenzini et al. (2001) suggest that future research should examine in further detail the levels at which classroom diversity becomes a significant positive or negative force on student learning.

Prior to the study of the effects of classroom diversity on student learning outcomes by Terenzini et al. (2001), Chang (1999) investigated the educational benefits of racial diversity as mediated by specific experiences that are significantly associated with having a diverse student body, or structural diversity. The two main goals for this research were (1) to determine how structural diversity impacts how frequently students socialized with those from different racial/ethnic groups and discussed racial/ethnic issues, and (2) to replicate Astin’s (1993a, 1993b) findings by examining the effects of socializing with persons from different racial/ethnic backgrounds and having discussions of racial/ethnic issues on four separate educational outcomes (student academic and social self-concept, retention, and college satisfaction).

The sample for this study was 11,688 students attending 371 four-year colleges and universities. The data were drawn from a number of sources, but the primary source was the CIRP database, where information was used from the 1985 Student Information Form (SIF) and the 1989 Follow-Up Survey (FUS). The 1985 SIF was given to entering college freshmen during orientation programs in the first week of school. It covered information on students’ demographic and personal characteristics, high school experiences, expectations about college, as well as values, attitudes, life goals, self-concepts, and career goals. Four years later, in the summer and fall of 1989, the FUS was sent to the respondents of the 1985 SIF, serving as a posttest for items on the SIF because it repeated questions

on values, attitudes, life goals, self-concepts, and career aspirations. The FUS also asked students to reflect about their college experience and their general perceptions of college. The data in this study also included students' SAT and ACT scores, as well as information on which students had earned bachelor's degrees, which were still enrolled in college, and how many years of college had been completed. This information was provided by the 1989 Higher Education Research Institute (HERI) Registrar's Survey.

Also, institutional characteristics and undergraduate ethnic enrollments from 1986 were obtained from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS, formerly HEGIS), and were merged with the survey data. Finally, several campus climate measures that were created from the responses to the 1989 HERI Faculty Survey were also merged with the comprehensive database. The HERI Faculty Survey was given to full-time teaching personnel at the same institutions for which the longitudinal student data was available. It asked faculty members to evaluate how they spent their time, how they interacted with students on campus, the teaching and evaluation methods they used, and other educational issues. This survey also included questions about demographic and personal information.

For the first stage, two dependent variables were selected from the 1989 FUS. They were two survey questions asking about how often students socialized with people of different racial/ethnic backgrounds from themselves and how often they discussed racial/ethnic issues over the past year. Four variables were selected as pretest measures and were controlled when examining the effects of racial diversity on students' likelihood to engage in diversity. An example of one of these measures from the 1985 Freshman Survey is, "Realistically, an individual can do little to bring about changes in a society" (Chang, 1999, p. 382).

In the second stage, the effects of socializing with people of other races and participating in discussions of racial issues were tested on four educational outcomes including retention, satisfaction with college, intellectual self-concept, and social self-concept. For each of these measures, a corresponding pretest measure from the 1985 SIF was selected. Academic achievement in college was measured by college persistence, or remaining continuously enrolled in the first institution for four years or earning a bachelor's degree. Students' satisfaction with their overall college experience was also considered to be an outcome in the second stage of this study. This was measured on the 1989 FUS with an item asking students to rate their overall college experience on a 1–4 scale. Finally, two other outcomes were selected to measure students' academic and social self-concept. The 1989 FUS asked students to rate their intellectual and social self-confidence in relation to the average person their age.

Also, because this study was most interested in understanding whether students benefit from structural diversity, the racial diversity of the student population at each school was calculated using a formula that is similar to that for calculating standard deviation. Essentially, percentages of students from different major racial groups were combined to create a measure that would represent diversity as the heterogeneity in the student body's racial composition. Four percentages (Asian American, Latino, African American, and white) were included in the formula:

$$\sqrt{\frac{(\%Asians - \mu)^2 + (\%Latinos - \mu)^2 + (\%Blacks - \mu)^2 + (\%whites - \mu)^2}{4}}$$

The mean (μ) was calculated by dividing the sum of the four percentages at each school by four. As this results in an inverse measure, the reciprocal of this value was used. This variable, in essence, measured the variance across all four racial groups. If an institution had similar percentages for all four groups, then they would have a very low standard deviation and a high level of diversity.

There are three sets of independent variables in this study. The first set consisted of students' precollege characteristics, such as socioeconomic status, race, gender, and measures of ability. The second set served as controls (institutional size, location, control, etc.) to help identify how the effects of racial diversity might vary according to environmental circumstances. The third set of variables measured students' direct involvement and experiences with their environment and were selected from the 1989 FUS. These included place of residence, fraternity or sorority membership, and whether or not a student has enrolled in an ethnic studies course, attended a racial or cultural workshop, or enrolled in remedial courses.

The researchers used hierarchical stepwise regression analysis to investigate the effects of racial diversity on the frequency with which students socialized with others from different racial/ethnic groups, as well as the frequency with which they discussed racial/ethnic issues during the past year. In the first stage of analysis, each of the two outcome measures was regressed on: (1) student background characteristics, (2) the racial diversity measure, (3) other college environmental measures, and (4) student college experiences. Variables were entered in the above sequence to observe changes in regression coefficients. In the second stage, further regression analyses were conducted on four educational outcomes (retention, satisfaction with college, intellectual self-concept, and social self-concept) in order to examine the effects of socializing across different races and participating in discussions of racial issues.

The results from this study indicated that a racially diverse student body has a positive effect on educational outcomes through its effects on diversity-oriented student activities and experiences (Chang, 1999). This effect was observed even after controlling for students' precollege characteristics, as well as other college experiences and

environmental factors. This study confirmed Astin's (1993a, 1993b) findings that socializing with someone of another race and discussing racial and/or ethnic issues positively affect a number of educational benefits, including retention, overall college satisfaction, and social self-concept.

Diversity-Related Initiatives and Curricular Diversity

Another way to research the educational benefits of diversity in higher education is to examine the number or type of diversity-related initiatives that schools make available. Such initiatives may include multicultural or diversity courses (required or otherwise), elective ethnic studies courses, cultural awareness workshops, and cultural centers (Umbach and Kuh, 2003). Two different ways to research diversity-related initiatives and classroom diversity are to investigate those who participate or take advantage of these courses or workshops, and determine how they affect those students (Springer, Palmer, Terenzini, Pascarella, and Nora, 1996), and examine whether or not these courses or workshops reduce racial prejudice and promote multicultural understanding and democratic sentiments among students (Chang, 2002; Gurin et al., 2004). The findings from such research may help colleges and universities to modify and improve the current diversity-related initiatives they have in place.

