

## **Empathy or Antipathy? The Consequences of Racially and Socially Diverse Peers on Attitudes and Behaviors**

Greg J. Duncan<sup>1</sup>  
Johanne Boisjoly<sup>2</sup>  
Dan M. Levy<sup>3</sup>  
Michael Kremer<sup>4</sup>  
Jacque Eccles<sup>5</sup>

May 16, 2003

<sup>1</sup>Institute for Policy Research, Northwestern University; email: [greg-duncan@northwestern.edu](mailto:greg-duncan@northwestern.edu);

<sup>2</sup>University of Quebec at Rimouski; Email: [johanne\\_boisjoly@uqar.qc.ca](mailto:johanne_boisjoly@uqar.qc.ca); <sup>3</sup>Mathematica Policy

Research, Inc; email: [dlevy@mathematica-mpr.com](mailto:dlevy@mathematica-mpr.com); <sup>4</sup>Department of Economics, Harvard

University; The Brookings Institution, and NBER. email: [mkremer@fas.harvard.edu](mailto:mkremer@fas.harvard.edu); <sup>5</sup>Department of Psychology, University of Michigan; email: [jeccles@isr.umich.edu](mailto:jeccles@isr.umich.edu)

An earlier version of this paper was presented at the annual meetings of the American Economics Association, January 5, 2003. Financial support from the W.T. Grant Foundation, the John D. and Catherine MacArthur Foundation, and the NICHD Child and Family Well-Being Research Network (2 U01 HD30947-07) is gratefully acknowledged. We thank Sean McCabe, Carol Boyd and William Zeller for their contributions in the early stages of this research, Brian Madden and Deanna Maida for research assistance and Patricia Gurin, Bruce Meyer and Bruce Sacerdote for helpful comments on an earlier draft.

## **Empathy or Antipathy? The Consequences of Racially and Socially Diverse Peers on Attitudes and Behaviors**

### **Abstract**

This paper investigates to what extent interactions with individuals from different social groups affect the attitudes and behaviors of university students. It avoids biases from self-selection by drawing data from students attending a large state university whose first-year roommates were randomly assigned in a housing lottery. Compared with white students who have white roommates, white students with black roommates express much more positive attitudes regarding affirmative action policies 1½- 3½ years after college entry. Whites assigned minority roommates are also more likely to say that they have more personal contact with and interact more comfortably with members of minority groups. Minority roommates appear just as likely as non-minority roommates to remain close friends of white students beyond their initial year. Whites' income redistribution attitudes do not appear to be affected by the racial/ethnic composition of roommates, but whites become decidedly less supportive of redistributive policies when they are assigned roommates from wealthy families. Taken together, these results suggest that students become more sympathetic to the social groups to which roommates belong.

# **Empathy or Antipathy? The Consequences of Racially and Socially Diverse Peers on Attitudes and Behaviors**

## **I. INTRODUCTION**

Do racial attitudes and friendship networks change when individuals of different races study, live or work together? Do social attitudes change when middle-class students interact with students from poor or wealthy backgrounds? Does familiarity breed contempt or do people become more tolerant towards people of other races and classes if they live with someone of a different race or class? Studies based on laboratory experiments suggest that mixing people of different racial backgrounds does not necessarily change racial attitudes, but when people of different races work together toward the same goal, racial attitudes change. Yet it is unclear to what extent these results generalize outside the laboratory. This paper addresses this issue in a real-world context by examining whether attitudes and behaviors change when people of different races and classes are randomly assigned to live together at the start of their first year of college.

The impacts of mixing students from different races and ethnic groups have obvious policy relevance. Affirmative-action policies directed at increasing minority, especially black, student enrollment are highly controversial. Thernstrom and Thernstrom (1997) argue that policies that admit minority students with lower test scores reinforce stereotypes and ultimately hurt minorities. But Gurin (2002) argues that diversity promotes critical thinking and learning among white students.

A major methodological problem in assessing the extent to which individuals influence each other is that in most settings individuals choose with whom they associate. For example, people choose their spouses, friends, neighbors, etc. In a university context, students often select their roommates, friends, course of study and university. Therefore, members of a group may behave in a similar manner either because they influence each other (peer effects), or because they "self-select" themselves into that particular group. The inability to distinguish between these possibilities is known in the economics literature as the "selection problem," the "endogenous membership problem" (Moffitt, 1998) or the "correlated effects" problem (Manski, 1993). With notable exceptions (Ludwig et al., 2001; Katz et al., 2001; Evans et al., 1992; Kremer and Levy, 2002), most of the previous literature has failed to address the selection problem convincingly.

We address the selection problem by taking advantage of a natural experiment in which college students are randomly assigned to roommates through a lottery system. By comparing white students who are randomly assigned minority roommates with white student assigned white roommates, we are able to assess the extent to which racially-diverse settings change the way whites think and act.

We organize our paper as follows: Section II provides the background for our study; Section III describes the data and measures used in our analysis; Section IV details our results; and a summary and discussion appear in Section V.

## **II. BACKGROUND**

Most studies of affirmative action policies have examined their impacts on minorities (Bowen and Bok, 1999). The impact of such policies on non-minority students is less well known. Bowen and Bok (1999) show that whites attending elite colleges with higher black enrollment are more likely to know two or more blacks several years beyond the completion of their undergraduate

education. They argue, but cannot establish empirically, that the many college venues (e.g., sharing rooms or the same residence hall, attending classes, engaging in social activities) in which black and white students interact provide ample opportunities for establishing interracial friendships. Our data enable us to estimate the impact of racial interactions in room and residence hall venues.

In what ways might minority roommates or floormates affect white students? Since people generally like familiar things (Bornstein 1989; Bornstein et al. 1987; Zajonc et al., 1974), more exposure to people of different backgrounds may help improve race relations. However, evidence also suggests that school desegregation may increase rather than decrease prejudice between blacks and whites (Stephan, 1978). And Luttmer (2001) shows that people are less inclined to support redistribution through welfare if there are high welfare reciprocity rates in their community, but that they increase their support for welfare spending as the share of local recipients from their own racial group increases.

Psychologists have long argued that familiarity with things presented under unpleasant conditions can lead to dislike (Burgess and Sales, 1971; Zajonc et al., 1974; Swap, 1977). Aronson (1975) argues that the traditional classroom environment tends to foster conflict and tense relations among ethnic groups, since students may be competing for the teacher's attention and are pitted against one another, with students who are not called on becoming jealous or resentful of the students who are called on.

Sherif et al. (1961) designed an experiment in which boys at a summer residence camp were divided into two cabins. Each cabin was assigned a name and competitive activities were set up between the cabins. During the competitions, cabins were raided, members of the opposing team were called names, and lunchroom scuffles were frequent. To reverse this growing rivalry, the experimenters set up situations where competition would be detrimental to everyone's interests. For example, the single truck available for getting food in town was found to be "stuck" one day and the boys had to figure out how to dislodge it if they were to eat. The crisis made the boys aware of the need for unified action, and they successfully worked together to dislodge the vehicle. After several other similar situations, the boys began to form friendships and bonds across cabins. The experimenters concluded that the cooperative activities successfully create links between different groups.

In another study, students worked together in a "jigsaw classroom" to master material for an exam. Each student in a team was given part of the information to pass the test, and then was responsible for teaching that information to the rest of his/her team. When tested against classrooms that did not use this method, jigsaw classrooms produced more friendships and less prejudice between ethnic groups, in addition to improving test scores and self-esteem (Aronson, et al. 1978; Aronson & Patnoe, 1997; Johnson and Johnson, 1983; DeVries and Slavin 1978; Cook 1990; Slavin & Cooper, 1999).

Finally, several studies have shown that working together cooperatively with workers and students from minority groups is linked to several positive changes in the race-related attitudes, beliefs, and behaviors of whites (e.g., Gurin et al., 1999; Khmelkov & Hallinan. 1999; Lopez, Gurin, & Nagda, 1998; Pettigrew, 1997; Pratkanis & Turner, 1999). Taken together, these studies suggest that close social interactions, particularly in the context of cooperation rather than conflict, can promote friendships and understanding. But many are based on artificial laboratory conditions rather than the real-world interactions of roommates and classmates.

Gurin's (2002) testimony in the University of Michigan's affirmative-action lawsuit outlines a developmental case for positive spillover effects of minority enrollment on white students. She

argues that students attending universities find themselves at a crucial time in their development when they experiment with different social roles before making permanent commitments to occupations, social groups, and intimate personal relationships (Newcomb, 1943; Alwin, Cohen, and Newcomb, 1991; Ruble, 1994; King and Shuford, 1996). It is difficult to change the way in which individuals think, given psychological research showing that most people resort to previously learned routines rather than effortful modes of thought when approaching new learning tasks (Langer, 1978; Bargh, 1997). Only when educational institutions provide and support sufficiently novel environments that demand departure from these routines does complex thinking occur. Racial diversity, she argues, is precisely the kind of novelty that encourages students to become conscious learners and critical thinkers (Allport, 1954).

