The Impact of College Diversity on Behavior Toward Minorities*

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Abstract

There is little question as to the lack of racial diversity at selective U.S. universities. However, there is considerable debate regarding the benefits of various policy options to increase diversity. Proponents of race-conscious admissions policies argue that diversity benefits both the majority and the minority, and that increasing interactions between groups will lead to improved relations. Critics of race-conscious admissions argue that targeted policies such as affirmative action are themselves a form of discrimination and can lead to diminished race relations, particularly if diverse candidates have lower admission standards. This paper estimates the impact of racial diversity on white males' subsequent behavior toward minorities. To overcome selection bias, we exploit data where students are randomly assigned to autonomous peer groups. Results show that white males randomly assigned to both a higher number as well as higher-aptitude black peers in their freshman year are more likely to match with a black roommate in their sophomore year, after reassignment to a new peer group with a different set of black peers. Importantly, exposure to more black peers particularly affects white males who come from more racially homogeneous (white) states.

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1 Introduction

The question of racial diversity on college campuses has long been of interest to colleges themselves as well as to the general public. There is little question that universities—particularly selective universities—have relatively little racial diversity. Underrepresentation is particularly acute for African Americans; only five percent of students at the 200 institutions ranked in the top three Barron's categories are black, compared to 16 percent of college-aged adults nationwide (Brint, 2013; US Census Bureau, 2010). This issue has also been highlighted in the recent racial protests occurring across college campuses, some of which have explicitly demanded increased admissions for black students (Griggs, 2015; Hartocollis and Bidgood, 2015; USA Today College Staff, 2016).

Although there is consensus regarding the current level of racial diversity on campuses, there is considerable debate regarding the benefits of various policy options to increase diversity. Proponents of race-conscious admissions policies argue that diversity benefits both the majority and the minority, and that increasing interactions between groups will lead to improved relations and serves a compelling state interest. Critics of race-conscious admissions argue that targeted policies such as affirmative action are themselves a form of discrimination and can lead to diminished race relations, particularly if diverse candidates have lower admission standards (National Public Radio Staff, 2014).[1] However, despite nearly half of a century of targeted efforts to improve diversity on college campuses and numerous high-profile lawsuits, we still know surprisingly little about how diversity affects racial attitudes and behavior on college campuses.[2]

The purpose of this paper is to assess empirically how students in the majority are affected by exposure to minority peers. Importantly, we focus primarily on whether diversity causes members of the majority to change their subsequent *behavior* toward the minority, in addition to examining changes in stated racial attitudes. We examine two dimensions of diversity: the effect of more minority peers, and the effect of minority peers of different ability. As a result, our analysis speaks directly to the policy question at hand, since many policies designed to increase campus diversity

[1]In addition, there is some evidence that increasing diversity leads to less cross-group interaction than expected due to sorting, which can undermine the effectiveness of increased diversity. (Arcidiacono, Aucejo, Hussey, and Spenner, 2013; Arcidiacono, Khan, and Vigdor, 2011)

[2]The most recent is *Fisher v. University of Texas*, which was argued before the U.S. Supreme Court on December 9, 2015. On June 23, 2016, the Court ruled 4-3 in favor of race-conscious admissions.

result in lowered admission standards along some dimension of ability or preparedness.

We do so by exploiting data in which freshman students at the United States Air Force Academy (USAFA) are randomly assigned to peer groups, called squadrons, with whom they live, eat, and train. We then ask whether exposure to black peers affects white students' subsequent revealed preferences for African Americans. Preferences are revealed when white students decide whether or not to pair up with a black roommate from a set of new and likely unknown peers in the second year at USAFA. Because this measure of behavior reveals willingness to share personal space and time with a black male for an extended period of time, we argue it is much more likely to reflect a fundamental change in racial attitudes than survey responses, though we also report effects on stated preferences.

Results indicate that increased diversity has important effects on racial attitudes and behavior. Specifically, both the number and the academic aptitude of the black peers to whom white males are exposed play important roles in changing subsequent behavior toward African Americans. Specifically, white males who are exposed to higher-aptitude black peers during their freshman year are significantly more likely to pair up with a black roommate the following year. Estimates indicate that a one standard deviation increase in black peer aptitude increases a white male's likelihood of rooming with a black male by 20 percent. Similarly, we find some evidence that exposure to more black peers improves subsequent behavior.[3] Unsurprisingly, effects are concentrated among white males who come from racially homogeneous (i.e., white) states; for these men, exposure to one additional black peer in a squadron of 30 increases the likelihood of a black roommate by between 1.3 and 1.7 percentage points, or by 21 percent. We also show that these changes in behavior are consistent with results from a survey in which white males are asked about how their acceptance of African Americans has changed since they arrived at USAFA.

In addressing the impact of exposure to black peers on the subsequent behavior of white males, we contribute to the broader literature on the contact hypothesis, which was first introduced by Williams Jr (1947) and Allport (1954) and states that interpersonal contact can be an effective way of reducing prejudice between groups. While the cross-sectional evidence is generally consistent with

[3]The impact on roommate pairings in the sophomore year is robust to excluding the small proportion of white-black pairs who by chance were also in the same freshman squadron.

this hypothesis (Pettigrew, 1998), a lingering concern is that this relationship could be driven by reverse causation or confounding factors that impact both attitudes and the choice to associate with other groups. While some recent studies have used quasi-experimental approaches to examine the effects of exposure to blacks in the U.S. (Merlino, Steinhardt, and Wren-Lewis, 2016) and to poor students in India (Rao, 2013), others have been able to exploit the randomization of intergroup contact. Most of these randomized studies have focused on settings such as college dormitory and roommate assignments, where increased proximity has been shown to increase frequency of inter-race contact via email (Marmaros and Sacerdote, 2006) and Facebook (Baker, Mayer, and Puller, 2011), as well as more favorable racial attitudes as measured by survey responses (Boisjoly, Duncan, Kremer, Levy, and Eccles, 2006; Van Laar, Levin, Sinclair, and Sidanius, 2005).

Our findings make two important contributions to this literature. First, our results demonstrate that increased cross-race interaction can in fact lead to changes in meaningful *behavior* toward minorities, in addition to more positive attitudes. This is important, since there is always some question about whether elicited racial attitudes are truthful, or if they would lead to meaningful changes in behavior toward new and different members of the minority group, such as electing to spend significant time and share a small living space with a black peer. In addition, our findings demonstrate that the impact of intergroup contact depends not only on the amount of exposure to members of the other group, but also to the type of individual from that group. This is consistent with the economic literatures on statistical discrimination and Bayesian updating, which would predict that individuals would update their statistical or taste-based discriminatory preferences based on the characteristics of the individuals to whom they were exposed.

Our results also speak directly to the policy question faced by universities in determining the benefits of increased diversity. On the one hand, our findings demonstrate that diversity itself leads to meaningful improvements in subsequent behavior for white students who had relatively little previous cross-race interaction. On the other hand, our results also show that the benefits of increased diversity can potentially be reduced to the extent that increased diversity is achieved by lowering academic standards. In our context, the impact of increased exposure seems to dominate; we estimate that the marginal black admit would need to be substantially below the group mean—2.4 standard deviations—to offset the positive benefits of increased exposure. More generally, however, our results highlight how both dimensions of diversity affect the subsequent behavior of the majority.

The remainder of the paper proceeds as follows. Section 2 presents the institutional framework and data for our study. Section 3 discusses the methods and presents results. Section 4 concludes.

2 Institutional Framework and Data

2.1 Institutional Framework

Our ability to reliably estimate changes in attitudes of majority group members toward members of minority groups is dependent upon an exogenous treatment (assignment into a peer group) followed by the observation of choices within an entirely new setting. Fortunately, the U.S. Air Force Academy has long followed assignment procedures into military squadrons which do precisely this.

