# Exploiting a policy from South African university to examine the effects of interracial contact

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam. The author replicates the results of Corno et al. (2022) in Section 4.1 and extends it in Section 4.2 with mediation analysis.

## Abstract

We examine the effects of sharing a room with someone of different race in University of Cape Town (UCT) where freshmen are randomly allocated to their rooms on campus. We find a significant reduction in White students prejudice against Black individuals by examining the students results for implicit association tests (IATs) at the beginning and at the end of the academic year. This reduction is accompanied by more positive social interactions with Black individuals. We also find positive effects on Black students academic performance. To investigate possible mediating effects between sharing a room with someone of different race and IATs, we apply mediation analysis with social and behavioral measures as our possible mediators. The results show no mediating effects on the IATs, suggesting that living with someone of different race affects the students prejudice directly or through other mediators not mentioned in this paper.

# 1 Introduction

South Africa has a long history of discrimination towards the indigenous Black community. Under apartheid, equal opportunities for the Black community did not exist and discrimination became more frequent than ever (Gurney, 2000). The dissolution of apartheid has sparked interest in studying racial attitudes and behaviors in South Africa. The enduring impact of apartheid is evident in the continued racialization of South African indigenous society (Williams et al., 2008). The country now grapples with profound inequality in terms of income and access to opportunities. Various research exists on the effects of intergroup interaction on behavior towards minorities to search for solutions for prejudice and discrimination that South Africa struggles with. Intergroup contact and its effects is a broadly researched topic, the intergroup contact theory was first proposed by Allport (1954) where the author argued that intergroup contact diminishes prejudice. However, other literature shows that the positives of contact theory do not always hold and that it can even lead to increase in prejudice (Graf et al., 2014). Still, the vast majority of the literature on intergroup contact including Pettigrew et al. (2011) shows that it reduces prejudice and increases intergroup trust, where Pettigrew et al. (2011) conducted a meta-analysis with 515 studies in multiple countries, including South Africa.

This study expands on the research of Corno et al. (2022) where the use of implicit association tests (IATs) to uncover prejudice against the Black community in South Africa is introduced for the first time. The IATs give us the possibility to quantify participants prejudice, without them knowing about the real goal of the tests and thus reducing the risk of invalid results due to pressure.

In this paper, we examine the effects of intergroup contact in a South African university, namely the University of Cape Town (UCT). We make use of a policy introduced by the UCT that aims to foster racial integration. This policy involves the random assignment of students to various university residences and new roommates. Therefore, this policy offers a distinctive possibility to assess the impact of a roommate's racial background on individual's attitudes and prejudice, enabling us to determine its direct influence. Our study specifically examines the changes in a student's stereotypes toward a particular race when they engage with someone from that race, aiming at investigating the effects of such interactions.

We perform extensive mediation analysis popularized by Baron and Kenny (1986) to examine those effects. In this analysis, we uncover causal processes for the measures of prejudice. Mediation analysis helps to understand the role of intermediate variables in explaining the relationship between the treatment and dependent variables, and it is widely used in psychology, and social and health sciences (Rucker et al., 2011; Freeman et al., 2017; VanderWeele and Vansteelandt, 2010). Our paper extends upon the research made by Corno et al. (2022) where mediation analysis is not complete. Corno et al. (2022) show treatment effects on some possible mediators but they do not use any mediation techniques to examine the strength and significance of mediating effects. With a deeper understanding of the causal process it may be easier for the regulators to intervene, and reduce prejudice and discrimination in the South African society.

We use the data from UCT provided by Corno et al. (2022). The sample consists mainly of Black and White freshmen, who were asked to fill in a survey and to do the IATs during the interviews at the beginning and at the end of the 2012 academic year. The survey contained questions about the student's friendship patterns, interracial attitudes and prosocial behavior, with the means of solidifying the student's behavior towards the individuals of other race. For extra analysis, the students had to participate in the prisoner's dilemma game at the end of the academic school year.

For the examination of changes in stereotypes, the students were asked to make a series of implicit association tests (IATs) which first were introduced by Greenwald and Banaji (1995). The Race IAT uncovers unconscious attitudes and beliefs towards a race which the subjects may not expect. Normally, individuals may be hesitant to reveal prejudice in a survey or interview and that is why IATs are of importance. The general idea of the IAT is that subjects have to pair two concepts in a rapid categorization task, subjects who do it more quickly associate the pair more strongly. Slower categorization means that the subject perceives the pair as as less familiar. The use of IAT scores and its reliability is criticized within the psychology literature, Corno et al. (2022) go more in detail about the use of IATs and its critiques for our dataset.

The results show a reduction in prejudice against Black individuals among the White participants as shown by the significant increase in Race IAT due to sharing a room with someone of different race. We also see a significant improvement in the attitudes and behavior of White participants towards the Black community. We observe no mediating effects of attitudinal and behavioral measures between sharing a room with someone of different race and Race IAT for both White and Black participants. This suggests that living with someone of a different race influences the students prejudice directly or through other mediators not mentioned in this paper. The results also show a significant improvement in academic performance for the Black participants.

Our research relates in many ways to previous literature on intergroup interaction. First, our research randomly allocates subjects with someone of different race, this is previously done but in different settings, like random allocation of subjects in classrooms and sport teams (Scacco and Warren, 2018; Mousa, 2020; Carrell et al., 2019). These papers study self-reported attitudes but they do not examine unconscious attitudes like we do in our work using IATs. Lastly, our study builds up on the existing literature which investigates the effects of intergroup contact in South Africa by performing mediation analysis and using IATs to measure prejudice (Cakal

et al., 2011; Swart et al., 2011; Schrieff et al., 2010; Durrheim and Dixon, 2010).

The remainder of this paper is organized as follows. In Section 2, the experimental design and data are introduced. In Section 3, the models used for estimation and the framework for mediation analysis are explained. In Section 4, the results of the estimations and the mediation analysis results are shown, and Section 5 concludes and discusses limitations of our research.

## 2 Data and experimental design

The sample consists of 499 students from the University of Cape Town (UCT) who were interviewed at the start and at the end of the 2012 academic year. The students are allocated randomly in one of the fifteen residences, within that residence they are then randomly allocated to a same gender room. From the sample 157 students were allocated to a roommate of a different race, whereas 342 were administered to a roommate of same race. Of those 499 students, 332 were Black and 177 White, the rest were other race. This composition automatically means that Black students have lower chance of being in a mixed room. The wardens decide the allocation criteria that may vary by residence, although the allocation stays random according to them. Since we want to examine the effects of intergroup contact, we only focus on the eight of fifteen residences with double rooms. In Table A3, we compare our sample to the rest of UCT students. The results from this table indicate that our sample is representative to the rest of the university. Although, there are some differences in the admission score and the female population.

To incentivize the students for the participation in the surveys, the students who participated got a remuneration of 30 South African Rands. To advertise the research, the wardens were instructed to mention the interviews during residence meeting. There were also posters placed in the residency halls that advertise the interviews and lastly emails were sent to the students in the residencies of interest. The real goal of the interviews was never mentioned, but instead it was advertised as a project about students life at UCT.

The baseline interviews including the IATs and surveys were conducted in the first week of new academic year in February 2012. Near the end of the academic year in September 2012 the follow-up interviews were conducted with extra lab experiments with the students who also were present at the baseline interviews. Table A2 indicates no signs of attrition due the measures of IATs and differences between mixed and non-mixed rooms. With the surveys Corno et al. (2022) collected information on students socioeconomic backgrounds, friendships, attitudes and beliefs towards other ethnic groups. The surveys give valuable information about the students friendship patterns, interracial attitudes and prosocial behavior. Friendship patterns provide more information about the student's willingness to socialize with someone of other race, like their share of best friends and study mates that are Black or White. Interracial attitudes give information about the student's comfort in discussing racial issues and student's impression of dating and dancing with someone of other race. Prosocial behavior shows the student's effort towards community service and volunteering, and if the donated any money to the charities last year, excluding churches. Like mentioned before, a lab experiment is conducted in the follow-up interview which also measures student's prosocial behavior. The experiment is the prisoner's dilemma game, in which the student receives a photograph of the participant which shows his

or hers racial identity, then the student decides if he or she wants to "cooperate" or "block" the other participant, this decision also holds for the participant. Different combinations of "cooperate" and "block" lead to different pay-offs.

To assess whether the allocation of students is random, we make use of the evidence provided in Tables 1 and 2. In Table 1, we find the summary statistics of main variables of interest at baseline. In Table 1, UCT admission score is the weighted sum of student's final high school grades where the weight depends on the program the student enrolled in. Wealth index measures the student's per capita ownership of durable goods in their household, which is constructed by applying principal component analysis to the following categories of goods: computer, fridges, TV, landline, mobile phones, bicycles, motorbikes, electricity, gas, kettles, geysers and cars. The variable Consumption measures the student's monthly consumption in African Rands. Foreign is a dummy which equals one if the student in not from South Africa and zero otherwise. Private high school is also a dummy which is equal to one if the student comes from a private high school and zero otherwise.