Gurin (2002) supports her arguments with data from three surveys, two of which draw their samples from nearly 200 colleges and the third of which is a longitudinal study of students attending the University of Michigan. She first establishes that colleges with higher percentage minority enrollments have higher enrollments in ethnic studies courses and more students who report discussing racial/ethnic issues, socializing across racial lines and having close friends in college from other racial backgrounds. She then replicates with her larger sample of universities the Bowen and Bok (1999) finding that students attending colleges with higher minority enrollment are more likely to live and work in racially diverse settings. Next she reports positive correlations between self-reported exposure to ethnic studies classes, diversity of a student's closest friendships, and more general interracial interactions on campus and a variety of outcomes, including intellectual and academic skills, citizenship engagement and racial/cultural engagement, and post-college interracial interaction patterns in friendships, neighborhoods, and work settings.

Despite attempts to include control variables, studies such as these that rely on naturally occurring variation in cross-university minority enrollment, or on within-university variation in engagement in ethnic-studies courses or racially-diverse social settings, are subject to the criticism that selection bias from still-unmeasured factors is producing the observed positive correlations. Such biases could arise if, for example, students predisposed to diversity in their friendships or eventual work settings seek out colleges with higher minority enrollments or, once in college, seek out ethnic studies courses or racially diverse social settings.

Absent in the literature are studies of impacts of social interactions on attitudes that are based on real-world social settings but avoid selection bias. The present study addresses these concerns by using data gathered from students whose roommates and residence hall floormates were randomly assigned to them. The great virtue of using such data is that student characteristics are not correlated with the racial composition of their living arrangements. Limitations include an unknown degree of generalizability of our findings beyond the group of students who opt for randomly-assigned roommates and to the impacts of racial diversity in social settings outside the residence hall.

### **III. DATA, MEASURES AND DESCRIPTIVE STATISTICS**

#### *Data*

Our data are taken from students entering a large, academically strong, state university in the fall of 1998, 1999 and 2000. The university has a strong affirmative action policy and, as shown below, whites' admission test scores are about one standard deviation higher than blacks'. These conditions are nearly ideal for testing Thernstrom and Thernstrom's (1997) contention that

affirmative action policies heighten racial animosities against hypotheses derived from social and educational psychology that affirmative action can produce more positive attitudes toward minority group issues when it leads to close positive interactions between whites and members of diverse minority groups (Aboud & Levy, 1999; Ruggiero & Kelman, 1999; Skedsvold & Mann, 1996..

In the spring of these years, first-year students mailed in housing applications listing four basic housing preferences (smoking/non-smoking room, single/double/triple occupancy, geographic area of campus, and gender composition of corridor), and whether they wanted to live in an enrichment residence hall or request a specific roommate. For some of these preferences, students could list a first, second and third choice.<sup>1</sup> Students who met the lottery deadline (usually around the end of April) were randomly assigned to their rooms unless they elected to live in an enrichment residence hall, in which case they submitted an essay to be considered for admission, or they select a specific roommate, in which case the housing office honored the request as long as it was mutual. Our analysis focuses exclusively on students who were randomly assigned rooms and roommates as part of the lottery process.

A computer randomly assigns a lottery number to each student who meets the deadline. The student with lottery number 1 is assigned first to a room that meets his/her basic housing preferences. Then the student with the next lowest lottery number who has the same gender and combination of housing preferences as student 1 will be assigned as his/her roommate. This process continues until the room is filled. The whole process is repeated subsequently for students with lottery numbers 2, 3 ..., up to the highest lottery number.

As a result, students in the lottery sample are randomly assigned to their rooms and roommates, conditional on gender and the combination of housing preferences. Hence their roommate assignments should be random within cells defined by the combination of gender and first, second and third choices of basic housing preferences. All of our analyses control for the student's combination of first choices of housing preferences, which amounts to fixed-effects regressions in which the unit of observation is the cell (i.e. combination of values of four housing variables plus gender and cohort). We also discuss selective results from fixed-effects models that control for all three sets of housing preferences. Standard errors are considerably higher in these cases, but we show that key coefficient point estimates, and therefore our conclusions, are largely unaffected by these extensions. We judged the more precisely estimated coefficients from first-preference-only fixed effects models to be the most useful, since it is highly unlikely that residual departures from random assignment in the second and third preferences would be powerful enough to impart serious bias.

We draw our data from several sources. The university's housing office provided us with data on the contents of each student's housing application and on actual occupancy. Race/ethnic, socioeconomic and attitudinal data on students were gathered from the Cooperative Institutional Research Program's (CIRP) Entering Student Survey, an annual survey of the American higher-education system that was started in 1966 by the American Council on Education and is now

---

<sup>1</sup> In their housing applications students provide information on their name and location (address, telephone number, email, etc.); gender; housing preferences: environment preference (substance-free housing, non-smoking roommate, don't mind roommate smoking, smoker); room type preference (single, double, triple+economy); corridor type preference: all female hall, coed hall/single sex corridor, coed hall/coed corridor; campus area preference: A, B, or C; and other housing preferences: whether want to apply to a learning residence hall (requires separate application process with an essay); whether want to choose a roommate (student must list name of desired roommate).

conducted jointly by the Council and the University of California, Los Angeles. In the case of the particular university in our study, entering students fill in the survey at an orientation session occurring before classes begin.

Outcome measures in our paper are drawn from a survey we administered to students who entered the university in the fall of 1998, 1999, and 2000 and who were randomly assigned roommates. The timing of our survey (winter/spring of 2002) provides us with data when students were more than halfway through their sophomore, junior and senior years. The survey was administered via the internet with a telephone follow-up to maximize response rates. The survey repeated many of the attitudinal and behavior questions asked in the entering student CIRP survey and provides us with our key dependent variables. It also asks about how long the student continued to reside with his or her originally assigned roommates and the nature of their friendship at the time of the survey.

Table 1 shows the size of our sample relative to the size of the entire entering class. Of all entering students in the 1998-2000 cohorts, 89-90% complete the CIRP survey. The 10,268 student respondents to the CIRP are cases in the most comprehensive data file provided to us by the university.

Of the 10,268 respondents, 2,232 opted to live in enrichment residence halls, 2,029 requested a roommate, 724 lived alone during their first year, 4,134 failed to meet the lottery deadline, 724 requested living alone and 42 otherwise-eligible students were not assigned a roommate. In the end, 1,107 students remained eligible for our lottery sample. The racial characteristics of the 1,107 are also given in Table 1. In all, 918 students designated themselves as “white” and constitute the target sample of white students for the follow-up survey. The follow-up survey response rate was 74% and produced an analysis sample of 682. Missing data on individual survey items reduced this case count further.

The CIRP’s questions are wide-ranging and cover student racial/ethnic classification, socioeconomic background (parental education and income); positive (e.g., extracurricular activities during the last year of high school) and problem behavior (drinking, smoking); attitudes toward a wide range of social policies (including affirmative action), goals students have set for themselves; and activities they plan to conduct in the future. Data from the CIRP are used to assign racial/ethnic status and characterize socioeconomic backgrounds of all students and their roommates in our sample. We also use CIRP data on affirmative-action and other attitudes as baseline controls in our estimates of the effects of roommate assignment on subsequently measured affirmative action and other attitudes.

For each student in our sample, the roommate variables were determined by averaging over all roommates. Given that 78% of students in our sample only had one roommate, sample sizes were too small to examine whether the average is better than other measures (such as the minimum or maximum) at capturing the relevant roommate information. We also constructed floormate variables by averaging responses across all individuals other than the given sample individual and his or her roommates who initially lived on the same residence hall floor.

Finally, when we use the term “roommate” and “floormate” we are referring to the roommate(s) or floormates *initially* assigned to the student when entering the university. If a student changed roommates or residence hall floors, we do not use the information on the new roommates

or floormates because this would raise the possibility of self-selection and possibly bias our results.<sup>2</sup> The university does not allow roommate changes during the first six weeks of classes (except for extreme cases such as those involving violence), and strongly discourages any roommate changes during the first year.<sup>3</sup> According to housing officers, less than 5% of students switch roommates during their first year.

### *Methodological issues*

A first methodological concern is that randomly assigned roommates may have interacted prior to filling out the entering student CIRP, which may have influenced their survey responses. In fact, housing officers reported that the vast majority of students filled out their surveys before or within a few days of meeting their roommates.