Squadrons at the Air Force Academy are comprised of approximately 30 members each of the freshman through senior classes. Members of a squadron share rooms, dine together, play intramural sports together, and undergo military training together. Freshmen members of a squadron have very limited contact with members of other squadrons through the end of March outside of academic classes and intercollegiate sports team participation.

Table 1 provides evidence of the limited contact freshmen at the Air Force Academy have with students outside their squadron. We administered a survey to students from the graduating classes of 2011 and 2012 asking them to name their five closest friends and their five closest study partners. In Column (1), 80.5% of named friends and 88.4% of study partners during the freshman year were from the same squadron. Importantly, in unreported results we find a similar pattern for black males during the freshman year: 70.2% of named friends and 81.1% of named study partners were from the same squadron. A relatively high proportion of named friends and study partners not from the same squadron, shown in Column (2), are recruited athletes. Students in their sophomore year exhibit much greater close contact and collaboration with students outside their squadrons.

Incoming freshman students at USAFA are placed into military squadrons without any input from the affected students according to a stratified random sorting algorithm (Carrell, Fullerton, and West, 2009; Carrell, Sacerdote, and West, 2013). This algorithm uniformly distributes females, members of racial and ethnic minority groups, recruited athletes, and alumni of the Air Force Academy Preparatory School across each squadron. Within each group, assignment is performed without regard to academic ability. In addition, because of both the discrete nature of the number of black cadets as well as the order in which the assignment is done, the assignment also generates random variation in the number of black cadets per squadron.[4]

At the end of the freshman year,[5] students are removed from their freshman squadron and placed by the same stratified random sort algorithm into a new squadron, which we will denote as $\mathbb{S}_i$, where $i = 1..36$. Following the model of roommate matching used by Chung (2000), let squadron members $s_j \in \mathbb{S}_i$ have preferences over possible roommate choices $s_k \in \mathbb{S}_i \; j \neq k$. We assume preferences to be complete, reflexive, and transitive, but formed with very limited personal information on the set of possible roommates beyond who the members of this set are. Lacking personal familiarity with members of $\mathbb{S}_i$, preferences over possible roommate choices reflect attitudes toward identifiable groups (racial and ethnic minorities, members of sports teams, students from areas or regions of the U.S., ...) not informed by interactions with the possible roommates. We do not attempt to explain initial attitudes toward groups upon matriculation to the Air Force Academy but assume them given and randomly distributed through squadrons. In this paper, we investigate how attitudes evolve as a result of exposure to and interaction with group members during the freshman year.

In the literature on learning in game theoretic experiments, players are faced with a set of possible strategies from which to choose guided by only speculation about how profitable each might be. In the theory of reinforcement learning, (Roth and Erev, 1995; McAllister, 1991; Sarin and Vahid, 1999) the desirability of a particularly strategy is "reinforced" by payoffs in previous rounds of the game. In a similar way, students' views of groups are updated by experiences in the freshman year, particularly by those in conflict with previously held views.

Given the preferences of each squadron member over possible roommate choices at the beginning

[4]For example, because females are assigned before members of minority groups, some squadrons are randomly assigned a white female, while others are randomly assigned a black female.

[5]For one of the class years contained in our data set, the graduating class of 2002, students were placed in new squadrons at the end of their sophomore year.

of the sophomore year, roommates are matched. A matching μ is a function $\mathbb{S}_i \longrightarrow \mathbb{S}_i$ such that for all $\{s_j, s_k\} \in \mathbb{S}_i$, $\mu(s_j) = s_k$ if and only if $\mu(s_k) = s_j$. As single rooms are not allowed, we assume that a triple occupancy room must exist if $\mathbb{S}_i$ contains an odd number of members. We assume individual rationality, i.e., that no students are forced to be roommates in the sophomore year.

2.2 The Dataset

Our primary dataset is comprised of the USAFA graduating classes of 2002 and 2004-2007. We omit the graduating class of 2003 from our sample because members of this class remained in their initial freshman squadrons through graduation.[6] These data contain four individual-level measurements of pre-Air Force Academy ability: *SAT* scores,[7] *High School Performance*, computed by USAFA Admissions as a weighted average of high school GPA, class rank, and the quality of the high school attended, a *Leadership Composite* of high school and community activities, and a *Fitness Score*. In addition, our data contain the state of residence and basic demographic information. In Table 2, we present summary statistics at the individual by semester level for white male students. Column 1 shows statistics for all white male students. Because a number of final squadrons did not contain any black male students from the relevant sophomore or junior class year, we omit white male students from such squadrons from our analysis. Column 2 reports summary statistics for white male students who could possibly be paired with a black male roommate.

To these data we match our primary outcome of interest: roommate matches in the second year after reassignment to a new squadron. Roommates in the second year are chosen among the same-gender students within a cohort and squadron. In practice, this matching occurs informally on the first day of the fall semester.[8] To determine roommates, we were able to obtain the official key log, which contains records on the issuing and returning of keys to dorm rooms. By matching records, we were able to determine individuals assigned to the same dorm room for a variety of lengths of time. In columns 3 through 5 of Table 2 we report statistics for white males for whom

[6] Because members of this class were not reassigned to new squadrons, roommate choices would be influenced by personal knowledge of potential roommates and a less pure indicator of attitudes toward minority groups in general.

[7] For students who took the ACT, we report converted SAT scores.

[8] Since students are informed of their sophomore squadrons at the end of the spring semester of their freshmen year, we cannot rule out that some students may pair-up prior to the start of the fall semester. This could occur through networking or students meeting each other through interactions outside their freshman squadron.

we were able to identify roommate[s] for seven or more days. This comprises 89.6 percent of all white male students. Column 3 reports statistics for all white male students for whom we identified roommate[s] for seven or more days. Column 4 reports the subset of white male students who were paired with a non-black roommate and column 5 reports for those with a black roommate. We note no differences of any significance between these subcategories of white male students.

Since roommate matches occur within squadrons, we report demographic and pre-collegiate aptitude statistics at the squadron level in Table 3. Due to the small number of black students per squadron, the standard deviations of all variables are considerably larger for black students than white male students, although the squadron-level mean values are quite similar.

Our secondary analysis uses data from a climate survey administered to students at USAFA during the spring semester of 2010. This survey asked respondents whether their acceptance towards certain groups (e.g., blacks) has changed since entering the Academy. The full survey question is shown in Appendix Figure A.1. Due to anonymity of the survey, responses were only made available for white males with identifiers by squadron for the graduating class of 2013. To these data we matched squadron-level group characteristics. Survey response rates were just under 50 percent. Although we cannot completely rule out selection into survey taking due to anonymity concerns that prevent us from having respondent-level covariates other than squadron, we can test whether there is selection in response rates at the squadron level. To do so, in Appendix Table A.2 we show that the number of survey responses by squadron is uncorrelated with squadron-level mean black or white male characteristics ($p = 0.432$ on a joint significance F-test).