Table 1: Summary statistics

| | Full sample | | Mixed room | | Non-mixed room | | Mixed minus non-mixed room | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Mean | SD | Mean | SD | Mean | SD | Beta | P-value |
| *Panel A. Full sample* | | | | | | | | |
| Race IAT | -0.193 | 0.517 | -0.252 | 0.496 | -0.167 | 0.524 | -0.057 | 0.308 |
| Academic IAT | -0.213 | 0.494 | -0.206 | 0.512 | -0.216 | 0.486 | 0.048 | 0.374 |
| UCT admission score | 0.463 | 0.048 | 0.466 | 0.050 | 0.462 | 0.048 | 0.000 | 0.923 |
| Wealth index | 0.024 | 2.122 | 0.045 | 1.890 | 0.014 | 2.223 | -0.316 | 0.147 |
| Consumption | 0.926 | 0.847 | 1.021 | 0.929 | 0.882 | 0.804 | 0.083 | 0.343 |
| Foreign | 0.112 | 0.316 | 0.140 | 0.348 | 0.099 | 0.300 | 0.037 | 0.286 |
| Private high school | 0.601 | 0.490 | 0.618 | 0.487 | 0.594 | 0.492 | -0.021 | 0.688 |
| *Panel B. Whites* | | | | | | | | |
| Race IAT | -0.354 | 0.505 | -0.318 | 0.465 | -0.372 | 0.525 | 0.047 | 0.667 |
| Academic IAT | -0.250 | 0.463 | -0.229 | 0.488 | -0.261 | 0.452 | 0.015 | 0.882 |
| UCT admission score | 0.487 | 0.039 | 0.487 | 0.042 | 0.487 | 0.038 | 0.003 | 0.725 |
| Wealth index | 0.838 | 1.804 | 0.459 | 1.295 | 1.028 | 1.991 | -0.613 | 0.103 |
| Consumption | 1.182 | 0.912 | 1.181 | 1.007 | 1.183 | 0.868 | 0.002 | 0.990 |
| Foreign | 0.068 | 0.253 | 0.103 | 0.307 | 0.051 | 0.222 | 0.067 | 0.210 |
| Private high school | 0.744 | 0.439 | 0.692 | 0.468 | 0.769 | 0.424 | -0.079 | 0.390 |
| *Panel C. Blacks* | | | | | | | | |
| Race IAT | -0.119 | 0.520 | -0.174 | 0.538 | -0.103 | 0.514 | -0.081 | 0.240 |
| Academic IAT | -0.188 | 0.498 | -0.139 | 0.514 | -0.203 | 0.494 | 0.062 | 0.341 |
| UCT admission score | 0.453 | 0.048 | 0.451 | 0.050 | 0.453 | 0.047 | -0.001 | 0.833 |
| Wealth index | -0.380 | 2.051 | -0.521 | 1.580 | -0.339 | 2.170 | -0.165 | 0.533 |
| Consumption | 0.809 | 0.800 | 0.894 | 0.901 | 0.784 | 0.769 | 0.130 | 0.204 |
| Foreign | 0.120 | 0.326 | 0.147 | 0.356 | 0.113 | 0.317 | 0.033 | 0.449 |
| Private high school | 0.536 | 0.499 | 0.533 | 0.502 | 0.537 | 0.500 | 0.001 | 0.983 |

During the interviews two types of IATs were conducted, first one is taste-based (Race IAT) and the other one is academic-based (Academic IAT). Race IAT involves the pairing of student's positive and negative features with ethnic backgrounds of Black and White individuals from South Africa. The Academic IAT was designed Corno et al. (2022) to bring out associations between race and academic ability. In Figures 1 and 2 we can see how Race and Academic IAT are distributed at the baseline for the two races.
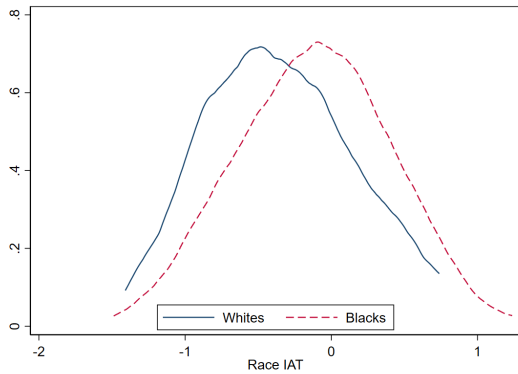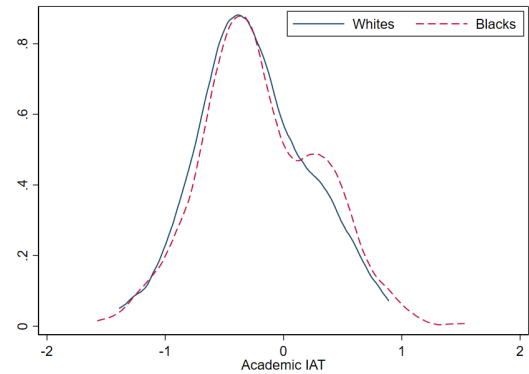
Figure 1: Distribution of Race IAT      Figure 2: Distribution of Academic IAT

The Race and Academic IAT in our experiment are constructed such that a negative value responds to prejudice against the Black individuals. The Race IAT is negative on average for both races as shown by the distributions in Figure 1, this means that even the majority of Black individuals has some kind of prejudice against their own race. Although, the prejudice holds stronger for White individuals. The means from column (1) of Table 1 confirm this observation as the means of Race IAT for the White and Black subsample are equal to -0.354 and -0.119, respectively. Figure 2 shows that the academic prejudice towards Black individuals is nearly on the same level for both races as the distributions are nearly equal.

The last two columns of Table 1 show whether the means of the variables are significantly different between mixed and non-mixed rooms. The $p$-values in column (8) show that the differences in variable means are insignificant at 5% level. This indicates that the variables in Table 1 are well balanced between the different samples. Table A6 shows the summary statistics of the variables measured at the end of the academic year.

In Table 2, we do additional checks on the probability of being assigned to a mixed room. In Panel A, the coefficients of a regression which show the probability of being assigned to a mixed room are reported, the analysis includes the entire sample and the sub samples of White and Black students. It is clear from Panel A that the variables show no evidence of sorting, apart from the dummies Indian/Other and Coloured which are significant at 10 and 5 percent level respectively. This result is to be expected as students from least populated groups have automatically higher chances of getting in a room with someone of a different race. Panel B gives us the correlations between the likelihood of being in a mixed room and interracial attitudes. The analysis shows that these correlations are not significant. In Panel C, test for sorting is applied, where the probability of two individuals being in the same room is a function of distance between the two students. This results to the following model:

$$SameRoom_{ij} = \alpha + \beta|X_i - X_j| + \gamma|X_i + X_j| + \epsilon_{ij}, \tag{1}$$

where $SameRoom_{ij}$ equals one if the students $i$ and $j$ are in the same room. Then $X_i$ denotes the student's baseline values for the IATs and socioeconomic features. We adopt the approach of Caprettini (2020) and Fafchamps and Gubert (2007) to do the estimation. The estimated value of $\beta$ must be negative to have evidence for some kind of sorting, however in our case, we

find no evidence for sorting given the positive values of $\beta$ for differences in Race and Academic IAT.

Given the evidence from Tables 1 and 2, we are confident that the allocation of students was as good as random.

Table 2: Likelihood of being in a mixed room

| Sample: | Full sample | | Whites | | Blacks | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Panel A* | | | | | | |
| Race IAT | -0.038 | -0.021 | 0.075 | -0.002 | -0.068 | -0.023 |
| | (0.037) | (0.039) | (0.084) | (0.082) | (0.047) | (0.049) |
| Academic IAT | 0.036 | 0.037 | -0.019 | -0.016 | 0.057 | 0.020 |
| | (0.040) | (0.040) | (0.117) | (0.113) | (0.048) | (0.048) |
| White | -0.028 | -0.071 | | | | |
| | (0.124) | (0.126) | | | | |
| Coloured | 0.627 | 0.647 | | | | |
| | (0.234) | (0.256) | | | | |
| Indian/Other | 0.432 | 0.459 | | | | |
| | (0.239) | (0.262) | | | | |
| UCT admission score | -0.011 | -0.013 | 0.494 | 0.858 | -0.089 | -0.106 |
| | (0.446) | (0.421) | (1.214) | (1.254) | (0.520) | (0.494) |
| Foreign | 0.092 | 0.090 | 0.199 | 0.118 | 0.083 | 0.058 |
| | (0.078) | (0.073) | (0.198) | (0.196) | (0.090) | (0.084) |
| Private high school | -0.020 | -0.018 | -0.161 | -0.141 | 0.001 | 0.003 |
| | (0.042) | (0.041) | (0.112) | (0.120) | (0.050) | (0.049) |
| Wealth index | -0.016 | -0.014 | -0.031 | -0.041 | -0.013 | -0.007 |
| | (0.008) | (0.008) | (0.021) | (0.024) | (0.010) | (0.010) |
| Consumption | 0.026 | 0.017 | 0.030 | 0.039 | 0.028 | 0.021 |
| | (0.024) | (0.021) | (0.055) | (0.050) | (0.029) | (0.025) |
| $R^2$ | 0.232 | 0.266 | 0.214 | 0.367 | 0.037 | 0.143 |
| Observations | 499 | 499 | 117 | 117 | 332 | 332 |
| *Panel B* | | | | | | |
| Index of attitudinal measures | 0.011 | 0.014 | 0.050 | 0.042 | -0.004 | -0.007 |
| | (0.018) | (0.017) | (0.037) | (0.040) | (0.025) | (0.023) |
| $R^2$ | 0.238 | 0.268 | 0.241 | 0.390 | 0.031 | 0.137 |
| Observations | 455 | 455 | 112 | 112 | 295 | 295 |
| *Panel C* | | | | | | |
| Difference in Race IAT | | 0.000905 | | (0.000744) | | |
| Difference in Academic IAT | | 0.000575 | | (0.000747) | | |
| Difference in index of attitudinal measures | | 0.000308 | | (0.000348) | | |
| Difference in UCT admission score | | -0.000953 | | (0.000368) | | |
| Difference in wealth index | | -0.000030 | | (0.000168) | | |
| Difference in consumption | | -0.001334 | | (0.000588) | | |
| Difference in foreign | | -0.002945 | | (0.001808) | | |
| Difference in private high school | | -0.000794 | | (0.000685) | | |

*Notes*: In panels A and B the dependent variable is equal to one if roommate is of different race In Panel C the dependent variable is equal to one if two individual are in the same room. The standard errors are given in the parentheses.