Springer et al. (1996) designed a study to investigate the effects of multicultural awareness programs on the attitudes of white students toward diversity on campus. The three major questions this study sought to answer were: (1) What precollege differences are significantly associated with white students' attitudes toward diversity on campus? (2) Are men and women, and students in different majors, more or less likely to participate in racial or cultural awareness workshops in their freshman year? (3) Are the effects of participation in these workshops different for men and women and for students in different majors? Springer et al. used a quasi-experimental, three-wave panel design for their analysis of survey data. Waves one (fall 1992) and three (spring 1994) involved the assessment of attitudes, while wave two (spring 1993) involved the assessment of participation in a workshop. The institutional sample included 17 colleges and universities in 10 states and represented nationwide differences in institutions based on information from the U.S. Department of Education's IPEDS data. The student sample for this study was selected to represent the population of white first-year undergraduates in colleges and universities in the United States in the fall of 1992.

For the initial data collection, students filled out precollege surveys, including the CAAP, which assessed students' declared majors in 23 categories, as well as a questionnaire designed to look at students' attitudes toward learning and their demographic characteristics.

The first data collection also measured students' attitudes toward diversity on campus with items that asked about the value that students placed on interacting with diverse individuals and learning about people from other cultures as part of their college experience. For the data collection after their first year of college, students indicated whether they had participated in a multicultural workshop offered by the school during that year. At the end of their second year of college, students were again asked to respond to questions regarding their diversity-related attitudes. The construct of the diversity-related attitude was operationalized using a two-item, five-point Likert-type scale labeled "attitudes toward diversity." This data collection also assessed students' declared major fields. Springer et al. (1996) collapsed categories of students' majors based on research linking certain majors with more liberal or conservative attitudes among faculty and students. Students who did not declare a major or who switched from one to another were considered the reference group.

The three research questions that this study sought to answer were addressed by using three separate analyses. First, a two-way analysis of covariance (ANCOVA) was used to determine whether students' gender or major or both were significantly associated with their attitudes regarding diversity prior to attending college. Second, a logistic regression assessed whether students were more or less likely to take part in a campus multicultural workshop in their first year of college based on their gender, major, degree aspiration, father's education, family income, and attitude toward diversity. Third, a three-way ANCOVA was employed to assess the impact of participating in the workshop on students' attitudes toward diversity at the end of their second year of school.

Results from this study indicated that gender-related and major-field-related differences in attitude toward diversity are separate, and that more favorable attitudes toward diversity among women cannot be attributed to greater numbers of women concentrated in more liberal majors rather than conservative majors (Springer et al., 1996). Students with higher degree aspirations, and with more highly educated fathers, generally held more favorable attitudes toward diversity. Family income was not significantly related to students' attitudes toward diversity. Results also suggested that participating in a racial or cultural awareness workshop promotes the development of more favorable attitudes toward diversity on campus among white students.

Chang (2002b) also investigated the benefits of curricular diversity by studying whether a required diversity-related course actually improved students' racial attitudes. This study used a between-subject research design and was conducted at a public university in the Northeast. The two groups of interest were undergraduates at the very beginning of their required diversity course,

and those about to complete the course. The dependent measures used in this study were an eight-item scale and two items from the College Student Experiences Questionnaire (CSEQ) to better understand the cognitive aspects of race relations and intergroup understanding.

The students in the sample were enrolled in a course that could be applied toward the diversity course requirement at their school. All of the diversity courses cover, both explicitly and in an academically challenging manner, issues of diversity in U.S. society. The between-subject design, instead of a repeated-measure (pre/post) design, was used in this study because the researcher felt that most students would connect enrollment in the course to the study if instruments were administered for a second time, and because after consulting with the course instructors, it became clear that most of them would feel as though they were being evaluated if the study had a pre/post design.

Thirteen courses at the university were randomly assigned to serve as the pretreatment group and 12 were randomly assigned to serve as the treatment group. Instructors for courses in the pretreatment and treatment groups were contacted and invited to participate in the study. Instructors for courses in the treatment group were contacted in March of 1999. The details of the study were revealed to the instructors, but they were told not to make the purposes of the study known to the students. The instructors who agreed to take part in the study were given detailed instructions and materials at least one week prior to the administration of the Modern Racism Scale (MRS). Data from the pretreatment group were collected one week into the semester, while data for the treatment group were collected during the fourteenth week of instruction in the same semester.

An adaptation of the MRS (see Appendix F) was used to assess students' amount of prejudice toward blacks. These eight items taken from the scale were embedded in a series of unrelated items that discussed other social and political issues to hide the intentions of the questionnaire. The treatment sample also responded to two additional items on their questionnaire that were adapted from the CSEQ and asked students to report how often during the school year they became acquainted with students with different racial/ethnic backgrounds from theirs, and how often they had serious conversations with students with different racial/ethnic backgrounds from theirs. Chang (2002b) conducted correlational analyses between students' responses on these two items and their MRS scores.

A number of variables were controlled for in this study in order to reduce experimental error so that estimates of treatment effects could be reasonably obtained. These variables included five student background characteristics: race, gender, age, and mother's and father's levels of education. The students' degree of exposure to racial diversity was also statistically controlled for, based on students' identification on a five-point scale (1=All and

5=None) of the number of people who were of their race/ethnicity in each of these groups: high school classmates, neighbors where they grew up, current close friends, and current neighbors. A cross-racial exposure score was calculated for each student by adding the value of the four responses, with larger scores indicating greater exposure to people from different backgrounds. The equality of mean scores on the Modern Racism Scale for the students who had just begun the diversity course requirement and for those who were nearly finished with the diversity course requirement were tested using analysis of covariance (ANCOVA), controlling for students' race, gender, age, mother's and father's levels of education, and degree of exposure to diversity.