A second concern is whether the lottery process indeed randomly assigns roommates. To verify that the housing assignment process was indeed random within cells, we first spoke with housing officers to understand how the assignment process worked and to understand the computer software used to make the assignments. We then reviewed the documentation of the computer software used to make the assignments for the 1997 and 1998 entering cohorts and checked that it truly randomized within cells. Kremer and Levy (2002) verified that initial roommates' background characteristics were not significantly correlated by running regressions in which student background characteristics (such as admissions test score, high school GPA, parental background, high school activities, goals, views, etc.) were regressed on their initial roommates' average and a set of housing preference cell dummies defined by first and all three sets of preferences. Here again, the analysis was conducted on the 1997 and 1998 entering cohorts.

Given that the error terms in the regressions described above may not be normally distributed, Kremer and Levy (2002) assessed significance by comparing the coefficient from running the regression on the actual data to the distribution of coefficients obtained from regressions run on 1,000 simulated samples. In each simulated sample, they matched each reference student with a randomly chosen roommate from the pool of roommates originally matched to reference students in the cell. They checked for correlation in 151 variables. Ten out of 151 regression coefficients turned out significant for the lottery sample, out of which seven had a positive sign and three had a negative sign. The distributions of the coefficients and the t-statistics obtained from the simulations are approximately normal. The test comparing the regression results using the actual data with the simulated distributions shows that 141 variables fall within the 2.5 and 97.5 percentiles and 10 variables are out in the 5% tail of the distribution. If roommates were indeed assigned randomly and the 151 characteristics were independent, then a calculation using the binomial theorem shows that we should expect 10 or more variables to be in the 5% tail with probability 22.5%. For plausible degrees of correlation, the probability would be even greater.

The test they employed has reasonable power. In the "roommate request" sample, 52 of 151 coefficients are in the 5% tail. In a set of artificial data where the top 10% of students in each cell in

---

<sup>2</sup> For example, one may expect that a student usually would switch to a roommate who is more similar or compatible than the initial roommate. If this is the case, and we used actual roommate (instead of initial roommate) information in our regressions, our peer-effect estimates could reflect self-selection.

<sup>3</sup> It turns out, according to some students at this university, that different dorms and floor counselors have different philosophies about allowing roommate changes instead of resorting to conflict resolution and other methods. Information on this is not systematic enough to exploit in our empirical work.

the reference sample and the roommate sample were matched together and the remaining 80% were randomly matched, 18 out of 151 coefficients were in the 5% tail of the simulated distribution. (If characteristics were independent, 18 or more tail events would be expected to occur with probability 0.0006.)

### *Measures*

Key outcome measures, all of which are drawn from our survey of students in the midst of their sophomore to senior years, are attitudes toward affirmative action. The questions ask for strong agreement (coded 4), agreement (3), disagreement (2), or strong disagreement (1) with the following statements: “Affirmative action in college admission should be abolished,” “Affirmative action is justified if it ensures a diverse student body on college campuses,” and “Having a diverse student body is essential for high quality education.”<sup>4</sup> The first of these items was also asked with identical wording on the 1999 and 2000 entering-student CIRP survey, but was not included in the CIRP survey administered to the 1998 entering students.

To assess whether roommate impacts extended to other types of social attitudes, we included as an outcome student endorsement of “Wealthy people should pay more taxes,” which was also asked with identical wording on the entering-student CIRP survey. To see if roommate assignment affected behavior, we added as dependent variables responses to a question asking respondents to specify the number of times per month when “I have personal contact with people from other racial/ethnic groups” and “I interact comfortably with people from other racial/ethnic groups,” and how often the respondent did “volunteer work.” Finally, we also examined responses to endorsement of the imperative of “helping to promote racial understanding.”<sup>5</sup> In all cases responses were converted to standardized scores by division by the sample standard deviation and scaled so the positive scores indicated more “liberal” attitudes and behaviors.

As mentioned above, a number of these and related questions were included in the entering-student CIRP survey, so we were able to include baseline controls for responses (also standardized and scaled in a “liberal” direction) to the following statements: i) “Race discrimination is no longer a problem”; ii) “Wealthy people should pay more taxes”; iii) “Colleges should prohibit racist/sexist speech on campus”; and iv) “Affirmative action in college admissions should be abolished.”

The entering-student CIRP survey also provided race/ethnicity and socioeconomic-background information on both respondents and their roommates. Race and ethnicity were asked in the single question: “Are you (mark all that apply): White/Caucasian, African American/Black, American Indian, Asian American/Asian, Mexican American/Chicano, Puerto Rican, Other Latino and Other.” We coded as “white” respondents who marked only the first category, “black” respondents who marked only the second category and “Asian” respondents who marked only the fourth category. For our “Hispanic” designation we included respondents who gave Mexican American/Chicano, Puerto Rican, or Other Latino and gave no other response. All respondents marking more than one category fall into our “Other” category.<sup>6</sup>

---

<sup>4</sup> We explored with factor analysis whether these or any other attitudinal items could be combined into an index, but in no case were the correlations among three items high enough to warrant this.

<sup>5</sup> The responses to this scale consisted of the categories “essential” (coded 4), “very important (3), “somewhat important” (2), and “not important” (1).

<sup>6</sup> Some 94 percent of students choosing “African American/Black” gave it as their only response.

CIRP measures used as control variables in our regressions include both self and average roommate responses to questions about: i) years of father's education; ii) years of mother's education; iii) family income collapsed to the intervals of <\$50,000, \$50,000 - \$74,999, \$75,000 - \$149,999 (used as the reference category), \$150,000-\$199,999, and \$200,000 or more; and iii) high school grade point average.

We also controlled for respondents' and roommates' high school test scores. Since some students took only the SAT, others took only the ACT, and some took both, a common admissions test score measure was needed as an academic background variable. We therefore standardized test scores using the ACT scale based on concordance tables (published by both ACT, Inc. and the College Board), which are used by many admissions offices around the country (including the one in this study).

We also constructed a handful of floormate measures based on the fraction of floormates (other than the given respondent and his or her immediate roommates) who were: i) black; ii) Asian; iii) Hispanic; iv) "other races"; or v) reported family incomes in excess of \$200,000.

### *Descriptive statistics*

Descriptive statistics for entering student measures are shown in Table 2. Comparable data for roommates and floormates as well as follow-up survey-based measures are shown in Appendix Table 1. The first column of Table 2 presents means and standard deviations of CIRP measures for the analysis sample of 682 whites who responded to the follow-up survey. The second presents descriptive statistics from the CIRP survey for the 6,842 white students who, for the various reasons listed in Table 1, failed to make it into the random-assignment analysis sample. The third column presents results for a t test of differences between columns 1 and 2. The fourth and fifth columns repeat this information for the 236 whites who were randomly assigned roommates but failed to respond to the follow-up survey. The sixth and seventh columns repeat this information for the 28 blacks in the random-assignment roommate pool. The eighth column provides descriptive statistics for the 606 Black students not opting for random assignment, while the final column shows results from a t test of differences between the two groups of black students.

The affluent nature of the white respondent sample is reflected in the high average levels of paternal (16.4 years) and maternal (15.9 years) education and a very small fraction of students coming from families with incomes under \$50,000. Test scores and high school grade point averages are high. Most entering students agree that race discrimination is still a problem and do not think that affirmative action policies should be abolished. Attitudes toward redistributive taxation fall in the middle of the scale. Since these same respondents are often roommates of other respondents, it is hardly surprising that the descriptive statistics for the roommates' data are very similar to those of the respondents (Appendix Table 1). Descriptive data on the racial and ethnic composition of the roommates of this sample of white respondents show relatively few nonwhites. In all, only 21 of the 682 white respondents were randomly assigned black roommates. Corresponding numbers assigned Asian, Hispanic or other race roommates are 45, 21, and 30. This greatly limits the precision of our estimates of roommate impacts, although it should not bias the estimates themselves.

As shown by the descriptive statistics for our dependent variables (Appendix Table 1), when students were reinterviewed in our web-based survey, their attitudes had become somewhat more liberal. Cross-racial/ethnic contact and comfort levels are quite high.

An important methodological concern relates to external validity – do results from the relatively small numbers of students who met all of our study criteria generalize to the larger student population and even to the much larger population of all university students? Differences between students who met the lottery deadline and did not request roommates and the rest of the students in the university should not bias our estimates of peer effects within the lottery sample but may make it difficult to generalize our results to the larger university population.

Despite the considerable statistical power, a comparison of white follow-up survey respondents with the much larger sample of white students who failed to meet the lottery criteria reveals few statistically significant differences. Respondents had a slightly higher high school GPA (3.79 vs. 3.77) and were less likely to come from very high-income families (12.8% vs. 17.2%). This lack of differences encourages us to think that our results may indeed generalize to other whites, although we can imagine many scenarios in which this would not be the case. One such scenario is if the 2,029 students who requested roommates or the 724 students who requested living alone were more introverted and less open to the influences of new social situations. In that case, our estimates of impacts of racially diverse roommates might overstate the influence of socially diverse college experiences. On the other hand, suppose that the 2,232 students opting for living in enrichment residence halls chose to do so because they are seeking out stimulating college experiences. Our estimates of impacts of racially diverse roommates might understate the influence of socially diverse college experiences for them.