We have three categories of dependent variables: the Race and Academic IATs, academic performance, and attitudinal and behavioral measures. The category of academic performance contains four variables: GPA, number of exams passed, eligible to continue and index of academic performance which are available at the end of the academic year. Note that GPA is standardized over the full sample and eligible to continue is a dummy. The index of academic performance

is constructed as the first principal component of the other three variables in the category of academic performance. Attitudinal and behavioral measures category consists again of four variables which are all indices that are constructed of 15 outcomes which were collected through the survey. First, index of friendship consists of the following variables: (i) how often the participant socialized with someone of different race last month, which is equal to 0 if never, 1 if once, 2 if 2-5 times, 3 if if 5-10 times and 4 if more than 10 times, (ii) last time the participant socialized with someone of other race, 0 if never, 1 if last year, 2 if last month, 3 if last week and 4 if yesterday, (iii) fraction of friends of different race, excluding the roommate, (iv) preferred number of individuals of different race in a leisure or academic group. Second, index of explicit attitudes consists of (i) the question, "In the last month, how often did you talk with any friends of yours about topics of discrimination, prejudice, and racial bias?" 0 if never, 1 if rarely, 2 if sometimes, 3 if most of the time and 4 if always, (ii) a dummy which specifies if the participant is comfortable with talking about race, (iii) a dummy for whether respondent does not agree that affirmative action in university admission should be abolished, (iv) dummy for whether the participant is willing to dance with someone of different race, (v) a dummy for whether the participant is willing to date someone of different race. Third, index of prosocial behavior includes (i) if the participant is a member of community service or volunteer organization, (ii) amount of money given to the charity past year, (iii) a dummy for whether the student cooperated in the prisoner's dilemma game at the end of the academic year, (iv) dummy for whether the participant believed that the partner would cooperate in the prisoner's dilemma game. Last, global index of social behavior is constructed of the first principal component of all 15 outcomes. The use of indices is of importance to avoid overrejection of the null hypothesis due to multiple inference, thus reducing the number of tests conducted (Anderson, 2008). Table 3 shows summary statistics of academic performance, attitudinal and behavioral measures. In general, White participants perform better academically than their Black peers. However, Black and White participants score similarly for the attitudinal and behavioral measures. This means that their social behavior against individuals of different races is nearly on the same level.

Table 3: Summary statistics of academic performance, attitudinal and behavioral measures

| | Full sample | | Mixed room | | Non-mixed room | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Mean | SD | Mean | SD | Mean | SD |
| *Panel A. Full sample* | | | | | | |
| GPA | -0.011 | 1.005 | 0.063 | 0.981 | -0.044 | 1.015 |
| Number of exams passed | 5.100 | 2.782 | 5.369 | 2.617 | 4.977 | 2.849 |
| Eligible to continue | 0.888 | 0.316 | 0.924 | 0.267 | 0.871 | 0.336 |
| Index of academic performance | 0.019 | 1.152 | 0.152 | 1.012 | -0.042 | 1.208 |
| Index of friendship | -0.876 | 1.144 | -0.347 | 1.194 | -1.110 | 1.041 |
| Index of explicit attitudes | -0.703 | 1.093 | -0.720 | 1.114 | -0.695 | 1.084 |
| Index of prosocial behavior | -0.711 | 1.071 | -0.724 | 1.084 | -0.705 | 1.067 |
| Global index of social behavior | -1.222 | 1.190 | -0.653 | 1.230 | -1.457 | 1.093 |
| *Panel B. Whites* | | | | | | |
| GPA | 0.588 | 0.868 | 0.438 | 1.019 | 0.663 | 0.778 |
| Number of exams passed | 6.341 | 2.206 | 6.026 | 2.019 | 6.500 | 2.289 |
| Eligible to continue | 0.932 | 0.253 | 0.949 | 0.223 | 0.923 | 0.268 |
| Index of academic performance | 0.646 | 0.816 | 0.520 | 0.909 | 0.709 | 0.764 |
| Index of friendship | -0.808 | 0.880 | -0.333 | 0.775 | -1.053 | 0.835 |
| Index of explicit attitudes | -1.068 | 1.179 | -1.039 | 1.220 | -1.083 | 1.166 |
| Index of prosocial behavior | -0.844 | 1.176 | -0.776 | 1.150 | -0.873 | 1.194 |
| Global index of social behavior | -1.329 | 1.013 | -0.699 | 0.817 | -1.604 | 0.972 |
| *Panel C. Blacks* | | | | | | |
| GPA | -0.234 | 0.951 | -0.117 | 0.823 | -0.268 | 0.984 |
| Number of exams passed | 4.617 | 2.845 | 5.000 | 2.828 | 4.506 | 2.845 |
| Eligible to continue | 0.867 | 0.340 | 0.920 | 0.273 | 0.852 | 0.356 |
| Index of academic performance | -0.223 | 1.170 | -0.024 | 0.924 | -0.281 | 1.228 |
| Index of friendship | -1.114 | 1.077 | -0.899 | 1.121 | -1.173 | 1.060 |
| Index of explicit attitudes | -0.564 | 1.010 | -0.586 | 1.029 | -0.558 | 1.006 |
| Index of prosocial behavior | -0.604 | 1.004 | -0.437 | 0.951 | -0.651 | 1.016 |
| Global index of social behavior | -1.410 | 1.082 | -1.201 | 1.039 | -1.465 | 1.089 |

# 3 Methodology

## 3.1 Econometric models

In order to assess the impact of being paired with a roommate from a different racial background on the outcomes we are interested in. Our dependent variables of interest are: the Race IAT and the indices of attitudinal and behavioral measures. The results for academic performance measures as the dependent variables are also included in this paper but we focus more on the effects of intergroup interaction on stereotyping and prejudice towards someone of different race. We estimate the following baseline model using OLS with standard errors clustered at the room level:

$$Y_{ijkt} = \alpha Y_{ijk0} + \beta MixRoom_{ik0} + \gamma Race_i + \lambda X_{ik0} + \mu X_{jk0} + \phi RaceGrp_i \times \delta_k + \epsilon_{ijkt}, \quad (2)$$

and for the attitudinal dependent variables of interest that are categorical an ordered logit model is applied:

$$Pr(Y_{ijkt} = y_c | Y_{ijk0}, MixRoom_{ik0}, Race_i, X_{ik0}, X_{jk0}, RaceGrp_i)$$
$$= F(\alpha Y_{ijk0} + \beta MixRoom_{ik0} + \gamma Race_i + \lambda X_{ik0} + \mu X_{jk0} + \phi RaceGrp_i \times \delta_k), \quad (3)$$

where we have $c$ categories and $F$ is the cumulative standard logistic distribution.

We estimate the models on the entire sample as well as separate analyses for Black and White participants. In these models $Y_{ijkt}$ represents the outcome which amounts to the dependent variables in the three categories mentioned in Section 2 for student $i$ paired with roommate $j$, in residence $k$ on time $t$, the follow-up interview, so $Y_{ijk0}$ is the same but at time 0, the baseline interview. $MixRoom_{ik0}$ is set to 1 if the student is assigned to a roommate of different race at the beginning of the academic year and 0 otherwise. $Race_i$ is a vector of race dummies which consists of categories representing different racial backgrounds, namely White, coloured, Indian, Asian, or other. The category of Black is treated as omitted category in this analysis. $X_{ik0}$ is the set of individual's baseline controls including gender, UCT admission score, household wealth, the student's monthly consumption expenditure, and a binary variable indicating whether the participant is from South Africa or not, then $X_{jk0}$ is the set of controls but of the roommate. In $RaceGrp_i$, we aggregate race groups into White, Black and a residual category as of the small number of participants from other race groups. Lastly, $\delta_k$ is the set of residence dummies and $\epsilon_{ijkt}$ is the error term.

In these models we want to examine the effects of $MixRoom_{ik0}$, thus $\beta$ is the coefficient of interest. A positive value for $\beta$ means reduction in prejudice towards the Black community due to being allocated to a room with someone of different race when our dependent variable is the Race/Academic IAT. Due to the construction of the IATs, the movements of IAT should be in the opposite directions, this means that for White students the $\beta$ should be positive and for Black students the $\beta$ must be negative to indicate a decrease in prejudice against the opposite race, for this reason we estimate models for both, the Black and White participants separately. When academic performance is the dependent variable, we also include a set of dummy variables that represents the program in which the student is enrolled. Also, for the academic, attitudinal and behavioral measures as dependent variable, we do not have the lagged dependent variables because that information is not available at the baseline.

For the calculation of the $p$-values, we use the resampling method for the family-wise error rate (FWER) with 10000 interactions designed for multiple hypothesis testing (Westfall and Young, 1993). This method decreases the Type I error so that we do not reject the null hypothesis too frequently when the null hypothesis is in fact true.

## 3.2 Mediation analysis

Mediation analysis helps us understand the process through which a treatment variable influences a dependent variable. The analysis centers on the use of intermediate variables, referred to as mediators, those mediators give us a deeper understanding about the relationship between the dependent and treatment variables. Baron and Kenny (1986) proposed a three step method of mediation analysis which is widely seen in the literature as the traditional method. The three step method is characterized by the following three equations:

$$Y = \beta_0 + \beta_1 D + \beta X + \epsilon \tag{4}$$

$$M = \beta_0 + \beta_2 D + \beta X + \epsilon \tag{5}$$

$$Y = \beta_0 + \beta_3 D + \beta_4 M + \beta X + \epsilon, \tag{6}$$

where $D$ is the binary treatment variable which is equal to 1 if a student shares the room with someone of different race and zero otherwise. $Y$ is the dependent variable representing the values for Race IATs and $M$ is the mediating variable represented by the attitudinal and behavioral measures. $X$ denotes the additional covariates like individual and roommate controls. Note, that in this section we omit variable indices in the notation for the ease of presentation. We will perform mediation analysis for the outcomes for which the main analyses shows an effect of mixed rooms, aiming at uncovering possible mediators. Baron and Kenny (1986) stated that in (4) $\beta_1$ should be statistically significant, however Shrout and Bolger (2002) argues that this assumption is too strong in situations where effect size of the treatment variable is expected to be small or when suppression of that treatment variable is plausible. According to Baron and Kenny (1986), $\beta_2$ in (5) should also be statistically significant, if not, the possibility of affecting $Y$ through $M$ is rather low. (6) includes the treatment variable and the mediator together, in this situation holds that if $\beta_3$ becomes insignificant (full mediation) or smaller than in the first equation (partial mediation), this suggests that mediating effect exists and thus some effect of $D$ on $Y$ operates through $M$. In this case, the effect of $D$ on $Y$ (direct effect) is denoted by $\beta_3$ and the effect of $D$ on $Y$ through $M$ (indirect effect) by $\beta_4\beta_2$.