2.3 Squadron Assignment and Variation in Black Peer Characteristics

To be a viable test of whether group diversity affects racial attitudes and behavior, our research design relies on random sampling variation in the number and attributes of black peers across squadrons. Figure 1 shows the variation in our academic aptitude measures at the individual and squadron-level for both blacks and white male students. While blacks and white males have similar standard deviations in individual SAT and high school performance scores, the fact that there are relatively few black cadets per squadron leads to much greater heterogeneity in average black peer ability across squadrons. As a result, while squadron level mean high school performance is almost identical between white male and black members, the standard deviation among black members is approximately four times the magnitude of that of white males.[9]

Due to the stratified nature of the random assignment process, the variation in the number of black peers across squadrons is less than one would expect under pure random assignment. However, there still remains considerable variation in the within-cohort number of blacks across squadrons. The average freshman squadron has 1.611 black peers (both male and female), with a range from zero to four. The mean within-cohort standard deviation in the number of black peers is 0.861. The within-cohort variation in the number of black peers across squadrons comes from three sources of exogenous variation.[10] First, the squadron assignment algorithm places female students into squadrons irrespective of race, allowing for a non-uniform placement of black females to squadrons. Second, USAFA administrators determine assignments to squadrons well prior to matriculation and the start of basic military training. Thus, attrition from the sample through students failing to matriculate either by changing their mind and not showing up, suffering an injury during basic training,[11] or quitting during basic training offers an additional source of exogenous variation in the number of black peers across squadrons. Third, late admits and students who suffered injuries or illness during the previous year's basic training (called "turnbacks") are randomly assigned to squadrons irrespective of race and after the completion of the initial assignment process. These three processes which affect the number of black students assigned to each squadron occur without regard to the characteristics of white male students. For this reason, we do not expect to find any systematic correlation between the number of black students per squadron and the characteristics of white peers.

Carrell and West (2010) and Carrell, Sacerdote, and West (2013) provide empirical evidence consistent with random assignment into squadrons with respect to academic ability, athletic ability, and leadership ability. In Table A.1, we provide additional tests of whether there is any systematic correlation between attributes of white males and the average attributes of black peers assigned to

[9]These statistics exclude the fifteen squadrons in our sample that had zero black male peers. Squadrons with zero black freshman peers are included in all estimated models of $\mathbb{P}(\mathit{BlackRoommate})$ with relevant indicator variable.

[10]There is also considerable variation in the number of black students across cohorts, which ranges from 79 blacks in the graduating class of 2004 and 41 blacks in the class of 2007. We include cohort fixed effects in all of our models and thereby exploit only the within-cohort variation in the number of black peers across squadrons.

[11]Students who are injured and cannot finish basic training are not allowed to matriculate into the fall academic semester.

the same squadron during the freshman and sophomore year.

For this and other regressions in the paper, we report statistical significance using empirical p-values, which is the cumulative distribution function of a resampled counterfactual[12] or the proportion of estimated coefficients using resampled data which are strictly less than the magnitude of the same estimated coefficient using the original data set; $F(\widehat{\beta}_i) = \mathbb{P}(\widehat{\beta}_i^R < \widehat{\beta}_i)$. This approach is preferred to clustered standard errors, which have been shown to be inconsistent in models estimating peer effects (Caeyers and Fafchamps, 2016). Here our counterfactual is estimated with 5,000 simulated squadron assignments we constructed using the USAFA squadron assignment algorithm. To interpret the reported empirical p-values, a null hypothesis that the estimated coefficient was generated from data constructed by the counterfactual process would be rejected at an α level of significance if the empirical p-value were less than $\alpha/2$ or greater than $1 - \alpha/2$. As in Carrell and West (2010), we perform a Kolmogorov-Smirnov test of whether the empirical p-values are distributed uniformly over the $[0, 1]$ interval, as would be expected under random assignment by the USAFA squadron sorting algorithm, our specified counterfactual. We fail to reject the null hypothesis of a uniform distribution with a p-value of 0.52, and are unable to find significant empirical evidence of systematic correlation between attributes of white and black students assigned to the same squadron. Importantly the magnitude of all the correlates is quite small and the coefficients vary in sign. For instance, a one standard deviation increase in average squadron black candidate fitness test is associated with a mere 0.034 increase in white male high school performance.

3 Methods and Results

3.1 Methods

To determine whether white males are significantly affected by variation in the number or type of black peers they are exposed to during their freshman year, we estimate the following linear probability model:

$$\mathbb{P}\left[\mu_{it}(s_j^W) = s_k^B\right] = \phi_1 + \phi_2 \bar{X}_{jt-1}^B + \gamma_t + \epsilon_{ijt}$$

[12]This approach to inference was used in Carrell, Sacerdote, and West (2013) and is similar to Figure 1 of Chetty, Looney, and Kroft (2009), where the estimated treatment effect is compared to the empirical CDF of a placebo effect.

where $\mathbb{P}\left[\mu_{it}(s_j^W) = s_k^B\right]$ is the probability that in squadron i at time t, white male student $s_j^W \in \mathbb{S}_i^W$ and black male student $s_k^B \in \mathbb{S}_i^B$ are matched as roommates. $\bar{X}_{jt-1}^B$ are the black peer characteristics that individual j is exposed to during his freshman year, $t-1$. The primary peer characteristics of interest measure the academic aptitude of the black peers (mean SAT and High School Performance scores) and the number of black peers by squadron. Because white males are exogenously assigned to black peers in the freshman year, estimates of these ϕ_2 coefficients are free from selection bias. γ_t is a cohort fixed effect and ϵ_{ist} is the error term.

3.2 Main Roommate Results

We begin by showing the raw data on the relationship between exposure to African Americans during the freshman year and our measure of behavior toward new and different African Americans in the sophomore year. Figure 2 shows the relationship between the biracial roommate match rate and the average high school performance level of the black peers to whom they were exposed during freshman year, as measured by quartiles. The results show a clear positive association between exposure to higher-ability black peers and the likelihood of rooming with a new and different black student the following year. Given the random way in which students were allocated across squadrons in both freshman and sophomore years, this suggests that the type of black peers to whom white men are exposed significantly affects their behavior toward new and different African Americans in the future.

Figure 3 shows a similar relationship between the number of African Americans to whom white men were exposed during freshman year and the likelihood of subsequently pairing with a black roommate. This suggests that the number of black peers to whom college-aged white men are exposed also affects their subsequent behavior toward other black peers in the future.

Table 4 presents our main estimation results. As suggested by Caeyers and Fafchamps (2016), the values presented in square brackets beneath each estimated coefficient are empirical p-values using 5,000 random assignment of roommates within existing squadrons as the constructed counterfactual. Likewise, a null hypothesis that the estimated coefficient was generated from data constructed by the counterfactual process would be rejected at a α level of significance if the empirical p-value were less than $\alpha/2$ or greater than $1-\alpha/2$.

Column 1 begins by estimating a parsimonious regression that only includes the main explanatory variables of interest and a class year fixed effect. The estimates in column 1 indicate that exposure to higher ability black peers significantly increases the likelihood of pairing with a black roommate in the sophomore year. The estimate of 0.0159 in the first row indicates that a one standard deviation increase in peer black ability, as measured by high school performance, is associated with a 1.59 percentage point increase in the likelihood of subsequently choosing to pair with a black roommate. The estimate is statistically significant at the 1 percent level and represents a 22 percent increase relative to the baseline likelihood of 7.2 percent from Table 2.

In addition, column 1 also shows evidence that exposure to additional black peers increases the likelihood of subsequently pairing with a black roommate. The estimate of 0.0142, which is significant at the 10 percent level, indicates that exposure to an additional black peer increases the probability of choosing a black roommate by 1.42 percentage points, or 20 percent. In contrast, we find no statistically significant relationship between peer black SAT scores and the probability of a roommate match, though the estimated effects are positive.[13]

We continue to find large, positive effects in columns 2-4 as we sequentially add controls for own demographic characteristics, non-black freshman peer characteristics, and characteristics of the black upperclassman in the freshman squadron. The similarity of the point estimates as we add controls is consistent with our expectation given the absence of selection in the squadron assignment process. Estimates of the impact of peer black ability remain statistically significant at the 1 percent level in columns 2 and 3, and are significant at a 5 percent level in column 4. The impact of the number of black peers remains significant at the 10 percent level.