Among the white lottery sample, the comparison of the follow-up survey respondents and nonrespondents reveals some potentially troublesome differences. Respondents come from lower-income and less educated parental families, have somewhat higher test scores and high school grades, are less likely to endorse the affirmative action item and somewhat more likely to endorse taxing the rich. We explore possible nonresponse bias below.

The next comparison is between white respondents and black students in the random-assignment roommate pool. There are no significant socioeconomic differences between the two groups. However, test scores and high school grade-point averages are more than a standard deviation higher for whites than blacks. There is a large difference in endorsing affirmative action policies, with blacks more than two standard deviations more likely than whites to endorse such policies.

On the other hand, the blacks in the lottery sample were significantly more affluent than the larger groups of entering black students. This suggests that while our results may generalize to white rooming with advantaged black roommates, they may not generalize to whites rooming with blacks from lower SES backgrounds.

The final comparison is between blacks opting for lottery-designated roommates and all other black students. The former group comes from considerably more advantaged backgrounds relative to the latter group, and has marginally less positive attitudes toward affirmative action and taxing the rich.

## IV. RESULTS

### *Attitude correlations*

Table 3 provides correlations and sample sizes for white respondents' and their roommates' endorsement of affirmative action and redistributive taxation policies in the entering student CIRP

and our follow-up survey.<sup>7</sup> Keep in mind that the scaling of the “affirmative action should be abolished” item is reversed so that more positive scores indicate stronger endorsement of such policies.

A first noteworthy and somewhat reassuring feature of this table is that correlations between first-year students and their randomly-assigned roommates are small (-.06 for the affirmative action item and +.09 for the redistributive taxation item). The first of these correlations is statistically insignificant, while the second is significant at the .05 level.

Second, comparable correlations when these first-year students and their roommates have become upperclassmen are only slightly larger (+.14 for the affirmative action item and +.10 for the redistributive taxation item), suggesting a modest scope for mutual first-year-roommate-based peer influences on attitudes.<sup>8</sup>

Third, correlations between follow-up survey responses and roommates’ initial attitudes are quite low (+.01 for the affirmative action item and +.06 for the redistributive taxation item), indicating a modest scope for attitudes of upperclassmen being influenced by the initial attitudes of their first-year roommates.

Turning from student/roommate to cross-time, within-individual correlations, Table 3 also shows considerable stability in these two attitudes across time. Responses to the affirmative action item are correlated +.37 across time, while responses to the redistribution item have a +.53 cross-time correlation.<sup>9</sup> This suggests that introducing controls for an individual’s CIRP-based prior attitudes will help adjust for unobservables in our estimates of peer effects on attitudes measured later in college. Finally, the two attitudes appear to become more correlated with one another during college. The within-individual correlation between the two items increases from +.12 in the entering-student CIRP to +.37 in the follow-up survey.

#### *Affirmative action attitudes*

Table 4 summarizes regression results for our attitudinal measures. Each column constitutes a separate regression in which the given dependent variable is regressed on the set of respondent, roommate, and floormate measures listed in the rows of the table. Huber-White methods adjust standard errors for the clustered nature of our roommate data.

The results for the follow-up survey affirmative action attitudes are striking. In all three cases, endorsement of these affirmative action items was half to two-thirds of standard deviation higher among whites who were randomly assigned black roommates than among whites not

---

<sup>7</sup> These are the only two questions about social issues that were asked identically in both surveys. As explained above, the affirmative action question was not asked on the entering-student CIRP survey for the 1998 cohort, which accounts for the lower case counts for correlations involving that measure.

<sup>8</sup> These modest correlations are typical of other social attitudes as well. Correlations between attitudes of follow-up respondents and their roommates’ freshman responses on criminals’ right, legalized abortion, the death penalty, causal sex, legalizing marijuana, legal sanctions against homosexuality, employee drug testing and the legal rights of same-sex couples ranged from -.01 to +.14.

<sup>9</sup> Corresponding within-individual, cross-time roommate correlations are +.48 and +.52. These are largely based on the same underlying data as the +.37 and +.53 correlations but are averaged across roommates sharing the same first-year residence hall rooms. Also, non-white roommates contribute data to the roommate correlations.

assigned black roommates. Despite the relatively low statistical power of the sample, all three of these effects were statistically significant at  $p < .06$ .<sup>10</sup> There is also some evidence that greater numbers of black floormates (who are not also roommates) are associated with more liberal attitudes toward affirmative actions policies. The black floormate effect was statistically significant in the case of responses to “affirmative action is justified if it ensures a diverse student body on college campuses” and positive but statistically insignificant for the other two models.<sup>11</sup>

No other roommate or floormate characteristic was a consistently significant predictor of affirmative-action attitudes. Roommate high-school-grade-point average was a marginally significant (negative) predictor in the first but not the subsequent two models.

Not unexpectedly, the respondent’s own prior responses to affirmative action and income redistribution questions in the entering-student CIRP questionnaire were significant predictors of affirmative action responses 1½ to 3½ years later. The respondent’s own test scores had an inconsistently negative impact on current affirmative action attitudes, while maternal schooling had an inconsistently positive association with them.

#### *Other attitudes and behaviors*

To see whether roommates influenced other kinds of social attitudes, we estimated models of agreement or disagreement with the statement “Wealthy people should pay more taxes” (final column of Table 4). The black roommate coefficient was positive but did not exceed its standard error.

Much more consistently predictive of attitudes toward redistribution was whether either the respondent or his or her roommates came from wealthy families.<sup>12</sup> Respondents from families with annual incomes of \$200,000 or more were nearly half a standard deviation less likely to endorse redistributive taxation, while respondents with at least one roommate with such an advantaged background were about one-third standard deviation less likely to do so. Interestingly, there were almost no differences across respondents in other family income categories.<sup>13</sup>

We also estimated the impact of racially diverse peers on the frequency with which white respondents to the follow-up survey “interacted comfortably with” and “had personal contact with” people from other racial/ethnic groups. Results for regression models using these as dependent variables are given in Table 5. Coefficients were sizable for all roommate categories other than Hispanic and significant in the case of multi-racial roommates for both outcomes and for Asian

---

<sup>10</sup> The p-level of the second item was .055.

<sup>11</sup> We also estimated “threshold” models in which the floormate measure was whether there were any blacks on the floor. In two cases the relevant coefficient exceeded its standard error, but in no case was it statistically significant.

<sup>12</sup> We also estimated models of agreement with the statements “social and economic differences in this country are justified,” “a person’s racial background plays only a small role in his/her personal development,” and “what one can achieve in life depends mainly upon one’s family background.” In no case was having a black roommate a significant predictor.

<sup>13</sup> Recall that there were very few instances where either respondents or their roommates had truly low incomes (e.g. below or near the poverty line).

roommates for the “interact comfortably” item.<sup>14</sup> The pattern of coefficients on the roommate composition variables is generally positive for Asian and multi-racial roommates but negative for black roommates. The latter result is consistent with research on whites’ housing preferences indicating that whites are comfortable with some but not large concentrations of black neighbors (Krysan and Farley, 2002).

The follow-up survey also contained a question on the personal imperative of “helping to promote racial understanding.” Having a black roommate had no substantial association with these responses. Similar null results (not shown in Table 5) were found in the case of imperatives regarding “helping others who are in difficulty,” “working to eliminate discrimination against people of color,” “participating in a community action group,” “participating actively in civil rights organizations,” “helping to promote racial understanding,” “keeping up to date with political affairs,” and “becoming a community leader.”

Finally, the follow-up survey also asked about a set of behaviors that might conceivably be affected by roommate demographic characteristics. While having a black roommate appeared to have no impact on reports of volunteer work, there is suggestive evidence that having a low-income roommate increases such work (Table 4). Not shown in Table 4 are comparable regression results for the frequency of “reading the editorial page in the daily newspaper,” “voted in a student election” and “tutored another student.” In the first and third of these regressions the coefficient on the low-income category was positive and exceeded its standard error, but was not statistically significant at conventional levels. There were no consistent patterns of coefficients across the race/ethnic roommate and roommate measures.