The key problem of mediation analysis is that the relationship between our treatment and dependent variables might be confounded by an unobserved variable. It is plausible that during the experiment the size of that unobserved variable has changed. In this case, if this unobserved variable is not independent of our observed variable, then there is a possibility that the effect of treatment variable on the dependent variable is confounded by the unobserved variable. In this situation, mediating effects on the dependent variable might be falsely associated with the enhancement of our mediators, but in fact it is due the change of the unobserved variable (Heckman and Pinto, 2015). This problem is more present in the method of Baron and Kenny (1986) than the newly developed methods as it does not have clear assumptions about the confounding effects and that makes it more difficult to validify the estimates of the effects.

Traditional method of Baron and Kenny (1986) has more crucial constraints, it does not work properly on binary dependent variables and it is also not applicable when categorical variables are used. However, since the proposal of the traditional method invented by Baron and Kenny (1986) more advanced methods of mediation analysis were developed (MacKinnon et al., 2007). Causal mediation analysis is one of these methods, this method is more advanced as it allows for interaction between the treatment variable and the mediator. Ignoring this interaction in your model might give biased direct and indirect effects as result. Causal mediation analysis uses counterfactual framework to handle this problem where we have a new set of equations:

$$M = \beta_0 + \beta_1 D + \beta X + \epsilon \tag{7}$$

$$Y = \theta_0 + \theta_1 D + \theta_2 M + \theta_3 DM + \theta X + \epsilon, \tag{8}$$

where $DM$ is the new interaction. Note that with these two equations we let go of the assumption that $\beta_1$ in (4) should be significant (Valeri and Vanderweele, 2013). With the new set of equations we can estimate two kinds of effects, the natural direct effect ($NDE$) and natural indirect effect ($NIE$). This decomposition of effects is favourable in settings where the analysis of mediating effects is of interest (Nguyen et al., 2020). In this section, we are not much interested in the

direct effects since we do that already in Section 3.1. The two effects are denoted as:

$$NDE = E[Y(1, M(0)) - Y(0, M(0))]$$
$$NIE = E[Y(1, M(1)) - Y(1, M(0))],$$

where $NDE$ estimates the average effect of the treatment variable on the dependent variable and $NIE$ indicates the indirect effect on the dependent variable through the mediator (Valeri and Vanderweele, 2013). In this research, our main focus is estimating $NIE$ and examining its significance, as significance of this effect gives us more insight about the existence of mediating process between the treatment and dependent variable.

We need to write the model in reduced form to express the two effects in the form of the variables from equations (7) and (8), the reduced form is denoted as:

$$E[Y|M, X] = \theta_0 + \theta_1 D + \theta_2(\beta_0 + \beta_1 D + \beta X) + \theta_3 D(\beta_0 + \beta_1 D + \beta X) + \theta X$$
$$= \theta_0 + \theta_1 D + (\theta_2 + \theta_3 D)(\beta_0 + \beta_1 D + \beta X) + \theta X,$$

by fixing the values of our binary treatment variable, we obtain the following three expectations:

$$E[Y(1, M(1))] = \theta_0 + \theta_1 + (\theta_2 + \theta_3)(\beta_0 + \beta_1 + \beta X) + \theta X$$
$$E[Y(1, M(0))] = \theta_0 + \theta_1 + (\theta_2 + \theta_3)(\beta_0 + \beta X) + \theta X$$
$$E[Y(0, M(0))] = \theta_0 + \theta_2(\beta_0 + \beta X) + \theta X,$$

this gives us the two new expressions for the effects:

$$NDE = \theta_1 + \theta_3(\beta_0 + \beta X)$$
$$NIE = (\theta_2 + \theta_3)\beta_1.$$

Causal mediation analysis has its own assumptions to make sure that the effects mentioned above are correctly identified. These assumptions are:

1. no unmeasured confounding between the treatment and dependent variable;

2. no unmeasured confounding between the mediator and dependent variable;

3. no unmeasured confounding between the mediator and treatment variable;

4. no effect of the treatment variable on the confounding variables which affect the relationship between the mediator and the dependent variable.

In our study, assumptions 1 and 3 are satisfied because of the randomization of our treatment variable due to the random allocation of students shown in Section 2 (Imai et al., 2010).

Figure 3: DAG of the mediation process
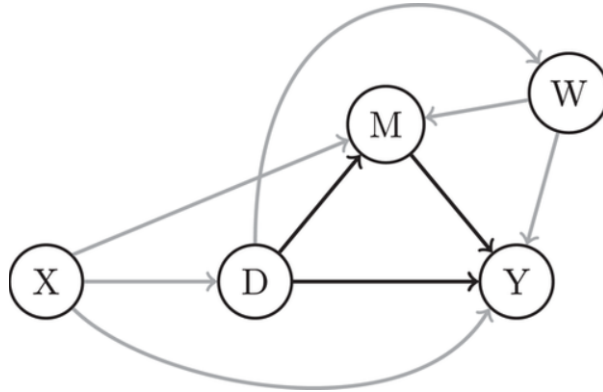


Figure 3 is the directed acyclic graph (DAG) of the mediation process, where $D$, $M$ and $Y$ represent the treatment variable, the mediator and the dependent variable respectively. $X$ represents the pre-treatment confounders while $W$ represents the post-treatment confounders (Celli, 2022). With the use of DAG, we observe more clearly how assumptions 2 and 4 control the causal processes within causal mediation analysis. We should control for the presence of post-treatment confounders to satisfy assumption 2. For assumption 4 to hold, the effect of the treatment variable on the post-treatment confounders ($D \rightarrow W$) should not exist. In practice, we should find all the unmeasured confounding variables and include them as the covariates in the analysis to make the assumptions hold. However, in this research we use a restricted dataset and thus we cannot know for sure that all the confounding variables are included. This is an important limitation of our study and it should be examined more thoroughly in future research.

Finally, we do mediation analysis with multiple mediators included in the model. With multiple mediators we get the following set of equations for $i = 1, ..., K$:

$$M^{(i)} = \beta_0^{(i)} + \beta_1^{(i)} D + \beta^{(i)} X + \epsilon \tag{9}$$

$$Y = \theta_0 + \theta_1 D + \theta_2^{(i)} M^{(i)} + \theta X + \epsilon \tag{10}$$

where we follow the estimation procedure stated by Preacher and Hayes (2008). Here the focus is on estimating the indirect effects, thus the effects on $Y$ through the mediators $M^{(i)}$. In this case, the indirect effect of $i$th mediator is equal to $\beta_1^{(i)} \theta_2^{(i)}$, then the sum of all indirect effects for $i = 1, ..., K$ is the total indirect effect. Note that the four before mentioned assumptions do not need to be satisfied as this approach with multiple mediators is more conservative and it does not take the interaction between the treatment variable and mediator into account.

## 4    Results

This section is split into two parts. In the first part, we discuss the main OLS estimation results of the models proposed in Section 3.1. Section 4.2 presents the results obtained by mediation analysis as shown in Section 3.2.

## 4.1 Main estimation results

In Table 4, we see the results of the regressions where the Academic and Race IAT are the outcomes of interest. Individual and roommate controls are included in each regression of Table 4. The standard errors clustered at the room level are shown in the parentheses and the $p$-values are included in square brackets. Column (1) in Table 4 shows significant positive effects of living in mixed room on the Race IAT for the White subsample. Living in a mixed room increases the Race IAT by 0.316, for White students, and the effect is also significant at 5% level. This significance complements the results of Laar et al. (2005) where also is shown that roommate contact decreases the level of prejudice towards a community of different race. However, the effect of living in a mixed room on Race IAT is insignificant at 5% level for the Black subsample as the Race IAT only decreases by 0.094. This result is not surprising as Pettigrew and Tropp (2006) show with meta-analysis that the effects of intergroup contact are lower for groups of lower status. The effects of living in a mixed room on the Academic IAT are insignificant at 5% level as the Academic IAT only decreases/increases by a value that is close to zero for both races as shown in columns (3) and (4). Thus, exposure to someone of different race does not significantly decrease nor increase stereotyping based on academic ability.

Table 4: Effect of living with someone of different race on Race and Academic IAT

| Dependent variable: | Race IAT | | Academic IAT | |
|---|---|---|---|---|
| Sample: | Whites | Blacks | Whites | Blacks |
| | (1) | (2) | (3) | (4) |
| Mixed room | 0.316 | -0.094 | 0.014 | -0.009 |
| | (0.140) | (0.069) | (0.107) | (0.059) |
| | [0.047] | [0.361] | [0.990] | [0.889] |
| | | | | |
| Mean of dep.var. in same race room | -0.423 | -0.097 | -0.293 | -0.185 |
| $R^2$ | 0.217 | 0.097 | 0.266 | 0.087 |
| Observations | 117 | 332 | 117 | 332 |

Table B1 of the Appendix is based on the same analysis as Table 4, excluding roommate controls. This gives insignificant results at 5% level for both IATs and samples, and the value of the coefficient on Mixed room in column (1) decreases by one-third. Table B2 of the Appendix shows the estimated effects of roommate's race on the IATs. We see an increase in Race IAT for White participants and a decrease for Black participants that live with someone of different race. These results complement the results given in Table 4. Table B2 also shows that we cannot reject the hypothesis that the estimates of the coefficients are equal between the races as the effects are insignificant at 5% level.