In our preferred specification in column 5, we also include controls for the academic attributes (SAT scores and high school performance) of the black peers in the sophomore squadron within which roommate matches are made. Estimates indicate that a one-standard deviation increase in the high school performance of freshman black peers is associated with a highly significant 1.41 percentage point increase in the probability of having a black roommate, which represents a 20 percent increase. Similarly, exposure to an additional black peer is associated with a 1.30

[13] We note that the high school performance effect may dominate the SAT effect because the high school performance is a much better predictor of grade performance at USAFA, particularly for blacks.

percentage point increase in the likelihood of having a black roommate.

In columns 6 - 10 we conduct a series of robustness checks. Column 6 excludes all white males who were randomly assigned to the same sophomore squadron as a black peer from their freshman squadron. We do this to ensure that the results are not driven by the small fraction of white sophomore men who happened to be able to room with black men from their freshman squadron with whom they are likely personally acquainted.[14] Column 7 excludes students who are recruited athletes, since these students (likely) have more exposure to black peers outside their freshman squadron. We do this to help rule out the possibility that are results driven by exposure to peers outside of the freshman squadron. In column 8 we include a sophomore squadron fixed effect to control for any unobservable differences in sophomore black peer characteristics. In column 9, we control for other black peer characteristics that are potentially correlated with academic aptitude (military preparatory school attendance, recruited athlete, leadership composite and fitness score). Finally, in column 10, we control for state of residence fixed effects.

In all these robustness specifications, our estimated coefficients of interest remain large, positive, and of similar magnitude, alternating between a 5 and 10 percent level of significance. Nevertheless, the similarity of the point estimates indicates that exposure during the freshman year to more and higher aptitude black peers increases the probability of a white-black roommate match in the sophomore year irrespective of the academic aptitude of potential sophomore black roommates.

In Table 5, we next test the robustness of our preferred estimate in column 5 to various roommate definitions. We find broadly consistent results across each duration of the roommate match from 1 to 240 days. Exposure in the freshman year to black peers with higher academic aptitude significantly increases the likelihood that a white male matches with a black roommate in the sophomore year, alternating between the 1 and 5 percent levels. Exposure to more freshman black peers alternates between significance at a 10 percent level and insignificance depending upon how roommates are defined.

In Appendix Table A.4, we test our main results to two additional model specifications to rule out the possibility that multicollinearity between the black freshman High School Performance and

[14] 105 white male sophomores out of 2,527 are assigned to squadrons with black male cadets who shared the same freshman squadron. Of these, 23 were paired with black roommates.

SAT scores are affecting our results. For comparison purposes, Column 1 re-reports the estimates from our preferred specification (Table 4, Specification 5). In Specifications 2 and 3, we re-estimate the model while separately including our two measures of academic aptitude of the black peers (mean SAT and High School Performance scores). Results confirm our previous findings that the black freshman peer High School Performance variable is significantly positively correlated with the probability of a white-black roommate match in the sophomore year.

3.3 Heterogeneous Effects

A natural question is whether the effects we find are heterogeneous across cadets with different incoming attitudes towards race. Although we cannot directly measure incoming attitudes or levels of racial prejudice, our dataset does contain information on each student's home state of residence.[15]

Using data from the U.S. Census Bureau on the percentage of the population that was African American in the 2000 Census, we estimate separate coefficients for our main variables of interest for students who come from states with below the median percentage of population black, designated as Low % Black, versus states above, designated High % Black. Parameter estimates are reported in Table 6. We note with interest that in states designated Low % Black, exposure to a larger number of black freshman peers is associated with a positive and statistically significant effect on the probability of a biracial roommate match, particularly in columns 4 and 5 where freshman squad-mates and recruited athletes are excluded respectively. The magnitude of the effect is quite large, one additional black freshman peer increases the probability of a subsequent biracial match by between 1.49 and 1.94 percentage points. This evidence suggests that increased diversity is particularly effective for those students who were the least likely to be exposed to black students while in high school. Similarly, the largest effect of additional exposure upon the probability of a biracial roommate in our main specifications occurred when recruited athletes were omitted as reported in column 8 of Table 4. We omitted recruited athletes in this specification due to the possibility of additional exposure to black freshman peers on athletic teams.

[15] The military academies are unique in the fact that admissions are made within each congressional district and state. Each member of the U.S. House of Representatives and Senate is allotted five total slots at each service academy in any given year. This process ensures the student body is representative of population centers throughout the United States.

3.4 Results on Stated Attitudes

As an alternative measure of racial attitudes and to shed light on why diversity affects roommate pairings, we exploit data from a 2010 USAFA Climate Survey in which students were asked to, "Please rate how your acceptance towards African Americans/Blacks has changed since you came to USAFA." Possible responses included: "Much less accepting", "Somewhat less accepting", "No Change", "Somewhat more accepting", and "Much more accepting". We use responses to this question to analyze how black peers affect stated attitudes of white males towards blacks. Unfortunately, this survey question was only administered in one year (2010), thus our analysis of these data is limited to the freshman students who formed the graduating class of 2013. The relevant survey question is shown in Figure A.1.

In Table A.3 we report results from a series of linear probability models in which we regress the stated probability of white males being either more or less accepting of blacks on our three primary measures of peer black characteristics (high school performance, SAT score, and number). Though limited by small sample size, results from this analysis are broadly consistent with those previously shown on roommate choices. The estimate from column 3 indicates that a one-standard deviation increase in peer black high school performance leads white males to report that they are 2.4 percentage points (14.2 percent) more likely to report they are "more accepting" of African Americans generally, though the estimate is not statistically significant. Likewise, being exposed to an additional black peers lead white males to be 2.0 percentage points more likely to report being "more accepting" of African Americans.

Results in column 6 show larger and more precisely estimated effects for negative responses to the survey. A one-standard deviation increase in peer black high school performance is associated with a statistically significant 49-percent decrease in the probability a white male reports being "less accepting" of blacks.[16]

Although this survey analysis is limited by the lack of power (i.e., a single graduation cohort of 2013) and potential non-response bias (approximately 50 percent response), the broadly consistent findings offers evidence that the effects on roommates is not likely driven by either the uniqueness

[16]Of the 427 survey respondents, 16.86 percent (72 students) reported being "more accepting", 3.04 percent (13 students) reported being "more accepting", and 80.28 percent (342 students) reported "No Change".

of the outcome variable or the particular cohorts of students in the roommate study (graduates from 2002-2007). Rather, evidence from both sets of outcomes indicates that exposure to more and higher ability black peers leads white men to have more favorable opinions of blacks generally, and to reveal those attitudes when making important choices about whether to spend significant amounts of time with African Americans in the future.

3.5 Generalizability to Other Groups

A final question remains regarding whether the effects we find are limited to blacks or whether diversity in other minority groups influences the behavior of the majority. To answer this question we repeat our roommate analysis for Hispanics and Asians. Results are reported in Table 7. For comparison purposes, column 1 repeats our results for blacks reported in column 5 of Table 4 while column 2 reports results for white males pairing with a Hispanic roommate, and column 3 for an Asian roommate. We do not find any statistically significant effects on the probability of a Hispanic-white roommate match, though the magnitude of the effect of one additional Hispanic peer is relatively large (0.0109) and close to statistical significance at a 10-percent level (empirical p=0.931). However, results show that exposure to more Asian freshman peers does significantly affect the probability of an Asian-white roommate match. Overall, the results presented in Table 7 provide evidence consistent with the idea the increased diversity changes the behavior of the majority group towards new and personally unfamiliar members of the same minority group.

4 Discussion and Conclusion

This study provides an empirical test of whether increased diversity on a college campus influences the subsequent behavior of the majority toward the minority. Specifically, we examine whether white males are affected by either the number or type of black peers to whom they are exposed. To do so, we use data from the U.S. Air Force Academy (USAFA) in which students are randomly assigned to peer groups in their freshman year and subsequently reassigned into different peer groups in their sophomore year.[17] Results show that exposure to additional black peers leads

[17] Reassignment occurred during the junior year for one cohort, the graduating class of 2002.

to increases in the likelihood of pairing with a black roommate the following year, with effects concentrated primarily among whites from states with relatively few blacks. In addition, we find that white males exposed to higher ability black peers in their freshman year were significantly more likely to pair with a black roommate in their sophomore year. That is, exposure to higher ability black peers leads white cadets to decide to share a significant amount of personal space and time with a different black peer the following year.