Chang (2002b) found that those students who had almost completed their diversity requirement made significantly more favorable judgments of blacks than those who had just started the requirement, indicating that students who had just begun the diversity requirement were more prejudiced and judged blacks more harshly than students who had almost completed their requirement. Also, taking additional diversity courses did not seem to result in more favorable judgments of blacks at the completion of the course(s). This is likely due to self-selection, as students who are less prejudiced are more likely to voluntarily take courses to learn more about diversity and are beginning the course(s) with more favorable judgments of blacks.

Gurin et al. (2004) designed two separate field studies to investigate the impact of curricular and cocurricular student experience with racial/ethnic diversity on democracy and citizenship outcomes. The first study compared undergraduate participants in a curricular diversity program with a matched control group, and the second study involved a longitudinal survey of University of Michigan students that examined whether student participation in certain campus activities fostered democratic sentiments among undergraduates.

The University of Michigan offers first-year students a curricular program called the Intergroup Relations Program (IGR) which incorporates different practices based on theories that are considered important for making diversity and democracy compatible. For example, in this program there is the "presence of diverse others, discontinuity from precollege experiences, equality among peers, discussion under rules of civil discourse, and normalization and negotiation of conflict" (Gurin et al., 2004, p. 20). Trained facilitators lead discussion groups of students from different backgrounds that have had a history of disagreement in the past. These groups discuss somewhat divisive policy issues, as well as theories of conflict and its impact on intergroup relations. Gurin and her colleagues (2004) hypothesized that student participation in the IGR program would result in the students' greater display of perspective-taking, understanding that differences do not

have to be divisive, perception of commonalities in values between their own and those of other groups, mutuality in learning about their own and other groups, interest in politics, participation in campus politics, commitment to civic participation after college, and acceptance and understanding of conflict as a normal part of social life, as compared to a matched sample of nonparticipants (see Appendix G for a list and description of the measures used).

This was a longitudinal study in which the IGR participants and the matched control group were surveyed at the time of entrance to the university, at the end of the term when the participants took the first course in the program, and again four years later in their senior year. The control students, who were matched one-to-one on race, gender, in-state or out-of-state residency, and campus residency, were drawn from a larger study of the entering University of Michigan undergraduate class in 1990. Both the participants and the control students had baseline measures from the Michigan Student Study that enabled the researchers to control for self-selection in their analyses.

The analyses in this study were conducted in three steps. The first involved a one-way multivariate analysis of variance (MANOVA) conducted to determine if the IGR had a significant impact across the fourth-year outcomes. Results indicated that there were a number of significant differences between the participant and control groups on the multiple dependent measures. Then, *t* tests were employed to assess mean differences on these measures between participants and control students at the conclusion of their senior year. Lastly, for the measures for which the researchers also had entrance scores, regressions were run using the pretest entrance measure and a dummy variable of participation/nonparticipation as predictors. These regression analyses controlled for the possible effects of self-selection into the IGR program.

The second study by Gurin et al. (2004) was designed to assess whether certain educational activities that share features of the IGR program would have similar effects to the IGR in fostering democratic sentiments among undergraduates. Such activities included intergroup dialogue for a course or campus organization, participation in campuswide educational events about the cultures or histories of various groups, and exposure to knowledge about race and ethnicity in formal classrooms as part of a diversity requirement. While these activities were not part of a greater program, the Michigan Student Study included large enough numbers of students to examine the data by racial/ethnic subgroups, thereby allowing the researchers to determine whether diversity activities have similar outcomes in all groups.

In their senior year, students were given a survey that included reports of their experiences with diversity. They were asked two questions about how much exposure they had to information or activities about diversity

in their course work, and if they had taken a class that had a significant impact on their views of racial/ethnic diversity and multiculturalism. A third measure assessed the number of five annually held multicultural events that the students had attended over the course of their four years at the University of Michigan. A fourth measure asked if the students had participated in any intergroup dialogue opportunities. Gurin et al. (2004) also formed a summary measure by standardizing individual items and then averaging across the different types of diversity experiences for the students in the Michigan Student Study. The same measures of democratic sentiment used in the IGR study were available in this dataset as well, except for the measures of attitudes toward conflict and interest in politics.

Separate multiple-regression analyses were conducted to determine the nature of the relationship of this diversity experience measure to democratic sentiments and civic activities for white, African American, Asian American, and Latino/a students. In the regression equation, initial position on outcome measures was controlled for whenever possible, as were gender and in/out of state precollege residence to make the analysis parallel to that of the IGR program.

The results from the two studies by Gurin et al. (2004) highlight the positive impact of diversity experiences, through curricular and cocurricular activities in higher education, on democratic citizenship. The first study, for example, showed that the seniors who were IGR participants expressed more democratic sentiments than the matched control students, showed significantly greater motivation to take the perspective of others, less frequently evaluated the university's emphasis on diversity as producing divisiveness between groups, and exhibited a number of other affirmative outcomes. However, certain effects of self-selection were observed. Once the participants' initial motivation to help their group or community promote racial/ethnic understanding was controlled for and analyzed, participation in the IGR program had no effect on postcollege civic commitments. The second study supported the results from the IGR study and provided evidence of a fairly consistent effect of having been exposed to knowledge about racial/ethnic groups and to interaction with students from different backgrounds in classrooms, events, and intergroup dialogue. For white students, experiences with diversity were significantly related to perspective-taking, to a sense of commonality in values with African Americans and Latinos/as, and to having learned about other groups' and their own group's contributions to society and to actual participation in the activities of their own and others' groups. For the three groups of color, the diversity experiences were influential in citizenship preparation; however, there was no relationship between the diversity index and perspective-taking.

Diversity Interactions or Informal Interactional Diversity

Diversity interactions can be represented by students' relations with others from different racial/ethnic backgrounds, as well as exposure to diverse ideas, information, and experiences (Umbach and Kuh, 2003). Studies on diversity interactions are often similar to studies on diversity initiatives in that many college and university diversity initiatives promote diversity interaction either through course requirements, structured intergroup dialogue, or multicultural workshops. However, diversity interactions will likely also take into account the personal friendships established between students of different racial/ethnic backgrounds, perhaps as a result of structural diversity, but not necessarily due to campus diversity initiatives.