Table 5 shows the results of regressions on the outcomes based on academic performance. Again, standard errors are shown in the parentheses and the $p$-values in square brackets. Individual and roommate controls are also included together with the set of dummies representing the program in which the student enrolled. Panel A of Table 5 shows the effects of living in mixed room on academic performance for the White subsample which are insignificant at 5% level. The coefficients of Eligible to continue and Index of academic performance only increase by 0.050 and 0.010, respectively. While, the GPA and the Number of exams passed decrease by 0.028 and 0.168, respectively. This indicates that living in a mixed room has no significantly

positive nor negative effects on the academic performance of White students. Panel B shows the same effects but for the Black subsample. The effects of living with someone of different race on the academic performance measures are significant at 5% level. Whereas, GPA, Number of exams passed, Eligible to continue and Index of academic performance increase by 0.257, 0.645, 0.152 and 0.443, respectively. This indicates significantly positive impact on the academic performance of Black students due to living in a mixed room. Panel C shows the effects for the full sample. We see positive significant effects at 5% level of living in a mixed room on Number of exams passed and Eligible to continue. These significant effects increase the Number of exams passed and Eligible to continue by 0.447 and 0.105, respectively. Living in a mixed room increases the GPA by 0.147, however the effect is insignificant at 5% level. This suggests that in general the academic performance improves for the full sample due to the effects of living in a mixed room. The effect of living in mixed room on Index of academic performance is both for the Black subsample and full sample significantly higher than for the White subsample which is close to zero as shown in column (4).

Table 5: Effect of living with someone of different race on academic performance

| Dependent variable: | GPA | Number of exams passed | Eligible to continue | Index of academic performance |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Mixed room | -0.028 | -0.168 | 0.050 | 0.010 |
| | (0.243) | (0.523) | (0.066) | (0.259) |
| | [0.922] | [0.922] | [0.782] | |
| UCT admission score | 10.812 | 10.553 | -0.453 | 7.702 |
| | (2.687) | (5.881) | (0.634) | (2.090) |
| Roommate's UCT admission score | -0.683 | -1.544 | 0.035 | -0.640 |
| | (0.746) | (1.131) | (0.171) | (0.675) |
| | | | | |
| Mean of dependent variable in same race room | 0.663 | 6.500 | 0.923 | 0.709 |
| $R^2$ | 0.576 | 0.727 | 0.436 | 0.426 |
| Observations | 117 | 117 | 117 | 117 |
| *Panel B. Blacks* | | | | |
| Mixed room | 0.257 | 0.645 | 0.152 | 0.443 |
| | (0.125) | (0.245) | (0.040) | (0.141) |
| | [0.041] | [0.015] | [0.000] | |
| UCT admission score | 5.505 | 11.441 | 0.738 | 6.158 |
| | (1.392) | (2.841) | (0.469) | (1.618) |
| Roommate's UCT admission score | 0.029 | 0.145 | 0.030 | 0.078 |
| | (0.512) | (0.641) | (0.107) | (0.520) |
| | | | | |
| Mean of dependent variable in same race room | -0.268 | 4.506 | 0.852 | -0.281 |
| $R^2$ | 0.386 | 0.715 | 0.400 | 0.447 |
| Observations | 332 | 332 | 332 | 332 |
| *Panel C. Full sample* | | | | |
| Mixed room | 0.147 | 0.447 | 0.105 | 0.289 |
| | (0.102) | (0.204) | (0.031) | (0.113) |
| | [0.147] | [0.050] | [0.003] | |
| UCT admission score | 8.237 | 12.750 | 0.840 | 8.105 |
| | (1.204) | (2.346) | (0.387) | (1.320) |
| Roommate's UCT admission score | -0.098 | -0.129 | 0.045 | -0.028 |
| | (0.334) | (0.474) | (0.078) | (0.342) |
| | | | | |
| Mean of dependent variable in same race room | -0.044 | 4.977 | 0.871 | -0.042 |
| $R^2$ | 0.424 | 0.709 | 0.325 | 0.447 |
| Observations | 499 | 499 | 498 | 498 |

Table B3 provides the same analysis as the table above but without roommate controls. The results of Table B3 are comparable to the results of Table 5 as the significant results stay significant even after excluding roommate controls. Table B4 shows the effects on academic performance for the second academic year. Students are free to leave the room and live somewhere else after the first year, so it is interesting to evaluate if the effects of living with someone of different race persist in the second year. In general, only the effects on GPA fade away while the effects on Number of exams passed and Eligible to continue stay present. Table B5 gives results which can explain why the significant effects on academic performance of the Black subsample does not necessarily come from the fact that Black students are paired with non-Black students who have stronger academic backgrounds, thus exposure to someone performing academically better would generate positive effects on academic performance instead of exposure to someone of different race. Columns (1) and (2) of Table B5 show that the interaction of Mixed room with

Same faculty is insignificant. Columns (3) and (4) show that the interaction with Same course is also insignificant. Students who live with someone of different race are also not inclined to study more with a roommate than students who live with someone of their own race as show in columns (5) and (6). These results indicate that the increase in academic performance of Black students does not stem from their roommate's academic ability.

Table 6 shows the effects of living with someone of different race on four indices related to attitudinal and behavioral measures explained in Section 2. Individual and roommate controls are again included in the analysis. In Panel A, we find the effects of Mixed room on the indices for the White subsample. The effects on the Index of friendship and Index of explicit attitudes are significant at 5% level. Meaning that White students who shared a room with someone of different race are more eager to partake in an interracial friendship as the Index of friendship increases by 0.477. Sharing a room with someone of different race also improved their interracial attitudes as shown by an increase of 0.670 for the Index of explicit attitudes. The effect on Index of prosocial behavior is only significant at 10% level and the index increases by 0.438. Thus, we find an improvement in White students social behavior and attitudes towards individuals of different race. Panel B shows the effects for the Black sample. We find no effects of Mixed room on the indices that are significant at 5% level for the Black subsample. The effects on Index of friendship and Index of prosocial behavior are also nearly half the size of the effects for White subsample as the indices increase by 0.254 and 0.229, respectively. The effect on Index of explicit attitudes is even smaller which only increases by 0.072. These findings complement the result obtained from Table 4 where no significant effects were found on the Race IAT for the Black subsample. For the full sample in Panel C, we again find significant effects at 5% level of sharing a room with someone of different race on Index of friendship and Index of explicit attitudes. Although, the effects are not stronger than for the White subsample as Index of friendship and Index of explicit attitudes increase by 0.340 and 0.318, respectively. The effect on Index of prosocial behavior is not significant at 10% level when compared to the White subsample as the index only increases by 0.169 which is almost three times smaller than for the Whites. Thus, in general, living in a mixed room improves students views and attitudes on interracial contact.

Table 6: Effect of living with someone of different race on attitudinal and behavioral measures

| Dependent variable: | Index of friend-ship | Index of explicit attitudes | Index of prosocial behavior | Global index of social behavior |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Mixed room | 0.477 | 0.670 | 0.438 | 0.760 |
| | (0.187) | (0.261) | (0.250) | (0.294) |
| | [0.044] | [0.044] | [0.088] | |
| | | | | |
| Mean of dependent variable in same race room | -1.053 | -1.643 | -0.873 | -1.604 |
| $R^2$ | 0.505 | 0.369 | 0.374 | 0.458 |
| Observations | 94 | 106 | 94 | 79 |
| *Panel B. Blacks* | | | | |
| Mixed room | 0.254 | 0.072 | 0.229 | 0.196 |
| | (0.170) | (0.166) | (0.165) | (0.212) |
| | [0.368] | [0.664] | [0.368] | |
| | | | | |
| Mean of dependent variable in same race room | -1.173 | -0.565 | -0.651 | -1.465 |
| $R^2$ | 0.155 | 0.068 | 0.099 | 0.149 |
| Observations | 275 | 299 | 253 | 203 |
| *Panel C. Full sample* | | | | |
| Mixed room | 0.340 | 0.318 | 0.169 | 0.439 |
| | (0.128) | (0.126) | (0.138) | -0.150 |
| | [0.030] | [0.030] | [0.230] | |
| | | | | |
| Mean of dependent variable in same race room | -1.110 | -0.813 | -0.705 | -1.457 |
| $R^2$ | 0.317 | 0.186 | 0.168 | 0.321 |
| Observations | 411 | 453 | 388 | 315 |

Tables B6, B7 and B8 of the Appendix show the effects of Mixed room on the measures from which the indices are made and Table B9 shows the same analysis as Table 6 but without missing values.

Table A1 shows the effects of Mixed room on three different outcomes. In Panel A, we find no significant effects of living with someone of different race on the student's choice of staying in residence during the second academic year. Panel B shows no significant effects on student's decision to stay in residence and mixed room. Last, Panel C shows no significant effects on student's decision of staying with the same roommate on campus during the second year.

## 4.2 Mediation analysis results

This section shows results of mediation analysis on Race IAT for the White sample. We use the dependent variables from Table 6 as the possible mediators proposed by Corno et al. (2022). The authors perform the analysis characterized by Equation (7) in Section 3.2 for which the results are found in Table 6. We perform analysis on these possible mediators to examine if these variables have mediating effects between Mixed room and Race IAT.