These results provide several important takeaways. First, in addition to complementing the existing literature on the impact of exposure to more members of the minority group, we also document that the type of members from that group affects racial attitudes. These latter effects are important; a one standard deviation increase in black peer aptitude has roughly the same impact on revealed preference for blacks as does one additional black freshman peer. This highlights the importance of the type of individual with whom one interacts, as well as the frequency of interaction, which is consistent with models in which individuals update prior attitudes regarding other groups.

In addition, the importance of the type of individuals with whom one interacts also speaks directly to the potential costs and benefits of increasing diversity in higher education. That is, the benefits of increased exposure may be partially offset if increased enrollment of underrepresented minorities is accomplished by lowering an admission threshold, thereby reducing the average ability level or preparedness of minority students at the university. In the context studied here, this tradeoff is such that the marginal black admit would need to be 2.4 standard deviations below the black mean to offset the positive benefits of increased exposure.[18] This suggests that given our measure of subsequent behavior toward minorities, the positive marginal impact of additional diversity likely outweighs the negative impact of lowering admission thresholds to achieve that diversity. However, whether the relative magnitudes of these two effects are similar in other contexts is an open question. In addition, while our findings highlight the importance of understanding this

[18]The estimate in column 5 of Table 4 indicate that adding one additional black student to a freshmen squadron increases the probability of a black-white roommate match by 1.30 percentage points in the sophomore year. By comparison, a one standard deviation increase in peer black high school performance increases the match rate by 1.41 percentage points. However, to offset the positive effect of increased exposure, the newly admitted black student would need to reduce the squadron's mean black high school performance by 0.92 standard deviations (1.30/1.41). Starting with mean (normalized) black high school performance of 0 and 1.6 black peers, the new squadron mean black high school performance of $-0.92 = \frac{0+HSP'}{2.6}$ implies the new black peer's high school performance must be $HSP' = 2.6 \times -0.92 = -2.4$ standard deviations below the black mean to offset the positive effect of increased exposure.

tradeoff, we emphasize that there are several other relevant factors in evaluating whether race-conscious admissions policies are socially desirable.

Finally, our results also demonstrate that exposure to more and higher aptitude African American peers can lead to significant changes in subsequent *behavior*. Importantly, these changes in behavior are toward a new and different set of African Americans. This provides rare causal evidence that increased diversity does more than change self-reported attitudes; it also leads to meaningful changes in future behavior.

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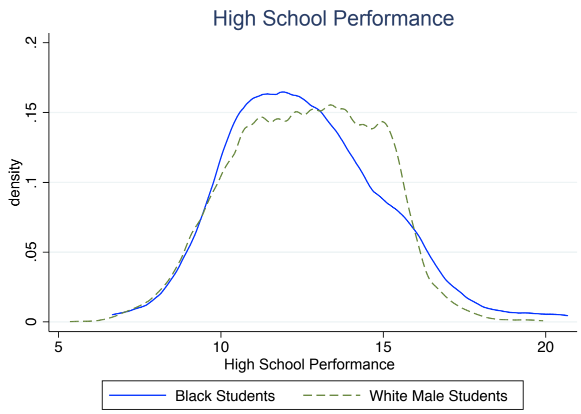
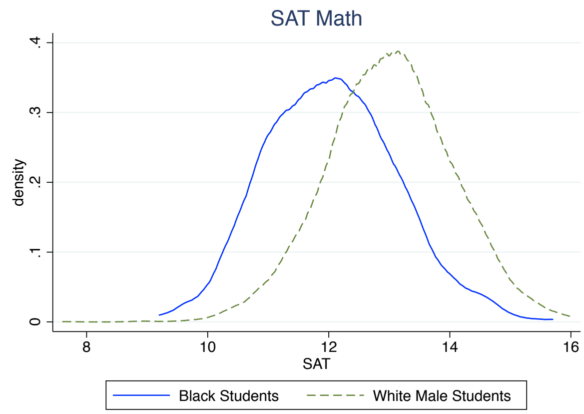
Figure 1: Distributions of Academic Ability by Race

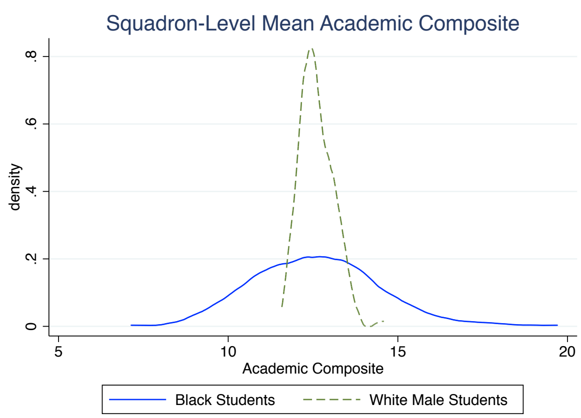
Panel A. Distribution of black and white male high school performance at the individual-level.



Panel B. Distribution of black and white male SAT scores at the individual-level.



Panel C. Distribution of black and white male academic composite at the squadron-level.



Panel D. Distribution of black and white male SAT scores at the squadron-level.