Hu and Kuh (2003) designed a comprehensive study to better understand: (1) the student and institutional characteristics associated with interactional diversity experiences, and (2) the effects of these experiences on a range of self-reported outcomes on undergraduate students. In this study, interactional diversity as defined by Gurin (1999) is considered to involve interactions with peers from diverse racial, ethnic, cultural, social, and economic backgrounds (as cited in Hu and Kuh, 2003). The sample consisted of full-time undergraduate students who completed all items on the College Student Experiences Questionnaire (CSEQ) between 1998 and 2001 at 124 colleges and universities. The fourth edition of the CSEQ was designed to measure different in- and out-of-class experiences of students attending four-year colleges and universities with 166 items divided into four sections. The first section of the CSEQ asked students for their background information. The second section included items divided into 13 college activity scales that assessed the amount of time and energy students put into various activities. The third section contained items that measured student perceptions of the extent to which the school's environment emphasized important conditions for learning and growing. Two additional questions measured student satisfaction. In the fourth section, students estimated the amount of progress they had made since beginning college in 25 areas that represented desired outcomes of higher education (see Garcia, Hudgins, McTighe Musil, Nettles, Sedlacek, and Smith, 2001, p. 130, for a demo version of the CSEQ).

This study focused on three sets of variables: (1) student background and institutional characteristics, (2) interactional diversity experiences, or student contact with peers from different backgrounds, and (3) a variety of desirable outcomes of college including gains in general education, personal development, vocational preparation, science and technology, intellectual development, and a diversity competence measure (Hu and Kuh, 2003). The

interactional diversity experience items taken from the CSEQ were combined to form an interactional diversity scale (see Appendix H for these items). Dependent variables included individual item scores and interactional diversity scale scores, in order to look at the relationship between student and institutional characteristics and interactional diversity experiences. The interactional diversity scale was then treated as the independent variable to investigate how interactional diversity experiences affect student gains in college, while controlling for variables involving student and school characteristics.

In the first set of regression analyses, the dependent variables were students' interactional diversity experience item and scale scores, while the independent variables are variables concerning individual and institutional characteristics. They ran regressions of student outcomes on the interactional diversity scale scores for all students in order to investigate the total effects of diversity experience on student gains. Then they disaggregated the respondents by race and ethnicity and institution type and repeated regression analyses for all students to examine the effects of diversity experience on student gains, controlling for individual and school characteristics. Additional regression analyses were conducted to examine whether the effects of diversity experience on student gains varied by student race or ethnicity (white and students of color) at the different types of institutions.

The results from this study indicated that although white students had less contact with peers from different backgrounds, such experiences positively affected the self-reported gains for both white students and students of color at all types of colleges. When the interactional diversity scale was the dependent variable, students of color, traditional-age students, and students majoring in all fields (not undecided) had more experience with diversity, as compared to white, nontraditional-age students, majoring in preprofessional fields, holding all other variables constant. Academic preparation and parental level of education were also positively related to interactional diversity experiences. Also, students in private institutions had higher interactional diversity scale scores than students at public institutions. Interactional diversity experiences had stronger effects on diversity competence, sum of gain, and gain in general education, weaker effects on gains in personal and intellectual development, and the weakest effects on gains in vocational preparation and science and technology. In general, white students saw larger gains from their interactional diversity experiences than students of color on general education, science and technology, and diversity competence. However, students of color benefited more than white students on vocational preparation.

Antonio (2001) approached the study of informal interactional diversity by looking at friendship groups at UCLA to determine the extent to which students perceive racial balkanization on a diverse campus, and

the extent to which students' closest friendships reflect balkanization. He also looked at the amount of influence these friendship groups have on students' development of racial understanding, cultural awareness, and interracial interaction. The student body at UCLA at the time of the study was 40 percent white, 35 percent Asian American, 16 percent Latino, and 6 percent African American. All of the students in the study had been surveyed as part of the CIRP's annual freshman survey in 1994, and were surveyed for this study in their third year of school in 1997. The instrument was sent to students in the mail and collected specific information about their experiences within their friendship group, descriptions of the group's characteristics, and the group's racial composition. Students were also asked to list the names of fellow students that they identify as those "with whom you spend most of your time and consider to be your best friend(s) at UCLA" (Antonio, 2001, p. 69).

After the mailed surveys were returned, freshman data were retrieved for the students whom respondents identified as friendship-group members. Most of these students also completed the annual freshman surveys. This data allowed Antonio (2001) to operationalize measures of friendship-group characteristics as aggregates of the freshman data for the members of each identified friendship group. The group aggregates included measures of academic ability, socioeconomic status, social activism, social self-confidence, and materialism.

Three outcome variables from the follow-up survey were used in this study. The first was a measure of Interracial Interaction. This assesses how frequently students have dated, studied with, discussed racial issues with, and taken time to learn more about someone of a different racial/ethnic background with students *outside of their friendship group*. The sum of responses to four items on the survey served as a measure of Interracial Interaction (see Table 1). Because an identical pretest was not available for this measure, a posthoc pretest was included on the follow-up survey, asking students to describe the racial/ethnic makeup of their friendship group prior to attending college. The second outcome measure in this study was Cultural Awareness. This measure was used because of the notion that students on multicultural campuses, particularly students of color, segregate themselves socially and as a result become more ethnocentric (D'Souza, 1991, as cited in Antonio, 2001). For this measure, a self-change question was included on the follow-up survey asking students to rate how much they have changed on a number of personal qualities since their freshman year (see Table 1). One drawback to this outcome is that no matching pretest was administered on the freshman survey. The last outcome measure in this study was intended to measure students' attitudes toward racial dynamics. It assessed the importance students' placed on "helping to promote racial understanding." This was directly measured in the 1994 CIRP freshman survey.

Table 1

Outcome Measures from Antonio (2001) Study on Diversity and Friendship Groups

<i>Interracial Interaction</i>	Sum of responses to these four items:
	Dated someone with a different race/ethnicity
	Studied with someone of a different race/ethnicity
	Discussed racial issues with someone of a different race/ethnicity
	Took extra time to learn more about someone of a different race/ethnicity (3-point scale, "not at all" to "frequently")
<i>Cultural Awareness</i>	Sum of responses of self-change on three items:
	Cultural awareness and appreciation
	Desire to learn about different people/cultures
	Understanding of problems faced by different people (5-point scale, "much weaker" to "much stronger")
<i>Promoting Racial Understanding</i>	Response to item:
	Importance of "helping to promote racial understanding" (4-point scale, "not important" to "essential")

Note: From "Diversity and the Influence of Friendship Groups in College," by A.L. Antonio, 2001, *The Review of Higher Education*, 25, p. 71.