### *Extensions*

Although roommates were randomly assigned on the basis of three sets of preferences, our analysis included fixed-effect controls for only the first set. We also estimated our models with fixed-effect controls for two and three combined sets of preferences. Key coefficients changed relatively little, but standard errors increased markedly, particularly in the case of controls for categories representing combinations of all three sets of preferences. For example, the coefficient and standard error on having a black roommate for the reverse coded and standardized “affirmative action should be abolished” item was .631 (.286). Fixed-effects controls for first and second preferences changed these numbers to .616 (.365), while fixed-effects controls for all three sets of preferences increased them to .713 (.797). Similar patterns emerged for the other affirmative action items. In the case of the “wealthy people should pay more taxes” item, the coefficients and standard error in Table 4 on having a rich roommate was -.311 (.127). Fixed-effects controls for first and second preferences increased these numbers to -.314 (.185), while fixed-effects controls for all three sets of preferences changed them to -.208 (.373).

On the other hand, the coefficients on the affirmative action items proved quite sensitive to the absence of any controls for preferences. For example, the “affirmative action should be abolished” item coefficient and standard error fell to .348 (.189) in the absence of controls for preferences and the coefficient on black roommates in the “having a diverse student body is essential for high-quality education” regression fell from .647 to .073. The coefficient on the taxing the rich item fell only from -.311 to -.270. All in all, we conclude that it is important to control for

---

<sup>14</sup> In the case of “interacting comfortably with people from other racial/ethnic groups,” a single dummy variable representing any minority roommate attains statistical significance (coefficient of .311 with a standard error of .132).

preference combinations, but less important to control for combinations involving second- and third-choice preferences.

Although the power was not very high, we estimated separate models for male and female respondents and failed to find significant gender differences in the coefficients on the key roommate characteristic variables.

Given the much stronger endorsement of affirmative action policies among black than white first-year students, it is possible that the apparent race-of-roommate effect on whites' endorsement of affirmative action policies in the follow-up survey results from merely having been assigned roommates with more positive affirmative action attitudes. Given the low correlations noted earlier between follow-up survey attitudes and initial roommates attitudes, this possibility seemed unlikely. Nevertheless, we tested for it by including in the first three regressions listed in Table 4 measures of initially-assigned roommates' CIRP-based attitudes on affirmative action and taxing the rich. The key coefficients on roommates' race increased slightly in size and remained statistically significant, indicating that initial roommates' attitudes are not accounting for the race-of-roommate effect.

We tested for whether the positive impacts on affirmative action attitudes of having black roommates changed over time or over cohorts by interacting "whether black roommates" with cohort. The standard errors on these interactions were quite large. None of these relevant coefficient approach conventional levels of statistical significance, nor was their pattern monotonic across cohorts.

The SES differences between white respondents and nonrespondents to our follow-up survey lead us to attempt to adjust for possible nonresponse bias. We did this in two ways. First, we estimated a Heckman two-step model in which the first stage model predicted response status among the 918 white students eligible for the survey, and the second stage estimating the first four regression listed in Table 4. Since it proved impossible to estimate the model with fixed effects based on all possible combinations of first rooming preferences, we instead estimated a model that included the preference variables as a set of additive dummy variables. In no case did the key coefficients on having black roommates change by more than .03. The coefficient on having a rich roommate fell by .09.

Our second approach to nonresponse bias was to develop a set of nonresponse weights and then reestimate the regressions in Table 4 using those weights. To locate sample subgroups that differed maximally in terms of response rates, we used a very flexible search algorithm (the CHAID option in SPSS's ANSWER TREE).<sup>15</sup> Response rates range from 63% for high income whites to 95% for not-highest-income males who favored taxing the rich in the CIRP. We used the inverse of the response rates for the subgroups to weight the regression results in Table 4. None of the key coefficients changed by more than .03.

The follow-up survey asked respondents how long they had lived with their roommates, how often they socialized with their initial roommates both during the first year and in the twelve months prior to the follow-up survey, and how friendly they still are with their initial roommates. Unfortunately, these questions were not asked for each specific randomly-assigned roommate, so it was necessary to restrict the sample of white students from the 682 who responded to the follow-up survey to the 613 white students who had only one roommate. The vast majority (525 or 86%) had white roommates; 11 had black roommates, 39 had Asian roommates, 16 had Hispanic roommates and 22 had "other" race roommates.

---

<sup>15</sup> Details are available from the authors upon request.

We tested for statistically significant differences in frequency of subsequent interactions with roommates according to the race of roommates and found none. For example, 10% of whites with white roommates but 18% of whites with black roommates considered these roommates to be their “best college friend.” Equal fractions (36% and 38%, respectively) were either “not in touch” or “did not get along” with these roommates. Roughly equal fractions (19% and 18%) had socialized more than once a week with their first-year roommates in the past year, while 57% and 46% had socialized more than once a week with their initial roommates during their first year. Keeping in mind the low power for this analysis, there did not appear to be appreciable differences in the duration or nature of friendships white students struck with white and black roommates.

## V. SUMMARY AND DISCUSSION

This paper assesses the magnitude of peer effects in the context of living arrangements at a large state university. It addresses an important methodological problem—self selection—present in most of the existing literature by exploiting a natural experiment in which people are randomly assigned to their peers. We find that white students with black roommates express more positive attitudes regarding affirmative action policies 2 to 4 years after college entry than white students assigned white roommates. In contrast, endorsement of redistributive attitudes (taxing the rich) becomes less positive when students are assigned roommates from wealthy families. Roommate characteristics had less certain effects on behaviors. There was some evidence that roommates with various racial and ethnic backgrounds influenced whites’ subsequent contact and comfort levels with people from other racial/ethnic groups, as well as suggestive evidence that students with lower-income roommates are more likely to engage subsequently in volunteer work.

One story that is consistent with these results is that students become more sympathetic to social policies directly related to the social groups to which their roommates belong, with supportive racial attitudes toward affirmative action being most closely associated with roommates’ race, and non-supportive attitudes towards income redistribution attitudes policies most closely associated with roommates’ family income. These findings are consistent with the evidence from social psychology that having close personal interactions with people who are different than you leads to a greater understanding of, and empathy with, such people (Stephan & Finlay, 1999; Lopez et al., 1998; Pettigrew, 1997). The fact these effects are stronger for attitudes toward affirmative action rather than values such as a willingness to endorse imperatives of working to eliminate discrimination and help to promote racial understanding could reflect the fact that university affirmative action policies were being hotly debated while these students were enrolled.

It is somewhat puzzling that having an African American roommate had less association with our two indicators of interpersonal relationships with people of other racial/ethnic groups. Although these associations were positive and equivalent to a quarter of a standard deviation, they were non-significant and much smaller than the association of having an Asian roommate or a roommate of “Any Other Race”. Having these types of roommates appeared to lead to more subsequent contact with people from non white racial/ethnic groups as well as greater comfort interacting with people who come from non-white racial/ethnic groups. These positive effects are also quite consistent with the results from studies showing the positive impact of close personal interactions between groups on friendship patterns and quality of interactions (Aboud & Levy, 1999; Pettigrew, 1997).

The debate over affirmative action policies has produced two polarized positions. In the first, it is argued that admitting more minority applicants than is warranted by their test scores

reinforces racial stereotypes and ultimately hurts minorities. In the second, the presence of more minority students promotes racial tolerance, stimulates critical thinking and promotes learning. Within residence hall rooms it appears that the presence of African Americans, despite their lower high school test scores and grades, indeed promotes whites' endorsement of race-related policies designed to counter prior inequities.

The impact of having a higher proportion of African American floormates is less certain. On the one hand, there was some evidence that greater concentrations of African American floormates promoted more positive attitudes toward affirmative action policies. But there was also evidence that it reduced the likelihood of comfortably interacting with people of different racial/ethnic groups at the time of our follow-up survey. Subsequent interactions with minorities appeared more likely with greater concentrations of floormates who identified themselves as Asian or "Any Other Race." A final verdict on the nature of floormate effects awaits replication studies.