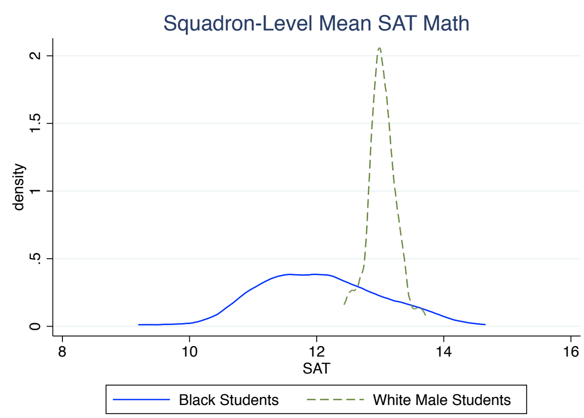
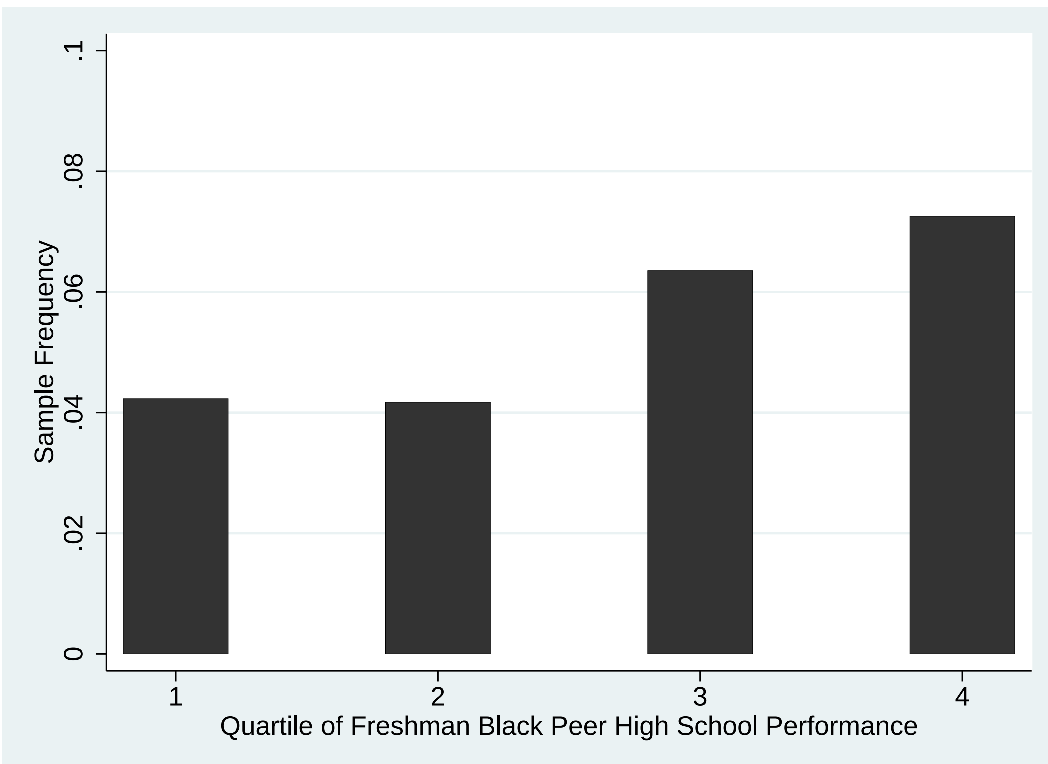
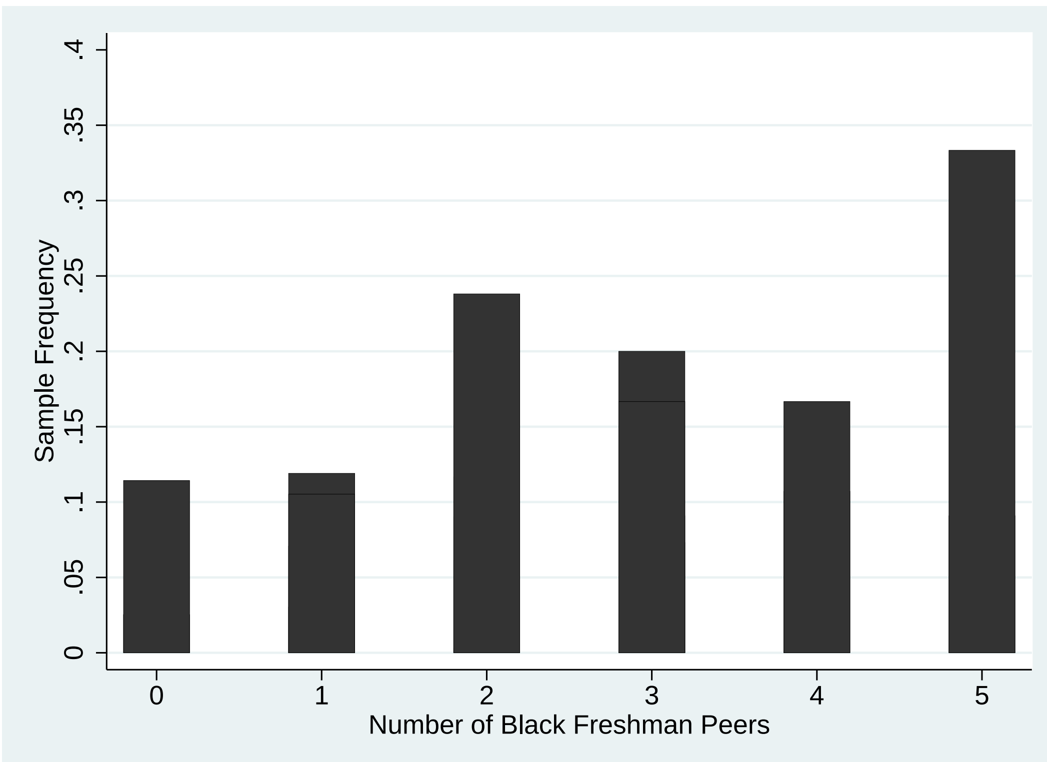


Figure 2: Frequency of Biracial Roommate Match by Freshman Black Peer High School Performance



Quartiles of Freshman Black Peer High School Performance computed by year. Frequency represents the proportion of white male students with freshman black peers within the given quartile who were subsequently matched with a sophomore black roommate.

Figure 3: Frequency of Biracial Roommate Match by Number of Black Freshman Peers



Frequency represents the proportion of white male students with the indicated number of freshman black peers who were subsequently matched with a sophomore black roommate.

Table 1: Social and Study Relationships of White Male Students

	(1)	(2)	(3)	(4)
	Freshman		Sophomore	
	Full Sample	Squadron Not Matched	Full Sample	Squadron Not Matched
VARIABLES	mean (sd)	mean (sd)	mean (sd)	mean (sd)
Panel A: Friends				
Both in Same Freshman Squadron	0.805	0	0.249	0.425
	(0.396)	(0)	(0.433)	(0.495)
Both in Same Sophomore Squadron	0.0338	0.0377	0.506	0
	(0.181)	(0.191)	(0.500)	(0)
Friend is Black	0.0345	0.0264	0.0262	0.0206
	(0.183)	(0.161)	(0.160)	(0.142)
Friend is Hispanic	0.0771	0.0566	0.0757	0.0796
	(0.267)	(0.232)	(0.265)	(0.271)
Friend is Asian	0.0720	0.0755	0.0816	0.0664
	(0.259)	(0.265)	(0.274)	(0.249)
Both are Recruited Athletes	0.0602	0.230	0.0575	0.0988
	(0.238)	(0.422)	(0.233)	(0.299)
Observations	1,362	265	1,373	678
Panel B: Study Partners				
Both in Same Freshman Squadron	0.884	0	0.146	0.257
	(0.320)	(0)	(0.354)	(0.437)
Both in Same Sophomore Squadron	0.0259	0.0308	0.569	0
	(0.159)	(0.173)	(0.495)	(0)
Study Partner is Black	0.0330	0.0308	0.0255	0.0175
	(0.179)	(0.173)	(0.158)	(0.131)
Study Partner is Hispanic	0.0750	0.0385	0.0746	0.0746
	(0.264)	(0.193)	(0.263)	(0.263)
Study Partner is Asian	0.0973	0.123	0.0925	0.0877
	(0.297)	(0.330)	(0.290)	(0.283)
Both are Recruited Athletes	0.0330	0.0692	0.0472	0.0746
	(0.179)	(0.255)	(0.212)	(0.263)
Observations	1,120	130	1,059	456

Survey Respondents are white male students from graduating classes of 2011 and 2012 asked to name their five closest friends and study partners in freshman and sophomore years.

Table 2: Summary Statistics for White Males with Matched Roommates

	(1)	(2)	(3)	(4)	(5)
		Soph Squadrons	Sophomores Matched to Roommates		
	Full	with 1+	All	Nonblack	Black
	Sample	Black Males	Roommates	Roommate	Roommate
	mean	mean	mean	mean	mean
VARIABLES	(sd)	(sd)	(sd)	(sd)	(sd)
High School Performance	12.58	12.58	12.71	12.69	12.98
	(2.396)	(2.401)	(2.136)	(2.144)	(2.010)
SAT Score	12.97	12.96	13.06	13.06	12.97
	(1.483)	(1.493)	(1.046)	(1.038)	(1.143)
Leadership Score	17.15	17.15	17.26	17.26	17.27
	(2.321)	(2.333)	(1.854)	(1.851)	(1.899)
Fitness Score	4.787	4.802	4.825	4.820	4.886
	(1.015)	(1.016)	(0.938)	(0.931)	(1.022)
Recruited Athlete	0.271	0.269	0.267	0.263	0.309
	(0.445)	(0.444)	(0.442)	(0.441)	(0.463)
Black Freshman HS Performance	12.66	12.58	12.60	12.57	12.90
	(1.860)	(1.838)	(1.844)	(1.847)	(1.792)
Black Freshman SAT	12.04	12.02	12.01	12.00	12.03
	(0.943)	(0.923)	(0.922)	(0.932)	(0.802)
Black Freshman Leadership	16.81	16.83	16.82	16.83	16.77
	(1.513)	(1.502)	(1.489)	(1.512)	(1.175)
Black Freshman Fitness	4.912	4.943	4.938	4.949	4.801
	(0.767)	(0.743)	(0.745)	(0.742)	(0.762)
Number of Black Freshmen	1.756	1.798	1.806	1.791	2.005
	(0.867)	(0.876)	(0.864)	(0.864)	(0.851)
P(Black Roommate)			0.0724		
			(0.259)		
P(Hispanic Roommate)			0.0688		
			(0.253)		
P(Asian Roommate)			0.0549		
			(0.228)		
Observations	3,718	2,804	2,513	2,331	182