Antonio (2001) chose the first block of independent variables as controls for precollege characteristics shown to be correlated to the three outcome variables (i.e., gender, race, SES, academic ability), and as individual-level controls for friendship-group-level variables to eliminate the effects of self-selection. Three other composite measures of individual value orientations (Social Self-Confidence, Social Activism, and Materialism and Status) corresponded to analogous group-level measures. These measures were derived from an exploratory factor analysis of student values from the freshman data.

The main variable of interest among friendship groups was *Friendship Group Diversity*. This was based on the racial/ethnic composition information supplied by respondents and defined by degrees of racial diversity by percentage of the largest racial or ethnic group represented in the friendship group:

- (1) Homogeneous—the largest racial/ethnic group makes up 100 percent of the friendship group.
- (2) Predominantly one race/ethnicity—the largest racial/ethnic group makes up 75–99 percent of the friendship group.
- (3) Majority one race/ethnicity—the largest racial/ethnic group makes up 51–74 percent of the friendship group.
- (4) No majority—the largest racial/ethnic group makes up 50 percent or less of the friendship group.

These definitions were applied only to friendship groups

made up of two to seven (the limit) students.

The five remaining friendship-group measures were derived from freshman data. They are group-level aggregates of SES, Academic Ability, Social Self-Confidence, Social Activism, and Materialism and Status. The final block of independent variables takes into account the mediating role of behavior and student-student interaction in socialization. Five dichotomous measures of campus activities were included in this block. Four "diversity activities" were incorporated (taking ethnic or women's studies courses, participating in an ethnic student organization, and/or taking a cultural awareness workshop), as well as membership in fraternities or sororities, and commuting regularly to campus, based on their demonstrated associations with the three outcome measures (Antonio, 2001). Also, to contrast the influence of close friends with socialization outside of the friendship group, Antonio (2001) chose two additional measures of student interaction: a composite measure of discussing issues of difference and diversity with students outside of the friendship group, and the measure of interracial interaction described above.

Antonio (2001) used multiple regressions to determine the relative influence of friendship-group characteristics on engaging in interracial interaction outside of the friendship group, students' commitment to racial understanding, and gains in cultural awareness. For each equation, independent variables were entered in three discrete blocks based on the college impact and socialization models of Astin (1984) and Weidman (1989) (as cited in Antonio, 2001). Weidman conceptualized the major influences on student change in college as student background characteristics, the academic and social normative context of a school, and the impact of parental and noncollege reference groups. Astin's model is similar but emphasized the central role of student involvement in assessing how students change in college. A blocked-entry method was used to control for background variables and an additional block of behavioral measures was entered into the regression equations to test for relationships with activities outside of the friendship group.

Antonio (2001) reported that the most striking finding from this study was the discrepancy between perceptions of racial balkanization and the relatively high degree of interracial friendship among students. Students seemed to experience diversity on a behavioral and perceptual level, and these experiences appeared to differ from and even contradict each other. On the behavioral level, the general interaction among students of different racial and ethnic groups seemed to be positive, with students exhibiting a strong pattern of amicable interracial and interethnic relationships. On the psychological level, the students in this study overwhelmingly viewed their campus as racially and ethnically segregated.

Antonio (2004) conducted another study on the influence of having a diverse friendship group in college,

but this time looked at its effect on the development of intellectual self-confidence and degree aspirations of students from the same sample used in the 2001 study. The two dependent variables used in this study were single item measures taken from the follow-up survey. The first, academic self-concept, was measured with a self-rated ability item asking students to rate their "self-confidence (intellectual)" as compared to the average person their age on a five-point scale (1=lowest 10 percent to 5=highest 10 percent). The second dependent variable was measured by an item that asked students to report the highest academic degree they intended to obtain (scored on a four-point scale of "none" to "Ph.D./Ed.D., M.D., J.D."). Both of these variables were pretested on the CIRP freshman survey with similar measures.

The independent variables in this study included precollege characteristics, friendship-group characteristics, and college involvement variables. The precollege characteristics were taken from the freshman survey, such as gender, race, socioeconomic status, and SAT score. Five friendship-group measures were chosen for the model, including group averages of intellectual self-confidence in 1994, SAT composite scores, and degree aspirations in 1994. Corresponding individual-level variables for these measures were included in the regression model to reduce self-selection effects. Each of the pretest measures, in addition to SAT scores, was included in the analysis of both dependent variables. As in his 2001 study, Antonio (2004) calculated a measure of the racial diversity of the friendship group on a four-point scale. The final three variables in this study included a composite variable of three "time diary" items (studying, partying, and talking with students), the frequency of having conversations about homework or classwork with friends, and the frequency of having conversations about homework or classwork with other students.

The primary set of analyses featured blocked multiple-regression procedures to estimate the relationship between the dependent variables and the five friendship-group characteristics while holding the precollege characteristics and pretests of intellectual self-confidence and degree aspirations constant. Separate analyses were also conducted for white students and students of color.

The peer group effects found in this study provide convincing evidence that the microlevel interpersonal environments of a college campus are important sites of influence on socialization and student development (Antonio, 2004). For example, for students of color, greater diversity of the friendship group is associated with enhanced intellectual self-confidence and degree aspirations. However, for white students, greater diversity of the friendship group is associated with less self-confidence and lower educational aspirations. The notion that interpersonal environments mediate institutional-level peer group effects is strongly supported by this

research. The complexity of the findings in this study highlights the need for researchers to further investigate the role of microenvironments in socialization in college.

Experimental Research

Antonio et al. (2004) took a unique approach to studying the educational benefits of diversity by designing a controlled, randomized experiment measuring the impact of racial diversity on the complexity of thinking in college students. The construct of integrative complexity (IC) was used as the main outcome measure. Integrative complexity refers to the degree to which cognitive style utilizes multiple perspectives, ideas, and dimensions (Antonio et al., 2004). At the highest level of IC, there is awareness of the trade-offs among differing perspectives. Higher IC has also been found to be related to higher grades among college students (Gruenfeld and Hollingshead, 1993 as cited in Antonio et al., 2004). Examining IC allows researchers to study students' critical thinking skills. The role that peer interaction can play in the integrative complexity of students' thoughts and written work is important to look at in light of the findings that peer interaction is considered one of the most influential sources of change in college (Astin, 1993; Feldman and Newcomb, 1969; Pascarella and Terenzini, 1991; as cited in Antonio et al., 2004).