Table 7 shows the results of Causal mediation analysis in Panel A, where we perform the mediation analysis on each possible mediator separately. In Panel B, we find the results of performing mediation analysis on the possible mediators together in one model. We again allow for individual and roommate controls in the models. Standard errors are clustered at room level

and are shown in the parentheses, and the $P$-values are between the square brackets. Panel A shows the natural indirect effect ($NIE$), the natural direct effect ($NDE$) and the proportion, where proportion equals the fraction of $NIE$ in the total effect ($NIE+NDE$). $NIE$ is the effect of interest when we want to find out if mediating effect through the mediators of Table 7 exists. In Panel A, $NIE$ is insignificant at 5% level for all possible mediators as the magnitudes of effect on Index of friendship, Index of prosocial behavior, and Global index of prosocial behavior are close to zero. $NIE$ is larger on the Index of explicit attitudes as its magnitude equals 0.082, however this is not enough to make the effect significant. The insignificance at 5% level of the proportions follows from the insignificance of indirect effects. Thus, we find no mediating effects through the indices of attitudinal and behavioral measures as the indirect effects are negligible. The magnitude of $NDE$ on Index of friendship, Index of prosocial behavior and Global index of social behavior equals 0.350, 0.307 and 0.475, respectively. The effect on these three indices is also significant at 5% level. However, $NDE$ on Index of explicit attitudes is insignificant at 5% level and its magnitude equals 0.232. These outcomes comply with the results from Table 4 where we have shown that there is a significant effect of Mixed room on Race IAT for the White sample. Panel B shows that there is also no mediating effect through all the possible mediators together as we again find an indirect effect that is equal to 0.050 which is insignificant at 5% level.

Table 7: Mediation analysis for the White sample

| Mediator: | Index of friend-ship | Index of explicit attitudes | Index of prosocial behavior | Global index of social behavior |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Single mediator model* | | | | |
| Natural indirect effect | 0.005 | 0.082 | 0.026 | 0.008 |
| | (0.105) | (0.069) | (0.072) | (0.136) |
| | [0.963] | [0.238] | [0.716] | [0.953] |
| Natural direct effect | 0.350 | 0.232 | 0.307 | 0.475 |
| | (0.164) | (0.147) | (0.139) | (0.193) |
| | [0.033] | [0.114] | [0.027] | [0.014] |
| Proportion | 0.014 | 0.261 | 0.078 | 0.017 |
| | (0.295) | (0.247) | (0.208) | (0.281) |
| | [0.963] | [0.291] | [0.707] | [0.953] |
| | | | | |
| Observations | 94 | 106 | 94 | 79 |
| *Panel B. Multiple mediators model* | | | | |
| Indirect effect | 0.050 | | | |
| | (0.079) | | | |
| | [0.522] | | | |
| | | | | |
| Observations | 79 | | | |

The results of mediation analysis for the Black subsample and full sample are shown in Table C1 of the Appendix. These results also show no evidence of mediating effects of the indices. For completeness, we also show the results of traditional mediation analysis in Table C2. We find no sign of mediating effects with this method as indirect effects for all samples are insignificant at 5% level.

In sum, we find no mediating effects through the indices structured from attitudinal and behavioral measures which Corno et al. (2022) proposed as possible mediators. The analysis is done using a small sample of observations which may lead to low power to identify mediating effects. However, the study of Fritz and MacKinnon (2007) on required sample size for finding mediating effects shows that 34.39% from the total of 166 articles uses a sample size between 51 and 150 for mediation analysis. Thus, our small sample size is not unusual in the literature of mediation analysis. Nevertheless, interpretation of our results should bear in mind this limitation.

In this study, we presume that the assumptions of causal mediation analysis shown in 3.2 are satisfied. However, this presumption is strong and more research on the validity of this assumptions is needed in the future to confirm our results.

## 5    Conclusion

This study exploits the policy of University of Cape Town (UCT) where first year students who are willing to live on campus are randomly assigned to a room in a residence on campus. We focus on a sample of students who share a room, so that we can examine the effects of students sharing a room with someone of different race on prejudice against the individuals of that race. We do this by analyzing the results of implicit association tests (IATs) and surveys at the beginning and at the end of the 2012 academic year which were conducted by Corno et al. (2022). In this paper, we also want to examine the effect of living in a mixed room on the academic performance of students. Thus, we analyze multiple measures related to academic performance at the end of academic year to find differences between students who lived in a mixed room and those who did not. To examine if living in a mixed room influences the students views and behavior toward the individuals of different race, we analyze the effects on attitudinal and behavioral measures. Ultimately, our objective is to attain a more comprehensive understanding of the underlying causal processes linking living in a mixed room and prejudice. We do this by applying mediation analysis to examine whether attitudinal and behavioral measures mediate the effects of living in a mixed room on prejudice.

The results indicate significant reduction in prejudice and a significant improvement in attitudes and behavior against Black individuals for the White participants. For the Black participants, there is a significant improvement in the academic performance. Finally, Mediation analysis finds no evidence of mediating effects through the indices derived from attitudinal and behavioral measures. Thus, we only find direct effects of living with someone of different race on measures of prejudice. Although, more research on other possible mediators is needed. Blascovich et al. (2001) show that intergroup contact with Blacks significantly reduces anxiety towards that race for the Whites. In addition, Pettigrew and Tropp (2008) find with meta-analysis of more than 500 studies that anxiety levels have significant mediating effects between interracial contact and prejudice. Increase in knowledge about the other race and increase in empathy also show mediating effects but of lesser strength than anxiety.

During this research we make extensive use of the IATs as it makes it possible to uncover unconscious prejudice among the participants. However, IATs have their own limitations, one limitation that may be relevant to this research is that with IATs, associations between objects

are measured. For example, measuring how a student associates a Black individual with trust-worthiness. However, such associations do not always translate into beliefs of the person who took the IAT. This is because beliefs are more complex and consist of multiple associations. However, IATs can be applied as an indirect indication on presence of beliefs (Houwer, 2002).

The use of mediation analysis also has its own limitations. First, we assume that all four assumptions for causal mediation analysis are satisfied. However, only two assumptions are satisfied with clear certainty due to the random allocation of students to the rooms at campus. The remaining two assumptions are satisfied if we contain and control all possible confounders in the analysis. In our study however, we are not completely certain if all those confounders are included in the analysis. This is why mediation analysis is unconventional in economic research as it is difficult to perform controlled research for economic purposes. Second, our analysis is limited by the number observations.

This study complements current literature on positive effects of intergroup contact. It provides new insights to the South African government on tackling prejudice and discrimination in their society. Our study focuses on the effects of intergroup contact on the students who are the future of South Africa. By encouraging intergroup contact between the students, the government can reduce prejudice and stereotyping in the future society, assuming that the positive effects of interracial contact will not strongly diminish after finishing the university. However, this is a strong assumption and more research is needed on the topic of duration of positive effects of intergroup contact. In the future, it would be also interesting to examine the effects of intergroup contact in primary and secondary school by allocating children randomly into mixed race classes.

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# A    Appendix

In this part of the Appendix, we show tables related to the randomization process. We also show additional information about the students at the beginning of second academic year.

In Tables A4 and A5, we find that Race IAT is positively correlated with the belief that your partner will cooperate in prisoner dilemma game and with the index of attitudinal attitudes for the White participants. Note that columns (3) and (6) of Table A4 contain individual controls and this also holds for the columns (2) and (4) of Table A5. Table A7 shows the $p$-values after allocating the students randomly a 10000 times. The estimates from column (3) are calculated with roommate controls in the model and the estimates from column (1) without. We apply roommate and individual controls in columns (4), (5) and (6) of Table A8, columns (1), (2) and (3) are without roommate controls.

Table A1: Choice of residence at the beginning of second academic year

| Sample: | Whites | Blacks | Full sample |
|---|---|---|---|
| | (1) | (2) | (3) |
| *Panel A. Still in residence in year 2* | | | |
| Mixed room | 0.014 | 0.061 | 0.073 |
| | (0.110) | (0.055) | (0.048) |
| | | | |
| Mean of dependent variable in same race room | 0.744 | 0.786 | 0.763 |
| $R^2$ | 0.134 | 0.084 | 0.118 |
| Observations | 117 | 332 | 499 |
| *Panel B. Still in residence and in mixed room in year 2* | | | |
| Mixed room | 0.084 | 0.009 | 0.039 |
| | (0.058) | (0.028) | (0.029) |
| | | | |
| Mean of dependent variable in same race room | 0.013 | 0.023 | 0.020 |
| $R^2$ | 0.158 | 0.056 | 0.052 |
| Observations | 117 | 332 | 499 |
| *Panel C. Still in residence and same roommate in year 2* | | | |
| Mixed room | 0.038 | 0.023 | 0.019 |
| | (0.037) | (0.026) | (0.027) |
| | | | |
| Mean of dependent variable in same race room | 0.026 | 0.027 | 0.026 |
| $R^2$ | 0.103 | 0.053 | 0.037 |
| Observations | 117 | 332 | 499 |