## References

- Aboud, F. E. and S. R. Levy (Editors). 1999. Reducing Racial Prejudice, Discrimination, and Stereotyping: Translating Research into Programs. *Journal of Social Issues*, 55 (40).
- Allport, G.W. (1954/1979). *The Nature of Prejudice*. Cambridge, MA: Addison-Wesley.
- Alwin, D.F., Cohen, R.L., and Newcomb, T.L. 1991. *Political Attitudes Over The Life Span*. Madison, WI.: University of Wisconsin Press.
- Aronson, E. 1975. "The Jigsaw Route to Learning and Liking." *Psychology Today*, February.
- Aronson, E., D.L. Bridgeman, and R. Geffner. 1978. "The Effects of a Cooperative Classroom Structure on Students' Behavior and Attitudes." In *Social Psychology of Education: Theory and Research*, edited by D. Bar Tal and L. Saxe. New York: Halstead Press.
- Aronson, E. and Patnoe, S. 1997. "The Jigsaw Classroom. New York: Longman. Barron's Profiles of American Colleges. 2000. Hauppauge, NY: Barron's Educational Series, Inc.
- Bargh, J.A. 1997. The Automaticity Of Everyday Life. *Advances in social cognition*, 10: 3-48.
- Bowen, W. and R. Bok. 1999. *Shape Of The River: Long-Term Consequences Of Considering Race In College And University Admissions*. Princeton: Princeton University Press.
- Bornstein, R.F. 1989. "Exposure and Affect." *Psychological Bulletin* 106: 265-89.
- Bornstein, R.F., D.R. Leone, and D.J. Galley. 1987. "The Generalizability of Subliminal Mere Exposure Effects." *Journal of Personality and Social Psychology* 53: 1070-79.
- Burgess, T. and S. Sales. 1971. "Attitudinal Effects of 'Mere Exposure': A Reevaluation." *Journal of Experimental Social Psychology* 7: 461-72.
- Cook, S.W. 1990. "Toward a Psychology of Improving Justice." *Journal of Social Issues* 46: 147-61.
- De Vries, D.L., and R.E. Slavin. 1978. "Teams-Games-Tournaments (TGT): Review of Ten Classroom Experiments." *Journal of Research and Development in Education* 12: 28-38.
- Evans, W., W. Oates, and R. Schwabb. 1992. Measuring Peer Group Effects: A Study of Teenage Behavior. *Journal of Political Economy* 100(5): 966-991.
- Gurin, P. 2002. "Expert Report Of Patricia Gurin" for *Gratz, et al. v. Bollinger, et al.*, No. 97-75321(E.D. Mich.) and *Grutter, et al. v. Bollinger, et al.*, No. 97-75928 (E.D. Mich.), obtained from <http://www.umich.edu/~urel/admissions/legal/expert/gurintoc.html>
- Gurin, P., T. Peng, G. Lopez, and B. Nagda. 1999. Context, identity, and intergroup relations. In D. A. Prentice and D. T. Miller (Eds.), *Cultural divides: Understanding and overcoming group conflict* (pp133-172). New York: Russell Sage Foundation on December 8.
- Johnson, D.W., and R.T. Johnson. 1983. "The Socialization and Achievement Crisis: Are Cooperative Learning Experiences the Solution?" *Applied Social Psychology Annual*, Vol. 4, ed. L. Bickman. Beverly Hills, CA: Sage.
- Katz, Lawrence F., Jeffrey R. Kling, and Jeffrey B. Liebman. 2001. "Moving to Opportunity in Boston: Early results of a randomized mobility experiment." *Quarterly Journal of Economics* (May) 607-654.

- Khmelkow, V. T., and M. T. Hallinan. 1999. Organizational effects on race relations in schools. *Journal of Social Issues*, 55 (4): 627-646.
- King, P.M. and Shuford, B.C. 1996. A multicultural view is a more cognitively complex view. *American Behavioral Scientist*, 40: 153-164.
- Kremer, M. and D. Levy. 2002. Peer Effect from Alcohol Use Among College Students. Mimeo, Harvard University.
- Krysan, M. and R. Farley. 2002. The Residential Preferences of Blacks: Do They Explain Persistent Segregation? *Social Forces*, 80: 937-80.
- Langer, E.J. 1978. Rethinking the role of thought in social interaction. In J. Harvey, W. Ickes, R. Kiss (Eds.). *New Directions in Attribution Research*, 2: 35-58.
- Lopez, G. E., P. Gurin, and B. A. Nadga. 1998. Education and understanding structural causes for group inequalities. *Political Psychology*, 19: 305-329.
- Ludwig, Jens, Greg J. Duncan, and Paul Hirschfield 2001. "Urban poverty and juvenile crime: Evidence from a randomized housing-mobility experiment." *Quarterly Journal of Economics* May, 655-679.
- Luttmer, Erzo. 2001. "Group Loyalty and the Taste for Redistribution" *Journal of Political Economy* 109(3): 500-528.
- Manski, C. 1993. Identification of Endogenous Social Effects: The Reflection Problem. *Review of Economic Studies* 60: 531-542.
- Moffitt, R.A. 1998. Policy interventions, low-level equilibria and social interactions. Mimeo. Johns Hopkins University.
- Newcomb, T.L. 1943. *Personality and social change: Attitude Formation in a student community*. New York: Dryden Press.
- Pettigrew, T. F. 1997. Generalized intergroup contact effects of prejudice. *Personality and Social Psychology Bulletin*, 23: 173-185.
- Pratkanis, A. R. and M E. Turner. 1999. The significance of affirmative action for the souls of White folk" Further implications of a helping model. *Journal of Social Issues*, 55 (4): 787-815.
- Ruble, Diane N. 1994. "A phase model of transitions: Cognitive and motivational consequences," *Advances in Experimental Social Psychology*, (26): 163-214.
- Ruggiero, K. M. and H. C. Kelman (Editors). 1999. Prejudice and Intergroup Relations: Papers in Honor of Gordon W. Allport's Centennial. Special issue of *Journal of Social Issues*, 55 (3).
- Sacerdote, B. 2000. Peer effects with random assignment: Results for Dartmouth roommates. National Bureau of Economic Research. Working Paper no. 7469.
- Sherif, M. et al. 1961. *Intergroup Conflict and Cooperation: The Robbers' Cave Experiment*. Norman, Okla.: University of Oklahoma Institute of Intergroup Relations.
- Skedsvold, P. R. and T. L. Mann (Editors). 1996. The Affirmative Action Debate: What's Fair in Policy and Programs? Special issue of *Journal of Social Issues*, 52 (4).
- Slavin, R. E. and R. Cooper. 1999. Improving intergroup relations: Lessons learned from cooperative learning programs. *Journal of Social Issues*, 55 (4): 647-664.

- Stephan, W.G. 1978. "School Desegregation: An Evaluation of Predictions Made in Brown v. Board of Education." *Psychological Bulletin* 85: 217-38.
- Stephan, W. G. and K. Finlay 1999. The role of empathy in improving intergroup relations. *Journal of Social Issues*, 55 (4): 729-744.
- Swap, W.C. 1977. "Interpersonal Attraction and Repeated Exposure to Rewards and Punishers." *Personality and Social Psychology Bulletin* 3: 248-51.
- Thernstrom, S. and Thernstrom, A. 1997. *America In Black And White: One Nation, Indivisible*. New York: Simon and Schuster.
- Zajonc, R.B., H. Markus, and W.R. Wilson. 1974. "Exposure Effects and Associative Learning." *Journal of Experimental Social Psychology* 10: 248-63.

Table 1  
Sample Attrition

	1998 to 2000 Total	1998	1999	2000
Response rate on CIRP survey for all entering students		89%	90%	n/a
<b>Number of students responding to CIRP survey</b>	10,268	3,573	3,419	3,276
Of which: students opting to live in enrichment dormitories	2,232	920	633	679
Of which: students requesting a specific roommate.	2,029	755	662	612
Of which: students failing to meet the lottery deadline	4,134	1,166	1,615	1,353
Of which: students living alone during the first year.	724	273	215	236
Of which: students not assigned roommates	42	5	12	25
<b>Total number of students randomly assigned roommates</b>	1,107	454	282	371
<b>Of which:</b>				
Students designated race as "black" only	28	8	8	12
Students designated race as "white" only	918	377	236	305
Students designated race as "Hispanic" (see text)	35	14	7	14
Students designated race as "Asian" (see text)	77	34	19	24
Students with other racial designations	49	21	12	16
<b>Target sample of white students opting for random assignment</b>				
<b>Of which :</b>	918	377	236	305
failed to respond to follow-up survey	236	91	75	70
<b>Final white analysis sample</b>	682	286	161	235

Table 2  
Means and Standard Deviations of Individual, Roommate and Floormate Characteristics (Independent Variables)  
and of White Upperclassmen Attitudes and Behaviors (Dependent Variables)