This study, conducted at three selective research universities, randomly assigned white college students (N=357) to small discussion groups in a 2 × 2 factorial design. The independent variables included the racial composition of the discussion group and the group opinion composition based on a target social issue. The dependent variable was the IC of the students' thoughts about the target social issue. Experimental conditions were created using research collaborators (N=31) who were either black or white to act as participants in the discussion groups. The collaborators, who were blind to the purpose of the study, were given predetermined scripts to follow that either agreed or disagreed with the opinions expressed by the white students in a survey used in the screening process. Participants for the study were recruited with flyers and e-mails, and those who expressed an interest in taking part were asked to fill out a questionnaire that asked students about their race and other background characteristics, amount of contact with racially diverse people, as well as their opinions on several social issues. Students who agreed with either being against child labor practices in developing countries or being in favor of the death penalty were asked to participate in a following experimental session. All participants were blind to the

purposes of the study and were debriefed upon completion of the experiment.

Each of the white participants was assigned to a same-sex experimental group consisting of three participants and one research collaborator. A facilitator took each group into a laboratory, set them around a table, and distributed a description of the target social issue for which the participants had been chosen based on their opinion from the screening survey. They were to read the prompt silently, and then, before discussing with the group, take 15 minutes to indicate their agreement or disagreement with the issue in a brief essay describing their support for, or opposition to, the issue at hand. This is referred to as the prediscussion essay. Most participants (85 percent) indicated the same opinion on the issue as in their prescreening essay; however, because some did not, the variable for group composition expanded to include the collaborator agreed with everyone versus the collaborator agreed with two members of the group versus the collaborator agreed with one group member versus the collaborator disagreed with everyone.

At the completion of the prediscussion essay, participants were asked to talk about their opinions on the issue. Each participant was asked to begin by stating his/her opinion, after which they would engage in an unstructured 15-minute discussion that included the collaborator following a script written to express agreement or disagreement with the group's participants based on their answers from the screening survey. After the discussion, participants were asked to write a second short essay on the same topic, referred to in the study as the postdiscussion essay. When the postdiscussion essay was completed, group members were asked to indicate their agreement or disagreement with a different social issue and to write a brief essay describing their support for or opposition to this new issue. This essay is referred to as the transfer essay because its purpose was to examine whether any stimulation of complex thought from the discussion of the first issue transferred to the thinking in the second essay topic. Students were given 15 minutes to complete the transfer essay and then were asked to complete a questionnaire in which they rated each group member on how much he/she made the other think about the issue in different ways, introduced a new perspective to the discussion, and was influential in the group. These three ratings of the collaborator were used to form an index of perceived novelty. The three essays were rated for IC by three independent judges who were unaware of the purposes of the experiment.

Antonio et al. (2004) were interested in determining whether collaborator race and collaborator opinion had an effect on perceived novelty ratings. Also, they tested for the effect of collaborator race on IC in the prediscussion essay, collaborator race and opinion on IC in the postdiscussion measure, and the effects of collaborator race and opinion

on IC in the transfer essay. Multilevel regression analyses were used to analyze the data. The authors found that the presence of a black collaborator in a group of white participants usually led to greater perceived novelty of the collaborator and a higher level of IC in the essays. Also, the presence of a minority opinion stimulates greater IC, and self-reported racially diverse contacts were significantly and positively related to IC.

Facilitating and Advocating for Diversity Research

Given the many different approaches to examining the educational benefits of diversity, researchers are faced with several complex decisions in an effort to arrive at the most effective research design(s). Various methods and measures have been used to assess the educational benefits of diversity, including the analysis of course evaluations, course syllabi, student computer conversations, student papers, symposium programs or papers, questionnaires, journals or diaries, honors projects, or practica (Garcia et al., 2001). Outcome measures used in such research have included access to knowledge, cross-cultural tolerance, economic opportunities, educational participation for all students, and several others (Chang, 2002a). With so many available ways and methods to conduct research in this field, as well as the compelling reasons for doing so, it would seem wise for schools to develop their own diversity research and evaluation agendas.

Garcia et al. (2001) note the value of having colleges and universities evaluate their current diversity programs and policies with regard to admissions, financial aid, faculty recruitment, curricular planning, etc., in order to best shape institutional planning and policy. Some schools seek public support for using diversity to achieve academic excellence, and therefore need to assess their efforts and report their findings to the public. Many colleges and universities design research programs aimed at justifying the importance of the consideration of race in admissions, or of maintaining some level of structural diversity for these very reasons. However, this type of research can do more than serve as empirical evidence in our courts; it can serve as information that enables school officials to make the necessary adjustments along the way to be sure that their schools' diversity initiatives are meaningful and ethical. An example may be that a university succeeds in increasing its structural diversity; however, there is still limited intergroup interaction. Therefore, students are not necessarily benefiting from attending college at a diverse campus. As the result of a conclusion similar to this one,

researchers or school officials might then decide to initiate diversity core course requirements.

Not only does the institutional assessment of diversity provide schools with a means of documenting the progress they have made in this area, but it ensures that schools accept accountability (McTighe et al., 1999). Such research can serve as a mechanism for achieving equal opportunity and keeping this as a central mission of the school. McTighe et al. (1999, p. 47) have recommended a set of seven questions that can serve as a starting point for campus conversations on this topic:

- 1) What are the operating understandings of diversity? What are the emerging definitions? How is diversity understood in the context of its emerging definitions?
- 2) How is diversity understood in the context of the institution's immediate community? How does the institution's knowledge of diversity correlate with the actual demographics of its city and state, the country, and the world?
- 3) How is diversity understood in relation to the institution's particular historic and current context?
- 4) How is diversity integrated into the institution's mission, vision, goals, and objectives?
- 5) What thought has been given to the ways that students are taught to think about diversity, in curriculum, climate, or campus ethos?
- 6) How, over time, has the institution come to understand its current diversity climate?
- 7) What are some reasons that would persuade people on campus to document diversity initiatives? What tools would help them do it?