## Table A2: Correlation of attrition

Dependent variable = 1 if respondent participated in follow-up survey

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Mixed room | -0.009 | | | -0.007 | 0.004 | -0.009 | -0.011 |
| | (0.043) | | | (0.044) | (0.044) | (0.043) | (0.043) |
| Race IAT | | 0.005 | | 0.002 | | 0.003 | |
| | | (0.031) | | (0.036) | | (0.036) | |
| Academic IAT | | | 0.023 | | 0.002 | | 0.022 |
| | | | (0.031) | | (0.036) | | (0.035) |
| Race IAT x Mixed room | | | | 0.010 | | | |
| | | | | (0.066) | | | |
| Academic IAT x Mixed room | | | | | 0.066 | | |
| | | | | | (0.065) | | |
| White x Race IAT | | | | | | 0.047 | |
| | | | | | | (0.076) | |
| Coloured x Race IAT | | | | | | -0.201 | |
| | | | | | | (0.185) | |
| Indian/Other x Race IAT | | | | | | -0.022 | |
| | | | | | | (0.209) | |
| White x Acamdemic IAT | | | | | | | 0.005 |
| | | | | | | | (0.075) |
| Coloured x Acamdemic IAT | | | | | | | 0.104 |
| | | | | | | | (0.156) |
| Indian/Other x Acamdemic IAT | | | | | | | -0.090 |
| | | | | | | | (0.108) |
| White | -0.474 | -0.470 | -0.491 | -0.467 | -0.522 | -0.450 | -0.410 |
| | (0.249) | (0.252) | (0.252) | (0.251) | (0.258) | (0.269) | (0.270) |
| Coloured | -0.123 | -0.128 | -0.135 | -0.119 | -0.125 | -0.171 | -0.041 |
| | (0.144) | (0.147) | (0.149) | (0.146) | (0.152) | (0.157) | (0.171) |
| Indian/Other | 0.043 | 0.041 | 0.031 | 0.048 | 0.038 | 0.030 | 0.060 |
| | (0.117) | (0.116) | (0.117) | (0.119) | (0.125) | (0.165) | (0.121) |
| Female | -0.138 | -0.140 | -0.139 | -0.137 | -0.137 | -0.137 | -0.136 |
| | (0.054) | (0.054) | (0.053) | (0.055) | (0.055) | (0.055) | (0.055) |
| UCT admission score | 0.332 | 0.333 | 0.351 | 0.334 | 0.348 | 0.291 | 0.335 |
| | (0.378) | (0.379) | (0.381) | (0.380) | (0.382) | (0.381) | (0.383) |
| Foreign | 0.091 | 0.090 | 0.090 | 0.090 | 0.095 | 0.095 | 0.094 |
| | (0.057) | (0.056) | (0.057) | (0.057) | (0.057) | (0.057) | (0.057) |
| Private high school | -0.026 | -0.026 | -0.026 | -0.027 | -0.026 | -0.028 | -0.027 |
| | (0.035) | (0.036) | (0.036) | (0.036) | (0.036) | (0.036) | (0.036) |
| Wealth index | -0.003 | -0.003 | -0.003 | -0.003 | -0.003 | -0.003 | -0.004 |
| | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) |
| Consumption | -0.046 | -0.046 | -0.046 | -0.046 | -0.046 | -0.046 | -0.046 |
| | (0.024) | (0.024) | (0.024) | (0.024) | (0.024) | (0.024) | (0.024) |
| | | | | | | | |
| Mean of dep.var | 0.804 | 0.804 | 0.804 | 0.804 | 0.804 | 0.804 | 0.804 |
| $R^2$ | 0.126 | 0.126 | 0.126 | 0.126 | 0.128 | 0.129 | 0.128 |
| Observations | 621 | 621 | 621 | 621 | 621 | 621 | 621 |

Table A3: Our sample compared to the rest of UCT students

| | Our sample | | Students in our residences (single & double rooms) not in the sample | | | All first year students (residence & non residence) not in the sample | | | All students in all years (residence and non residence) not in the sample | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean (1) | N | Mean (2) | P-value (2)-(1) | N | Mean (3) | P-value (3)-(1) | N | Mean (4) | P-value (4)-(1) |
| *Panel B: Black* | | | | | | | | | | | |
| Female | 332.000 | .690 | 864.000 | .688 | .940 | 1774.000 | .491 | 0 | 3191.000 | .502 | 0 |
| UCT admission score | 326.000 | 452.344 | 852.000 | 449.493 | .477 | 1750.000 | 451.995 | .922 | 2511.000 | 451.027 | .721 |
| Foreign | 332.000 | .120 | 865.000 | .074 | .011 | 1774.000 | .074 | .004 | 3194.000 | .035 | 0 |
| Home language: English | 332.000 | .569 | 853.000 | .556 | .672 | 1751.000 | .527 | .153 | 2512.000 | .623 | .057 |
| Home language: Isizulu | 332.000 | .081 | 853.000 | .110 | .141 | 1751.000 | .112 | .098 | 2512.000 | .046 | .005 |
| Home language: Isixhosa | 332.000 | .102 | 853.000 | .095 | .697 | 1751.000 | .112 | .612 | 2512.000 | .053 | 0 |
| *Panel C: White* | | | | | | | | | | | |
| Female | 117.000 | .675 | 444.000 | .707 | .502 | 844.000 | .495 | 0 | 1845.000 | .517 | .001 |
| UCT admission score | 115.000 | 487.330 | 441.000 | 480.658 | .243 | 836.000 | 481.425 | .26 | 1199.000 | 435.692 | 0 |
| Foreign | 117.000 | .068 | 443.000 | .047 | .363 | 842.000 | .043 | .215 | 1842.000 | .086 | .501 |
| Home language: English | 117.000 | .880 | 444.000 | .921 | .165 | 840.000 | .931 | .052 | 1202.000 | .618 | 0 |
| Home language: Afrikaans | 117.000 | .060 | 444.000 | .056 | .884 | 840.000 | .050 | .652 | 1202.000 | .024 | .024 |

Table A4: Correlations of Race IAT: Prisoner dilemma

| | Whites | | | Blacks | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Dep.Var* | Belief partner will cooperate in prisoner dilemma | | | | | |
| Race IAT | 0.172 | 0.211 | 0.178 | -0.082 | -0.088 | -0.086 |
| | (0.082) | (0.088) | (0.097) | (0.054) | (0.059) | (0.061) |
| Index of friendship | | 0.035 | 0.019 | | 0.004 | 0.019 |
| | | (0.058) | (0.058) | | (0.026) | (0.027) |
| | | | | | | |
| $R^2$ | 0.031 | 0.052 | 0.198 | 0.007 | 0.008 | 0.032 |
| Observations | 115 | 92 | 92 | 342 | 283 | 283 |
| *Dep.Var* | Cooperate in prisoner dilemma | | | | | |
| Race IAT | 0.051 | 0.155 | 0.129 | -0.051 | -0.010 | -0.010 |
| | (0.090) | (0.101) | (0.089) | (0.054) | (0.061) | (0.063) |
| Index of friendship | | 0.032 | 0.049 | | 0.004 | 0.009 |
| | | | | | | |
| $R^2$ | 0.003 | 0.029 | 0.342 | 0.003 | 0.000 | 0.038 |
| Observations | 115 | 92 | 92 | 342 | 283 | 283 |

Table A5: Correlations of Race IAT: Social indices

| | Whites | | Blacks | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Dep.Var* | Index of attitudinal measures | | | |
| Race IAT | 0.209 | 0.218 | 0.051 | 0.040 |
| | (0.230) | (0.238) | (0.136) | (0.143) |
| | | | | |
| $R^2$ | 0.009 | 0.162 | 0.001 | 0.034 |
| Observations | 107 | 107 | 310 | 310 |
| *Dep.Var* | Index of friendship | | | |
| Race IAT | -0.029 | -0.093 | 0.032 | 0.007 |
| | (0.182) | (0.206) | (0.118) | (0.118) |
| | | | | |
| $R^2$ | 0.000 | 0.062 | 0.000 | 0.070 |
| Observations | 95 | 95 | 284 | 284 |

Table A6: Summary statistics at the end of the academic year

|  | Full sample | | Mixed room | | Non-Mixed room | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Mean | Std. Dev | Mean | Std. Dev | Mean | Std. Dev |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| *Panel A. Full sample* | | | | | | |
| Race IAT | -0.205 | 0.502 | -0.263 | 0.488 | -0.178 | 0.508 |
| Academic IAT | -0.215 | 0.451 | -0.228 | 0.443 | -0.209 | 0.455 |
| UCT admission score | 0.463 | 0.048 | 0.466 | 0.050 | 0.462 | 0.048 |
| Wealth index | 0.024 | 2.122 | 0.045 | 1.890 | 0.014 | 2.223 |
| Consumption | 0.926 | 0.847 | 1.021 | 0.929 | 0.882 | 0.804 |
| Foreign | 0.112 | 0.316 | 0.140 | 0.348 | 0.099 | 0.300 |
| Private high school | 0.601 | 0.490 | 0.618 | 0.487 | 0.594 | 0.492 |
| Female | 0.671 | 0.470 | 0.656 | 0.477 | 0.678 | 0.468 |
| GPA | -0.011 | 1.005 | 0.063 | 0.981 | -0.044 | 1.015 |
| *Panel B. Whites* | | | | | | |
| Race IAT | -0.382 | 0.510 | -0.299 | 0.477 | -0.423 | 0.523 |
| Academic IAT | -0.310 | 0.465 | -0.345 | 0.404 | -0.293 | 0.495 |
| UCT admission score | 0.487 | 0.039 | 0.487 | 0.042 | 0.487 | 0.038 |
| Wealth index | 0.838 | 1.804 | 0.459 | 1.295 | 1.028 | 1.991 |
| Consumption | 1.182 | 0.912 | 1.181 | 1.007 | 1.183 | 0.868 |
| Foreign | 0.068 | 0.253 | 0.103 | 0.307 | 0.051 | 0.222 |
| Private high school | 0.744 | 0.439 | 0.692 | 0.468 | 0.769 | 0.424 |
| Female | 0.675 | 0.470 | 0.641 | 0.486 | 0.692 | 0.465 |
| GPA | 0.588 | 0.868 | 0.438 | 1.019 | 0.663 | 0.778 |
| *Panel C. Blacks* | | | | | | |
| Race IAT | -0.124 | 0.487 | -0.214 | 0.495 | -0.097 | 0.482 |
| Academic IAT | -0.191 | 0.441 | -0.210 | 0.445 | -0.185 | 0.441 |
| UCT admission score | 0.453 | 0.048 | 0.451 | 0.050 | 0.453 | 0.047 |
| Wealth index | -0.380 | 2.051 | -0.521 | 1.580 | -0.339 | 2.170 |
| Consumption | 0.809 | 0.800 | 0.894 | 0.901 | 0.784 | 0.769 |
| Foreign | 0.120 | 0.326 | 0.147 | 0.356 | 0.113 | 0.317 |
| Private high school | 0.536 | 0.499 | 0.533 | 0.502 | 0.537 | 0.500 |
| Female | 0.690 | 0.463 | 0.733 | 0.445 | 0.677 | 0.469 |
| GPA | -0.234 | 0.951 | -0.117 | 0.823 | -0.268 | 0.984 |