<i>Independent variables</i>	White respondents to the follow-up survey (all randomly assigned roommates)	White respondents to CIRP Entering Survey (none opting for randomly assigned roommates)	p value of t-test of (2) minus (1) or of Pearson Chi-square (3)	White randomly assigned roommates who FAILED to respond to the follow-up survey (4)	p value of t-test of (3) minus (1) or of Pearson Chi-square (5)	Blacks randomly assigned roommates (6)	p value of t-test of (4) minus (1) or of Pearson Chi-square (7)	Black respondents to CIRP Entering Survey (none opting for randomly assigned roommates) (8)	p value of t-test of (5) minus (4) or of Pearson Chi-square (9)
	(1) Mean	(2) Mean	(3)	(4) Mean	(5)	(6) Mean	(7)	(8) Mean	(9)
<b><i>Respondent (all gathered in entering student survey)</i></b>									
Race discrimination is no longer a problem (reversed)	3.160 (.719)	3.156 (.728)	.891	3.189 (.752)	.598	3.472 (.633)	.024	3.620 (.632)	.226
Wealthy people should pay more taxes	2.476 (.912)	2.446 (.913)	.413	2.337 (.822)	.039	2.304 (1.117)	.333	2.678 (.879)	.030
Colleges should prohibit racist/sexist speech on campus	2.369 (.923)	2.413 (.943)	.244	2.451 (.918)	.239	2.500 (1.036)	.464	2.839 (.991)	.078
Affirmative action in college admissions should be abolished (reversed)	2.073 (.665)	2.040 (.719)	.250	2.193 (.675)	.018	3.450 (.507)	.000	3.258 (.647)	.122
Father's Education	16.386 (1.975)	16.425 (1.950)	.619	16.651 (1.727)	.067	16.714 (1.584)	.386	15.051 (2.383)	.000
Mother's Education	15.837 (2.033)	15.947 (1.966)	.165	16.115 (1.744)	.061	16.214 (1.950)	.336	15.045 (2.179)	.006
High School Grade Point Average	3.792 (.248)	3.766 (.273)	.017	3.755 (.277)	.056	3.504 (.356)	.000	3.480 (.431)	.772
Test Scores (ACT Scale)	28.391 (2.609)	28.451 (2.844)	.597	27.890 (2.548)	.011	25.367 (2.993)	.000	23.978 (3.579)	.044
Family Income < \$50,000	.094 (.292)	.106 (.308)	} .030	.051 (.220)	} .007	.071 (.262)	} .691	.380 (.486)	} .000
Family income \$50,000 to \$74,999	.151 (.358)	.146 (.353)		.144 (.352)		.214 (.418)		.191 (.394)	
Family income is \$75,000 to \$149,999	.400 (.490)	.369 (.483)		.369 (.483)		.393 (.497)		.271 (.445)	
Family income \$150,000 to \$199,999	.113 (.317)	.102 (.303)		.114 (.319)		.107 (.315)		.040 (.195)	
Family income > \$200,000	.128 (.334)	.172 (.378)		.220 (.415)		.179 (.390)		.033 (.179)	
	n=682	n=6842		n=236		n=28		n=606	

Table 3  
Individual/Roommate and Cross-Time Correlations in Affirmative Action and  
Redistributive Taxation Attitudes for White Students

	Respondents as Entering Freshman		Respondent Currently		Roommate(s) as entering Freshman		Roommate(s) Currently	
	1- Affirmative action should be abolished (Reversed)	2- Wealthy people should pay more taxes	3- Affirmative action should be abolished (Reversed)	4- Wealthy people should pay more taxes	5- Affirmative action should be abolished (Reversed)	6- Wealthy people should pay more taxes	7- Affirmative action should be abolished (Reversed)	8- Wealthy people should pay more taxes
Pearson's Correlation (Pairwise)								
<b>Respondents as Entering freshman</b>								
1- Affirmative action should be abolished (Reversed)	1.000							
	(n=383)							
2- Wealthy people should pay more taxes	.116	1.000						
	p=.024							
	(n=379)	(n=668)						
<b>Respondent Currently</b>								
3- Affirmative action should be abolished (Reversed)	.373	.217	1.000					
	p=.000	p=.000						
	(n=349)	(n=615)	(n=627)					
4- Wealthy people should pay more taxes	.155	.532	.371	1.000				
	p=.004	p=.000	p=.000					
	(n=339)	(n=589)	(n=569)	(n=601)				
<b>Roommate(s) as entering Freshman</b>								
5- Affirmative action should be abolished (Reversed)	-.059	-.087	.009	.001	1.000			
	p=.26	p=.094	p=.869	p=.988				
	(n=366)	(n=371)	(n=342)	(n=334)	(n=379)			
6- Wealthy people should pay more taxes	-.065	.090	.011	.064	.063	1.000		
	p=.211	p=.021	p=.790	p=.123	p=.220			
	(n=374)	(n=651)	(n=611)	(n=586)	(n=378)	(n=665)		
<b>Roommate(s) Currently</b>								
7- Affirmative action should be abolished (Reversed)	-.009	.031	.142	.127	.479	.190	1.000	
	p=.898	p=.536	p=.006	p=.018	p=.000	p=.000		
	(n=210)	(n=395)	(n=368)	(n=350)	(n=211)	(n=395)	(n=402)	
8- Wealthy people should be more taxes	.054	.028	.081	.101	.184	.511	.403	1.000
	p=.440	p=.591	p=.128	p=.066	p=.008	p=.000	p=.000	
	(n=206)	(n=381)	(n=354)	(n=334)	(n=205)	(n=381)	(n=365)	(n=387)

Notes: The roommates values are averaged over all the roommates for respondents having more than one roommate.

The question on affirmative action was not asked in the 1998 CIRP survey The correlations involving that variable are for the 1999 and the 2000 cohorts.

The "entering Fresman" variables come form the CIRP surveys.

The "current variables" come from the 2002 follow-up survey.

Table 4  
 OLS Regression Coefficients and Standard Errors for  
 Individual, Roommate and Floormate Predictors of Attitudes and Behaviors of  
 White Upperclassmen

	Affirmative action in college admission should be abolished (reversed coding)		Affirmative action is justified if it ensures a diverse student body on college campuses		Having a diverse student body is essential for high quality education		Wealthy people should pay more taxes	
<b>ROOMMATES (all gathered in entering student survey)</b>								
Any Black Roommate	.631 **	(.286)	.457 *	(.237)	.647 **	(.217)	.258	(.302)
Any Asian Roommate	.006	(.209)	.173	(.189)	.205	(.189)	-.058	(.163)
Any Hispanic Roommate	-.090	(.279)	-.058	(.209)	-.038	(.193)	-.432	(.312)
Any Other Race Roommate	.072	(.256)	.132	(.245)	-.257	(.244)	-.049	(.238)
Father's Education	.002	(.030)	.012	(.029)	.010	(.026)	-.017	(.027)
Mother's Education	-.013	(.029)	-.010	(.025)	-.010	(.025)	.032	(.024)
Roommates' Average High School Grade Point Average	-.320 *	(.172)	-.149	(.168)	.066	(.165)	.049	(.163)
Roommates' Average Test Scores (ACT Scores)	.002	(.020)	.006	(.020)	-.004	(.019)	.020	(.018)
At least one roommate with family income < \$50,000	.063	(.171)	.003	(.179)	.158	(.145)	.033	(.161)
At least one roommate with family income \$50,000 to \$74,999	-.083	(.148)	.056	(.145)	-.069	(.146)	-.096	(.122)
At least one roommate with family income \$75,000 to \$149,999	Omitted		Omitted		Omitted		Omitted	
At least one roommate with family income \$150,000-\$199,999	.003	(.147)	.078	(.144)	.026	(.130)	.128	(.124)
At least one roommate with family income > \$200,000	-.008	(.135)	-.080	(.135)	.015	(.130)	-.311 **	(.127)
<b>RESPONDENT (all gathered in entering student survey)</b>								
Race discrimination is no longer a problem (reversed)	.143 **	(.071)	.057	(.069)	.117	(.073)	.127 *	(.070)
Wealthy people should pay more taxes	.245 ***	(.056)	.198 ***	(.056)	.165 ***	(.051)	.517 ***	(.048)
Colleges should prohibit racist/sexist speech on campus (reversed)	-.061	(.050)	-.061	(.047)	.019	(.046)	.005	(.046)
	.282 ***	(.075)	.227 ***	(.068)	.064	(.076)	.076	(.069)
Father's Education	.019	(.029)	.039	(.027)	.022	(.028)	-.006	(.026)
Mother's Education	.057 **	(.027)	.050 *	(.027)	.006	(.026)	.050 **	(.025)
High School Grade Point Average	.083	(.206)	.266	(.203)	-.001	(.203)	.175	(.207)
Test Scores (ACT Scale)	-.010	(.022)	-.043 **	(.021)	-.020	(.020)	-.022	(.017)
Family income < \$50,000	.008	(.196)	.036	(.178)	.153	(.162)	.141	(.157)
Family income \$50,000 to \$74,999	.015	(.164)	-.059	(.149)	-.125	(.145)	-.034	(.136)
Family income \$75,000 to \$149,999	Omitted		Omitted		Omitted		Omitted	
Family Income \$150,000 to \$199,999	.082	(.149)	-.002	(.148)	.133	(.136)	-.008	(.144)
Family Income > \$200,000	-.115	(.159)	-.153	(.177)	.040	(.160)	-.494 ***	(.154)
<b>FLOORMATES (all gathered in entering student survey)</b>								
% of floormates that are Black	.006	(.011)	.025 **	(.011)	.012	(.010)	.017 *	(.009)
% of floormates that are Asian	.001	(.008)	.004	(.008)	.008	(.007)	.003	(.006)
% of floormates that are Hispanic	-.002	(.014)	-.013	(.013)	-.011	(.012)	-.010	(.008)
% of floormates that are "Other Races"	.005	(.010)	.001	(.009)	.009	(.007)	.003	(.007)
% of floormates with family income > \$200,000	.005	(.008)	.008	(.008)	.003	(.008)	.015 **	(.007)
	N=627;		N=637;		N=670;		N=601;	
	R <sup>2</sup> =0.433		R <sup>2</sup> =0.459		R <sup>2</sup> =0.445		R <sup>2</sup> =0.576	
P-value of F-test on R-square increase when adding Roommates' Characteristics	0.64		0.85		0.66		0.06	
P-value of F-test on R-square increase when adding Floormates' Characteristics	0.96		0.12		0.34		0.10	
P-value of F-test on R-square increase when adding both Roommates and Floormates' Characteristics	0.88		0.95		0.58		0.03	