In the Association of American Colleges and Universities (AACU) monograph, *A Diversity Agenda*, Smith et al. (2000) highlighted many key methodological considerations that researchers should be aware of before carrying out their own studies in this field. First, they mentioned the importance of framing appropriate and sound research questions. Second, Smith et al. stated that researchers must be aware of the impact of their research on institutions, policies, and students. Third, issues must be considered from diverse perspectives and methodologies, and therefore, having a diverse research team that brings together people with different perspectives will be more likely to reveal hidden biases. Fourth, there is a need for both practice-driven and conceptual research. Fifth, it is important to take advantage of all of the existing data, such as many of the databases discussed in this paper. Sixth, it is important to assess the appropriateness and limits of data. For example, researchers should be wary before grouping all "nonwhite" students into one sample or category, as they may be an extremely heterogeneous group. Seventh, syntheses of existing studies are needed, as a single study is rarely complete in and of itself.

Lastly, communication of results is critical, including the discussion of study conclusions at presentations at national meetings, using Web resources, and by means of other publications.

Conclusion

Several different research methods and designs for examining the educational benefits of diversity have been discussed. Whether the purpose of the research is to defend certain institutional policies, provide support for affirmative action, assess and improve the campus climate for diversity, or evaluate current institutional diversity initiatives, the research is needed and positively contributes to the body of knowledge in this field that informs practice. It is recognized that attorneys, policymakers, and leaders in higher education across the United States are searching for research evidence that validates the educational benefits of diversity (Hurtado et al., 1998). As even more research is conducted in this field, it appears that there will be greater evidence in support of the educational benefits of diversity.

Perhaps the importance of this research is magnified when the real-life outcomes of applying the findings are considered; outcomes such as decreased barriers to minority success within their institutions, greater equality, and solidarity in a culturally pluralistic society (Allen, 1992). Colleges and universities that conduct and utilize research on the educational benefits of diversity are seizing the opportunity to improve not only the campus climate for racial/ethnic diversity, but to improve the world we live in. Gurin and her colleagues (2004) stated that the literature has shown that changes students experience in college can have a lifelong impact on the ways students live their lives after college, and they will often seek out and develop postcollege lives that will allow them to reinforce the lessons they learned while in college (Newcomb et al., 1967). Similarly, Alger (1997) notes that employers will expect these graduates to be able to work and interact with a wide variety of people in the increasingly global economy we live in.

Given the impact this research can have, Smith et al. (2000, p. 27) have composed recommendations for future diversity research that may be helpful to all those involved:

- (1) Funders at all levels can play several key roles in generating and sponsoring research that is important to substantiating the educational benefits of diversity (i.e., serve as a clearinghouse of related research, encourage collaboration, encourage interdisciplinary and longitudinal research, etc.). Funders can also facilitate the dissemination of results.
- (2) Institutional research can make a major contribution

to this effort, particularly by developing and carrying out policy research on the topic of diversity. Also, applied research needs to be recognized as legitimate, and faculty should be encouraged to study teaching, learning, and curriculum as related to diversity research.

- (3) The practitioner needs to take on the role of researcher as part of his/her everyday activities. Ultimately, the collaboration of academic researchers, institutional researchers, and practitioners ensures that many different strengths and backgrounds are maximized.
- (4) Issues of diversity will increasingly have to be understood in a larger national or global context.
- (5) Creativity will be needed to design and implement research through approaches that can influence and be understood by larger audiences.

With these recommendations in mind, researchers have an important responsibility to build on the knowledge that is currently available, as this knowledge informs crucial policy decisions, molds the culture of higher education, and ultimately shapes the society in which we live.

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Appendix A: Explanation of Acronyms

AACU	Association of American Colleges and Universities
ACT	American College Testing Program
ANCOVA	analysis of covariance
C&B	College and Beyond database
CAAP	Collegiate Assessment of Academic Proficiency
CIRP	Cooperative Institutional Research Program
CSEQ	College Student Experiences Questionnaire
DAQ	Diversity Assessment Questionnaire
ECSEL	Engineering Coalition of Schools for Excellence in Education and Leadership
FUS	Follow-Up Survey
HERI	Higher Education Research Institute
HLM	hierarchical linear modeling
IC	integrative complexity
IGR	Intergroup Relations Program
IPEDS	Integrated Postsecondary Education Data System
MANOVA	multivariate analysis of variance
MSS	Michigan Student Study
NSSE	National Survey of Student Engagement
NSSL	National Study of Student Learning
PPD	Perceptions of Prejudice and Discrimination
SIF	Student Information Form
UCLA	University of California: Los Angeles
UCSF	University of California: San Francisco

Appendix B: Sample Items from the Diversity Assessment Questionnaire (DAQ)

- During classroom discussions in your social studies or history class how often are racial issues discussed and explored?
- My teachers encourage me to work with students of other racial/ethnic backgrounds.
- After high school, how prepared do you feel to work in a job setting where people are of different racial or ethnic backgrounds than you are?

- How comfortable would you be with a work supervisor who was of a different racial or ethnic background than you?
- How interested are you in going to a four-year college?
- To what extent have your teachers encouraged you to attend college?

Note: From *The Impact of Racial and Ethnic Diversity on Educational Outcomes: Cambridge, MA School District*, by M. Kurlaender and J.T. Yun, 2002, Cambridge, MA: The Civil Rights Project.

Appendix C: Diversity Experiences

1. Number of diversity courses taken
2. Made friends with students whose race was different from yours
3. Participated in a racial or cultural awareness workshop
4. Made friends with students from another country
5. Had serious discussions with students whose philosophy of life or personal values were very different from yours
6. Had serious discussions with students whose religious beliefs were very different from yours
7. Had serious discussions with students whose political opinions were very different from yours
8. Had serious discussions with students from a country different from yours
9. Had discussions with other students about major social problems such as peace, human rights, equality, justice
10. Had discussions with other students about different lifestyles and customs

Note: From “Do Diversity Experiences Influence the Development of Critical Thinking?” by E.T. Pascarella, B. Palmer, M. Moye, and C.T. Pierson, 2001, *Journal of College Student Development*, 42, p. 262.

Appendix D: Openness to Diversity/ Challenge Scale Items

1. I enjoy having discussions with people whose ideas and values are different from my own.
2. The real value of a college education lies in being introduced to different values.

3. I enjoy talking with people who have values different from mine because it helps me understand myself and my values better.
4. Learning about people from different cultures is a very important part of my college education.
5. I enjoy taking courses that challenge my beliefs and values.
6. The courses I enjoy the most are those that make me think about things from a different perspective.
7. Contact with individuals whose background (e.g., race, national origin, sexual orientation) is different from my own is an essential part of my college education.
8. I enjoy courses that are intellectually challenging.