Table 3: Summary Statistics by Squadron

VARIABLES	(1) All M & F mean (sd)	(2) Freshman White Male mean (sd)	(3) Black M & F mean (sd)	(4) All M & F mean (sd)	(5) Sophomore White Male mean (sd)	(6) Black Male mean (sd)
High School Performance	12.75	12.68	12.69	12.75	12.68	12.55
	(0.374)	(0.488)	(1.920)	(0.416)	(0.510)	(1.916)
SAT Score	12.96	13.06	12.07	12.96	13.06	12.03
	(0.207)	(0.234)	(0.925)	(0.206)	(0.243)	(0.867)
Leadership Composite	17.28	17.27	16.81	17.28	17.27	16.71
	(0.348)	(0.436)	(1.464)	(0.326)	(0.390)	(1.521)
Fitness Score	4.799	4.815	4.915	4.796	4.813	4.985
	(0.285)	(0.289)	(0.764)	(0.292)	(0.281)	(0.846)
Number of Members	29.86	20.66	1.611	29.86	20.66	1.228
	(3.559)	(3.070)	(0.861)	(2.828)	(2.837)	(0.939)
Zero Members			0.083			0.239
			(0.277)			(0.428)
Recruited Athlete	0.271	0.270	0.348	0.272	0.271	0.357
	(0.0600)	(0.0859)	(0.423)	(0.0754)	(0.0996)	(0.413)
Female	0.171		0.251	0.171		
	(0.0374)		(0.367)	(0.0341)		
White	0.823			0.822		
	(0.0413)			(0.0453)		
Black	0.0547			0.0545		
	(0.0288)			(0.0295)		
Hispanic	0.0639			0.0644		
	(0.0298)			(0.0317)		
Asian	0.0502			0.0506		
	(0.0299)			(0.0279)		
Observations	180	180	180	180	180	180

Table 4: Impact of Exposure to Black Peers on Roommate Matching

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Black Freshman HS Performance	0.0159***	0.0165***	0.0154***	0.0140**	0.0141**	0.0129**	0.0119**	0.0131*	0.0122*	0.0143**
	[0.996]	[0.998]	[0.996]	[0.992]	[0.993]	[0.984]	[0.977]	[0.971]	[0.974]	[0.991]
Black Freshman SAT	0.0031	0.0025	0.0020	0.0017	0.0017	0.0022	0.0000	0.0023	0.0006	0.0016
	[0.722]	[0.681]	[0.655]	[0.632]	[0.630]	[0.651]	[0.512]	[0.615]	[0.548]	[0.618]
Number of Black Freshmen	0.0142*	0.0149*	0.0133*	0.0131*	0.0130*	0.0141	0.0138*	0.0172*	0.0129	0.0131*
	[0.970]	[0.974]	[0.960]	[0.959]	[0.957]	[0.946]	[0.958]	[0.974]	[0.896]	[0.956]
Year Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Own Characteristics	-	Y	Y	Y	Y	Y	Y	Y	Y	Y
Freshman Non-Black Peer Characteristics	-	-	Y	Y	Y	Y	Y	Y	Y	Y
Black Upper Class Peer Characteristics	-	-	-	Y	Y	Y	Y	Y	Y	Y
Sophomore Black Peer Characteristics	-	-	-	-	Y	Y	Y	Y	Y	Y
Exclude Freshman Squad-mates	-	-	-	-	-	Y	-	-	-	-
Exclude Recruited Athletes	-	-	-	-	-	-	Y	-	-	-
Sophomore Squadron FE	-	-	-	-	-	-	-	Y	-	-
Non-academic Black Peer Characteristics	-	-	-	-	-	-	-	-	Y	-
State of Residence FE	-	-	-	-	-	-	-	-	-	Y
Observations	2,529	2,529	2,529	2,529	2,529	2,529	2,424	1,851	2,529	2,529
R^2	0.019	0.031	0.032	0.033	0.033	0.063	0.032	0.029	0.035	0.062

Dependent variable is probability of roommate match between black and white males for seven or more days. High School Performance and SAT Score are normalized. Square brackets contain empirical p-values for randomly assigned roommates within existing sophomore squadrons. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Robustness of Estimates to Alternate Roommate Definitions

VARIABLES	(1) 1 Day	(2) 7 Days	(3) 30 Days	(4) 60 Days	(5) 90 Days	(6) 120 Days	(7) 240 Days
Black Freshman HS Performance	0.0142**	0.0141**	0.0149***	0.0141**	0.0149***	0.0156***	0.0146**
	[0.993]	[0.993]	[0.995]	[0.993]	[0.995]	[0.996]	[0.994]
Black Freshman SAT	0.0008	0.0017	0.0013	0.0016	0.0013	0.0008	-0.0009
	[0.572]	[0.630]	[0.608]	[0.624]	[0.608]	[0.569]	[0.449]
Number of Black Freshmen	0.0131*	0.0130*	0.0123	0.0124*	0.0126*	0.0123	0.0068
	[0.957]	[0.957]	[0.948]	[0.950]	[0.951]	[0.949]	[0.839]
Observations	2,539	2,529	2,518	2,517	2,514	2,512	2,423
R^2	0.033	0.033	0.034	0.033	0.035	0.031	0.026

Dependent variable is probability of roommate match between black and white males. High School Performance and SAT Score are normalized. All Specifications include controls for year effects, own characteristics, freshman non-group characteristics, and upper group characteristics as in Table 4, Specification 5. Square brackets contain empirical p-values for randomly assigned roommates within existing sophomore squadrons. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Heterogeneity of Effects by Percentage of the Population Black

VARIABLES	(1)	(2)	(3)	(4)	(5)
Freshman Black HS Performance × High % Black	0.0158**	0.0143*	0.0143*	0.0106	0.0089
	[0.973]	[0.956]	[0.956]	[0.889]	[0.813]
Freshman Black HS Performance × Low % Black	0.0165*	0.0141	0.0141	0.0108	0.0156
	[0.973]	[0.948]	[0.947]	[0.897]	[0.948]
Freshman Black SAT × High % Black	0.0071	0.0049	0.0049	0.0042	0.0084
	[0.815]	[0.739]	[0.741]	[0.702]	[0.795]
Freshman Black SAT × Low % Black	-0.0003	-0.0008	-0.0008	-0.0031	-0.0028
	[0.478]	[0.451]	[0.446]	[0.353]	[0.379]
Number of Black Freshman × High % Black	0.0087	0.0082	0.0081	0.0091	0.0145
	[0.879]	[0.858]	[0.855]	[0.880]	[0.953]
Number of Black Freshman × Low % Black	0.0162*	0.0150*	0.0149*	0.0183**	0.0194**
	[0.984]	[0.976]	[0.976]	[0.991]	[0.987]
Year Effects	Y	Y	Y	Y	Y
Own Characteristics	-	Y	Y	Y	Y
Freshman Non-Black Peer Characteristics	-	Y	Y	Y	Y
Black Upper Class Peer Characteristics	-	Y	Y	Y	Y
Sophomore Black Peer Characteristics	-	-	Y	Y	Y
Exclude Freshman Squad-mates	-	-	-	Y	-
Exclude Recruited Athletes	-	-	-	-	Y
Observations	2,529	2,529	2,529	2,424	1,851
R^2	0.020	0.034	0.034	0.033	0.030