Notes:

All regressions include housing preferences, gender, cohort, test taken; values not shown.  
 Missing values assigned to the mean and controlled for by missing value indicators; values not shown.  
 Standard errors adjusted for room clustering using Huber-White robust estimations.  
 Floormates exclude respondent and his/her roommates  
 Significance levels: \*\*\* (p<=.001) \*\* (p<=.05) \* (p<=.10).

Table 5  
 OLS Regression Coefficients and Standard Errors for  
 Individual, Roommate and Floormate Predictors of Attitudes and Behaviors of  
 White Upperclassmen

	I have personal contact with people from other racial/ethnic groups		I interact comfortably with people from other racial/ethnic groups		The imperative of helping to promote racial understanding		Frequency of doing volunteer work	
<b>ROOMMATES (all gathered in entering student survey)</b>								
Any Black Roommate	.242	(.312)	.227	(.324)	.086	(.442)	-.043	(.293)
Any Asian Roommate	.185	(.190)	.427 **	(.178)	.164	(.177)	-.117	(.191)
Any Hispanic Roommate	-.071	(.376)	.063	(.349)	.172	(.227)	-.291	(.210)
Any Other Race Roommate	.612 **	(.193)	.574 **	(.183)	.061	(.269)	.016	(.331)
Father's Education	.013	(.031)	.036	(.030)	-.025	(.032)	.034	(.030)
Mother's Education	.030	(.031)	.035	(.031)	-.024	(.027)	.006	(.030)
Roommates' Average High School Grade Point Average	-.015	(.200)	.044	(.195)	-.038	(.188)	-.291	(.233)
Roommates' Average Test Scores (ACT Scores)	.011	(.021)	.008	(.019)	.013	(.020)	.008	(.023)
At least one roommate with family income < \$50,000	.134	(.176)	.105	(.185)	.235	(.169)	.443 *	(.237)
At least one roommate with family income \$50,000 to \$74,999	.102	(.145)	.088	(.148)	-.023	(.152)	.205	(.145)
At least one roommate with family income \$75,000 to \$149,999	Omitted		Omitted		Omitted		Omitted	
At least one roommate with family income \$150,000-\$199,999	-.018	(.158)	.056	(.166)	-.078	(.127)	-.011	(.140)
At least one roommate with family income > \$200,000	.023	(.147)	.206	(.130)	-.089	(.142)	-.004	(.121)
<b>RESPONDENT (all gathered in entering student survey)</b>								
Race discrimination is no longer a problem (reversed)	.032	(.075)	.049	(.076)	.139 *	(.071)	-.059	(.076)
Wealthy people should pay more taxes	.000	(.055)	-.023	(.053)	.136 **	(.055)	.018	(.055)
Colleges should prohibit racist/sexist speech on campus (reversed)	.037	(.052)	.085	(.053)	.030	(.049)	-.016	(.051)
	.037	(.081)	.101	(.078)	.075	(.065)	-.017	(.058)
Father's Education	.029	(.030)	.025	(.029)	.027	(.032)	.004	(.024)
Mother's Education	-.007	(.030)	.004	(.029)	-.017	(.026)	.005	(.027)
High School Grade Point Average	.179	(.221)	.140	(.228)	.098	(.189)	.358 *	(.189)
Test Scores (ACT Scale)	.005	(.021)	.018	(.020)	-.003	(.022)	-.018	(.019)
Family income < \$50,000	.274 *	(.159)	.152	(.165)	-.089	(.208)	-.088	(.178)
Family income \$50,000 to \$74,999	-.067	(.162)	.053	(.154)	-.020	(.149)	.223	(.143)
Family income \$75,000 to \$149,999	Omitted		Omitted		Omitted		Omitted	
Family Income \$150,000 to \$199,999	-.262	(.166)	-.376 **	(.162)	-.248	(.167)	.084	(.165)
Family Income > \$200,000	-.209	(.182)	-.185	(.173)	-.160	(.150)	.240	(.200)
<b>FLOORMATES (all gathered in entering student survey)</b>								
% of floormates that are Black	-.013	(.012)	-.021 *	(.012)	.006	(.011)	-.003	(.009)
% of floormates that are Asian	.016 **	(.008)	.010	(.007)	.003	(.007)	-.013 *	(.007)
% of floormates that are Hispanic	-.012	(.012)	-.012	(.012)	-.008	(.012)	-.001	(.010)
% of floormates that are "Other Races"	.009	(.008)	.015 **	(.007)	-.001	(.010)	.004	(.008)
% of floormates with family income > \$200,000	-.007	(.008)	-.006	(.008)	.005	(.007)	.006	(.008)
	N=679;		N=678;		N=659;		N=675;	
	R <sup>2</sup> = 0.287		R <sup>2</sup> =0.313		R <sup>2</sup> = 0.405		R <sup>2</sup> =0.295	
P-value of F-test on R-square increase when adding Roommates' Characteristics	0.72		0.18		0.60		0.48	
P-value of F-test on R-square increase when adding Floormates' Characteristics	0.08		0.04		0.91		0.52	
P-value of F-test on R-square increase when adding both Roommates and Floormates' Characteristics	0.35		0.05		0.82		0.54	

Notes:

All regressions include housing preferences, gender, cohort, test taken; values not shown.  
 Missing values assigned to the mean and controlled for by missing value indicators; values not shown.  
 Standard errors adjusted for room clustering using Huber-White robust estimations.  
 Floormates exclude respondent and his/her roommates  
 Significance levels: \*\*\* (p<=.001) \*\* (p<=.05) \* (p<=.10).

Appendix Table 1  
Means and Standard Deviations of Roommate and Floormate Characteristics (Independent Variables)  
and of White Upperclassmen Attitudes and Behaviors (Dependent Variables)

	White respondents to the follow-up survey (all randomly assigned roommates)	
	Mean	Std. Dev.
<b><i>Roommates (all gathered in entering student survey)</i></b>		
Any Black Roommate	.031	(.173)
Any Asian Roommate	.066	(.248)
Any Hispanic Roommate	.031	(.173)
Any Other Race Roommate	.044	(.205)
Roommates' Average Father's Education	16.426	(1.874)
Roommates' Average Mother's Education	15.888	(1.932)
Roommates' Average High School Grade Point Average	3.758	(.269)
Roommates' Average Test Scores (ACT Scores)	28.098	(2.704)
At least one roommate with family income < \$50,000	.098	(.298)
At least one roommate with family income \$50,000 - \$74,999	.157	(.364)
Any roommate with family income \$75,000 - \$149,999	.408	(.492)
At least one roommate with family income \$150,000-\$199,999	.132	(.339)
At least one roommate with family income > \$200,000	.180	(.385)
<b><i>Floormates (all gathered in entering student survey)</i></b>		
% of floormates that are Black	3.642	(5.230)
% of floormates that are Asian	9.024	(9.047)
% of floormates that are Hispanic	3.341	(4.491)
% of floormates that are "Other Races"	5.691	(6.242)
% of floormates that are minority	21.825	(12.879)
% of floormates with family income > \$200,000	15.631	(9.403)
<b><i>Dependent Variables (all gathered in follow-up survey)</i></b>		
Affirmative action in college admission should be abolished	2.306	(1.034)
Affirmative action in college is justified if it ensures a diverse student body on college campuses	2.466	(1.014)
Having a diverse student body is essential for high quality education	3.296	(.818)
Wealthy people should pay more taxes	2.700	(.998)
I have personal contact with people from other racial/ethnic groups (number of times per month)	19.691	(8.432)
I interact comfortably with people from other racial/ethnic groups (number of times per month)	20.502	(7.993)
The Imperative of helping to promote racial understanding	2.282	(.905)
Frequency of doing volunteer work (number of times per week)	2.136	(3.521)

n=682