Note: From “Influences on Students’ Openness to Diversity and Challenge in the First Year of College,” by E.T. Pascarella, M. Edison, A. Nora, L.S. Hagedorn, and P.T. Terenzini, 1996, *The Journal of Higher Education*, 67, p. 179.

Appendix E: Independent Variables Investigated by Pascarella, Edison, Nora, Hagedorn, and Terenzini (1996)

1. Precollege Characteristics
 - a. Precollege Openness to Diversity/Challenge
 - b. Precollege Academic Ability
 - c. Precollege Academic Motivation
2. Environmental Emphases of Institution
 - a. Average Precollege Openness to Diversity/Challenge of Each Institution’s First-Year Class
 - b. Nondiscriminatory Racial Environment
 - c. Environmental Emphasis on the Development of Academic, Scholarly, and Intellectual Qualities
 - d. Environmental Emphasis on the Development of Aesthetic, Expressive, and Creative Qualities
 - e. Environmental Emphasis on the Development of Vocational and Occupational Competence
3. First-Year Academic Experiences
 - a. Total Credit Hours Completed
 - b. Hours Per Week Spent Studying

- c. Social Sciences, Mathematics, Technical/Professional, Arts and Humanities, and Natural Sciences and Engineering Courses Taken
- d. CSEQ Course Learning Scale
- e. CSEQ Experiences with Faculty Scale
4. First-Year Social/Nonacademic Experiences
 - a. On-Campus Residence
 - b. Joined a Fraternity/Sorority
 - c. Participated in Intercollegiate Athletics
 - d. Participated in a Racial or Cultural Awareness Workshop
 - e. Hours Worked Per Week
 - f. CSEQ Clubs and Organizations Scale
 - g. CSEQ Student Acquaintances Scale
 - h. CSEQ Topics of Conversations Scale
 - i. CSEQ Information in Conversations Scale

Note: From “Influences on Students’ Openness to Diversity and Challenge in the First Year of College,” by E.T. Pascarella, M. Edison, A. Nora, L.S. Hagedorn, and P.T. Terenzini, 1996, *The Journal of Higher Education*, 67, p. 179.

Appendix F: Modern Racism Scale (MRS)

Subjects indicated their degree of agreement with each of the following items:

- Blacks have more influence upon school desegregation plans than they ought to have.
- The streets are not safe these days without a policeman around.
- It is easy to understand the anger of black people in America (coded in reverse).
- Blacks are getting too demanding in their push for equal rights.
- Over the past few years blacks have gotten more economically than what they deserve.
- Over the past few years the government and news media have shown more respect to blacks than they deserve.
- Blacks should not push themselves where they’re not wanted.
- Discrimination against blacks is no longer a problem in the United States.

Items were coded as a five-point scale: 1=Agree strongly to 5=Disagree strongly.

Note: From “The Impact of an Undergraduate Diversity Course Requirement on Students’ Racial Views and Attitudes,” by M.J. Chang, 2002b, *The Journal of General Education*, 51, p. 29.

Appendix G: List and Description of Measures Used in Gurin, Nagda, and Lopez (2004)

Perspective-taking

- Measured with four items upon students’ entrance to school and four years later.
- Example: “I find it difficult to see things from the other person’s point of view” (on a scale of 1=Very much like me to 5=Not at all like me).

Nondivisiveness of difference

- Measured with four items written for the MSS to assess how divisive students believe the University of Michigan’s emphasis on diversity to be.
- Example: “The university’s emphasis on diversity fosters more intergroup division than understanding” (on a scale of 1=Strongly agree to 5=Strongly disagree).

Perception of commonalities in values across groups

- Measured by an index summing judgments of commonality with groups other than one’s own (including African Americans, Asian Americans, Hispanics/Latinos, Native Americans, and white Americans), from 1=Much more different than similar to 4=Much more similar than different.
- Example: “People often feel that some groups in our society share many common values—like values about work and family—while other groups have few common values.”

Mutuality in learning about their own and other groups

- Measured by students’ agreement or disagreement with statements about one’s own group and with statements about other groups.
- Example of a statement about one’s own group is: “I have thought more about my memberships in different groups” (on a scale of 1=Strongly disagree to 4=Strongly agree).
- Example of a statement about other groups is: “I have learned a great deal about other racial/ethnic groups and their contributions to American society.”

Acceptance of conflict as a normal part of social life

- Measured by students’ evaluation of conflict on eight statements, which were factor analyzed to reveal two factors, a positive and negative evaluation factor.
- Example of positive evaluation is: “Conflict and disagreements in the classroom discussion enrich the learning process.”
- Example of negative evaluation is: “The best thing is to avoid conflict.”

Interest in politics

- Measured by students’ agreement or disagreement with four statements indicating low interest or high interest in politics.
- Example of low interest in politics: “I do not enjoy getting into discussions about political issues” (on a scale of 1=Strongly agree to 7=Strongly disagree).

Participation in politics

- Measured by asking seniors how involved they had been in “campus political activities” during their time in college (on a scale of 1=Not at all involved to 4=Substantially involved).

Participation in community service

- Measured by asking seniors how involved they had been in community service activities such as Big Brother/Big Sister.

Commitment to postcollege civic participation

- Measured by asking students how important it is to them to be involved in the following activities after college: influencing the political structure, helping their group or community, helping to promote racial understanding, etc. (on a scale of 1=Not at all important, to 5=Crucially important).

Note: From “The Benefits of Diversity in Education for Democratic Citizenship,” by P. Gurin, B.A. Nagda, and G.E. Lopez, 2004, *Journal of Social Issues*, 60, p. 22.

Appendix H: Interactional Diversity Items from the College Student Experiences Questionnaire (CSEQ)

- Became acquainted with students whose race or ethnic background was different from yours

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- Became acquainted with students from another country
 - Had serious discussions with students whose philosophy of life or personal values were very different from yours
 - Had serious discussions with students whose religious beliefs were very different from yours
 - Had serious discussions with students whose race or ethnic background was different from yours
 - Had serious discussions with students from a country different from yours

Note: From “Diversity Experiences and College Student Learning and Personal Development,” by S. Hu and G.D. Kuh, 2003, *Journal of College Student Development*, 44, p. 323.