Dependent variable is probability of roommate match between black and white males for seven or more days. High School Performance and SAT Score are normalized. Square brackets contain empirical p-values for randomly assigned roommates within existing sophomore squadrons. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Impact of Exposure to Other Peers on Roommate Matching

VARIABLES	(1) Prob Black Roommate	(2) Prob Hispanic Roommate	(3) Prob Asian Roommate
Freshman Group HS Performance	0.0141**	-0.0041	-0.0009
	[0.993]	[0.269]	[0.455]
Freshman Group SAT	0.0017	0.0010	0.0025
	[0.630]	[0.605]	[0.716]
Number of Group Freshmen	0.0130*	0.0109	0.0123*
	[0.957]	[0.931]	[0.963]
Observations	2,529	2,851	2,590
R^2	0.033	0.017	0.023

Dependent variable is probability of roommate match for seven or more days. High School Performance and SAT Score are normalized. All Specifications include controls for year effects, own characteristics, freshman non-group characteristics, and upper group characteristics as in Table 4, Specification 5. Square brackets contain empirical p-values for randomly assigned roommates within existing sophomore squadrons. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure A.1: Cadet Climate Survey Question on Acceptance of Minority Groups

2009 USAFA Cadet Climate Survey

19. Please rate how your acceptance towards the following groups of people has changed since you came to USAFA. (Select the rating that best corresponds to your current attitude.)

	Much less accepting	Somewhat less accepting	No Change	Somewhat more accepting	Much more accepting
African Americans/Blacks					
American Indians/Alaskans/Aleuts					
Asians/Pacific Islanders					
Chicano(a)s/Latino(a)s /Hispanics					
Whites/Caucasians					
Bisexual men or women					
Gay men					
Lesbians					
Men					
Women					
Persons of different economic backgrounds than yours					
Persons of different religious backgrounds than yours					

Table A.1: Falsification Tests - Selection by Group Attributes

VARIABLES	(1) High School Performance	(2) SAT	(3) Leadership Composite	(4) Fitness Test	(5) Number Fresh Black
Panel A: White Male Attributes on Average Freshman Black Attributes					
Average Black HS Performance	-0.022**	-0.018**	-0.004	0.003	
	[0.00700]	[0.0166]	[0.324]	[0.645]	
Average Black SAT Score	-0.022	-0.001	0.014	-0.018	
	[0.120]	[0.478]	[0.754]	[0.154]	
Average Black Leadership Composite	0.014	-0.013	-0.004	-0.017	
	[0.811]	[0.204]	[0.418]	[0.150]	
Average Black Candidate Fitness Test	-0.012	-0.020	0.005	-0.021	
	[0.225]	[0.0982]	[0.632]	[0.0836]	
Number of Black Students	-0.028	-0.041*	-0.024	0.035	
	[0.0940]	[0.0274]	[0.164]	[0.946]	
Observations	4,005	4,011	3,894	4,011	
R^2	0.003	0.013	0.001	0.003	
Panel B: White Male Attributes on Average Sophomore Black Attributes					
Average Black HS Performance	0.004	-0.025**	0.010	-0.000	
	[0.625]	[0.0146]	[0.826]	[0.619]	
Average Black SAT Score	0.005	-0.004	0.005	-0.016	
	[0.529]	[0.844]	[0.466]	[0.384]	
Average Black Leadership Composite	0.018	-0.005	0.006	0.023	
	[0.529]	[0.844]	[0.466]	[0.384]	
Average Black Candidate Fitness Test	0.034**	0.030**	0.010	0.004	
	[0.981]	[0.986]	[0.688]	[0.636]	
Number of Black Students	0.022	0.018	-0.020	0.010	
	[0.851]	[0.839]	[0.184]	[0.685]	
Observations	3,699	3,700	3,700	3,700	
R^2	0.011	0.024	0.013	0.016	
Panel C: Average Freshmen Black Attributes of White Males on Average Sophomore Black Attributes					
Average Black HS Performance	0.005	-0.009	-0.001	0.014*	0.005
	[0.735]	[0.0854]	[0.508]	[0.950]	[0.912]
Average Black SAT Score	-0.031	0.017	0.000	-0.010	-0.016
	[0.382]	[0.781]	[0.608]	[0.193]	[0.240]
Average Black Leadership Composite	0.008	0.020	0.011	0.014	-0.009
	[0.558]	[0.934]	[0.755]	[0.851]	[0.149]
Average Black Candidate Fitness Test	-0.002	0.018	0.007	-0.006	-0.010
	[0.528]	[0.899]	[0.725]	[0.313]	[0.193]
Number of Black Students	-0.028	-0.016	-0.027	0.008	0.019
	[0.207]	[0.161]	[0.0878]	[0.659]	[0.940]
Observations	3,718	3,718	3,647	3,718	3,718
R^2	0.785	0.914	0.327	0.186	0.548

All specifications include class year fixed effects. Square brackets contain empirical p-values for randomly assigned squadrons. Kolmogorov-Smirnov test FTR null hypothesis of empirical p-values drawn from a uniform distribution (p=0.52). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2: Number of Survey Responses by Squadron Characteristics

VARIABLES	(1) Number of Survey Responses
Average Black Academic Composite	-1.193**
	(0.582)
Average Black SAT Score	-0.475
	(0.652)
Average Black Leadership Composite	0.439
	(0.648)
Average Black Fitness Test	-0.444
	(0.599)
Caucasian Male Academic Composite	0.565
	(0.690)
Caucasian Male SAT Score	0.130
	(2.278)
Caucasian Male Leadership Composite	0.122
	(0.635)
Caucasian Male Fitness Test	-0.139
	(0.620)
Observations	40
R^2	0.164
Model F	1.376
p-value	0.432

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Impact of Exposure to Black Peers on Stated Attitudes

VARIABLES	(1) More Accepting	(2) More Accepting	(3) More Accepting	(4) Less Accepting	(5) Less Accepting	(6) Less Accepting
Average Black HS Performance	0.016	0.020	0.024	-0.020*	-0.026***	-0.015*
	(0.015)	(0.013)	(0.020)	(0.010)	(0.009)	(0.009)
Average Black SAT Score	-0.006	-0.002	-0.011	-0.004	-0.010	0.007
	(0.014)	(0.014)	(0.017)	(0.008)	(0.008)	(0.007)
Number of Black Members	0.014	0.020	0.020	0.013	0.009	-0.009
	(0.023)	(0.024)	(0.033)	(0.021)	(0.016)	(0.010)
Caucasian Male Academic Controls	N	Y	Y	N	Y	Y
Non-Academic Controls	N	N	Y	N	N	Y
Observations	426	426	426	426	426	426
R^2	0.004	0.016	0.027	0.016	0.051	0.082

Standard errors are clustered by squadron. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Robustness Specifications

VARIABLES	(1)	(2)	(3)
Black Freshman HS Performance	0.0141**	0.0141**	
	[0.993]	[0.993]	
Black Freshman SAT	0.0017		0.0020
	[0.630]		[0.656]
Number of Black Freshmen	0.0130*	0.0131*	0.0142*
	[0.957]	[0.957]	[0.966]
Observations	2,529	2,529	2,529
R^2	0.033	0.033	0.031

Dependent variable is probability of roommate match for seven or more days. High School Performance and SAT Score are normalized. All Specifications include controls for year effects, own characteristics, freshman non-group characteristics, and upper group characteristics as in Table 4, Specification 5. Square brackets contain empirical p-values for randomly assigned roommates within existing sophomore squadrons. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.