Table A7: Probability of being in a mixed room at baseline

| Dependent variable = 1 if roommate of a different race at baseline | Estimates | Simulated P-value | Estimates | Simulated P-value |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Race IAT | -0.038 | 0.209 | -0.021 | 0.339 |
| | (0.037) | | (0.039) | |
| Academic IAT | 0.036 | 0.788 | 0.037 | 0.796 |
| | (0.040) | | (0.040) | |
| White | -0.028 | 0.304 | -0.071 | 0.210 |
| | (0.124) | | (0.126) | |
| Coloured | 0.627 | 0.956 | 0.647 | 0.963 |
| | (0.234) | | (0.256) | |
| Indian/Other | 0.432 | 0.622 | 0.459 | 0.697 |
| | (0.239) | | (0.262) | |
| UCT admission score | -0.011 | 0.505 | -0.013 | 0.496 |
| | (0.446) | | (0.421) | |
| Foreign | 0.092 | 0.898 | 0.090 | 0.890 |
| | (0.078) | | (0.073) | |
| Private high school | -0.020 | 0.289 | -0.018 | 0.295 |
| | (0.042) | | (0.041) | |
| Wealth index | -0.016 | 0.058 | -0.014 | 0.091 |
| | (0.008) | | (0.008) | |
| Consumption | 0.026 | 0.787 | 0.017 | 0.682 |
| | (0.024) | | (0.021) | |
| | | | | |
| $R^2$ | 0.232 | | 0.266 | |
| Observations | 499 | | 499 | |

Table A8: Placebo regression of lagged stereotypes

| | Whites | Blacks | Full sample | Whites | Blacks | Full sample |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Panel A. Dep.Var = Race IAT (lag)* | | | | | | |
| Mixed room | 0.103 | -0.083 | -0.043 | 0.008 | -0.021 | -0.011 |
| | (0.115) | (0.070) | (0.055) | (0.128) | (0.080) | (0.058) |
| | | | | | | |
| $R^2$ | 0.078 | 0.048 | 0.088 | 0.157 | 0.092 | 0.129 |
| Observations | 117 | 332 | 499 | 117 | 332 | 499 |
| *Panel B. Dep.Var = Academic IAT (lag)* | | | | | | |
| Mixed room | -0.005 | 0.057 | 0.045 | -0.006 | 0.021 | 0.051 |
| | (0.116) | (0.066) | (0.055) | (0.127) | (0.072) | (0.057) |
| | | | | | | |
| $R^2$ | 0.177 | 0.065 | 0.071 | 0.245 | 0.107 | 0.099 |
| Observations | 117 | 332 | 499 | 117 | 332 | 499 |
| *Panel C. Dep.Var = Index of attitudinal measures (lag)* | | | | | | |
| Mixed room | 0.312 | -0.026 | 0.068 | 0.321 | -0.045 | 0.099 |
| | (0.221) | (0.134) | (0.112) | (0.288) | (0.136) | (0.112) |
| | | | | | | |
| $R^2$ | 0.281 | 0.088 | 0.135 | 0.309 | 0.096 | 0.141 |
| Observations | 112 | 295 | 455 | 112 | 295 | 455 |

# B Appendix

This part of the Appendix shows additional information about the effects of living in a mixed room. Tables B2 till B9 contain individual and roommate controls. In columns (1)-(6) of Table B6 ordered logit estimates are reported, and also in columns (1)-(3) of Table B7.

Table B1: Effect of living with someone of different race on Race and Academic IAT without roommate controls

| Dependent variable: | Race IAT | | Academic IAT | |
|---|---|---|---|---|
| | Whites | Blacks | Whites | Blacks |
| | (1) | (2) | (3) | (4) |
| Mixed room | 0.210 | -0.115 | 0.017 | -0.044 |
| | (0.126) | (0.067) | (0.099) | (0.056) |
| | [0.192] | [0.175] | [0.878] | [0.430] |
| | | | | |
| Mean of dep.var | -0.423 | -0.097 | -0.293 | -0.185 |
| $R^2$ | 0.146 | 0.066 | 0.167 | 0.051 |
| Observations | 117 | 332 | 117 | 332 |

Table B2: Effect of living with someone of different race on Race and Academic IAT, by race group

| Dependent variable: | Race IAT | | Academic IAT | |
|---|---|---|---|---|
| | Whites | Blacks | Whites | Blacks |
| | (1) | (2) | (3) | (4) |
| Roommate Black [A] | 0.368 | | 0.066 | |
| | (0.167) | | (0.123) | |
| Roommate Coloured or Indian/Asian [B] | 0.189 | -0.140 | -0.115 | -0.019 |
| | (0.172) | (0.105) | (0.113) | (0.085) |
| Roommate White [C] | | -0.057 | | -0.000 |
| | | (0.082) | | (0.077) |
| | | | | |
| $P$-value [A] = [B] | [0.390] | | [0.163] | |
| $P$-value [B] = [C] | | [0.508] | | [0.862] |
| Mean of dep.var | -0.423 | -0.096 | -0.423 | -0.096 |
| $R^2$ | 0.223 | 0.099 | 0.273 | 0.087 |
| Observations | 117 | 332 | 117 | 332 |

Table B3: Effect on academic performance without roommate controls

| Dependent variable: | GPA | Number of exams passed | Eligible to continue | Index of academic performance |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Nixed room | -0.185 | -0.084 | 0.035 | -0.082 |
| | (0.259) | (0.500) | (0.074) | (0.289) |
| | [0.806] | [0.855] | [0.848] | |
| | | | | |
| Mean of dep.var | 0.663 | 6.500 | 0.923 | 0.709 |
| $R^2$ | 0.542 | 0.689 | 0.330 | 0.371 |
| Observations | 117 | 117 | 117 | 117 |
| *Panel B. Blacks* | | | | |
| Mixed room | 0.259 | 0.673 | 0.151 | 0.449 |
| | (0.115) | (0.225) | (0.038) | (0.130) |
| | [0.025] | [0.005] | [0.000] | |
| | | | | |
| Mean of dep.var | -0.268 | 4.506 | 0.852 | -0.281 |
| $R^2$ | 0.369 | 0.709 | 0.372 | 0.430 |
| Observations | 332 | 332 | 332 | 332 |
| *Panel C. Full sample* | | | | |
| Mixed room | 0.147 | 0.456 | 0.105 | 0.290 |
| | (0.099) | (0.193) | (0.031) | (0.109) |
| | [0.133] | [0.032] | [0.002] | |
| | | | | |
| Mean of dep.var | -0.044 | 4.977 | 0.871 | -0.042 |
| $R^2$ | 0.412 | 0.702 | 0.307 | 0.433 |
| Observations | 499 | 499 | 498 | 498 |

Table B4: Effect on academic performance in the second academic year

| Dependent variable: | GPA | Number of exams passed | Eligible to continue | Index of academic performance |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Mixed room | -0.082 | 0.428 | -0.033 | -0.073 |
| | (0.085) | (0.808) | (0.070) | (0.252) |
| UCT admission score | 7.113 | -2.844 | 0.037 | 9.054 |
| | (1.066) | (9.152) | (1.055) | (2.469) |
| Roommate's UCT admission score | 1.318 | 6.750 | -0.421 | 2.475 |
| | (0.768) | (7.272) | (0.680) | (2.234) |
| | | | | |
| Mean of dep.var | 0.683 | 6.099 | 0.958 | 0.570 |
| $R^2$ | 0.813 | 0.631 | 0.513 | 0.657 |
| Observations | 105 | 105 | 105 | 105 |
| *Panel B. Blacks* | | | | |
| Mixed room | 0.052 | 1.012 | 0.150 | 0.451 |
| | (0.070) | (0.408) | (0.062) | (0.206) |
| UCT admission score | 1.590 | 10.152 | 1.004 | 5.310 |
| | (0.706) | (5.071) | (0.668) | (2.135) |
| Roommate's UCT admission score | 1.090 | 5.793 | -0.300 | 2.148 |
| | (0.548) | (3.331) | (0.414) | (1.442) |
| | | | | |
| Mean of dep.var | 0.254 | 4.785 | 0.879 | -0.349 |
| $R^2$ | 0.444 | 0.596 | 0.412 | 0.476 |
| Observations | 208 | 208 | 207 | 207 |
| *Panel C. Full sample* | | | | |
| Mixed room | -0.016 | 0.805 | 0.089 | 0.242 |
| | (0.052) | (0.299) | (0.039) | (0.132) |
| UCT admission score | 3.467 | 6.604 | 0.838 | 6.954 |
| | (0.608) | (3.909) | (0.482) | (1.615) |
| Roommate's UCT admission score | 0.739 | 7.255 | 0.013 | 2.353 |
| | (0.408) | (2.908) | (0.296) | (1.095) |
| | | | | |
| Mean of dep.var | 0.389 | 5.234 | 0.902 | -0.055 |
| $R^2$ | 0.522 | 0.518 | 0.317 | 0.474 |
| Observations | 355 | 355 | 354 | 354 |

Table B5: Effect on academic performance and academic interaction with roommate for the Black sample

| Dep.var: | Index of performance | GPA | Index of performance | GPA | Study with roommate | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Mixed room | 0.362 | 0.193 | 0.461 | 0.268 | 0.010 | 0.007 |
| | (0.170) | (0.151) | (0.153) | (0.134) | (0.035) | (0.039) |
| Mixed room x Same faculty | 0.187 | 0.124 | | | | |
| | (0.296) | (0.259) | | | | |
| Same faculty | 0.001 | 0.003 | | | | 0.119 |
| | (0.175) | (0.146) | | | | (0.048) |
| Mixed room x Same course | | | -0.135 | -0.083 | | |
| | | | (0.349) | (0.333) | | |
| Same course | | | -0.027 | 0.030 | | |
| | | | (0.187) | (0.163) | | |
| Respondent's UCT score | 6.282 | 5.673 | 6.179 | 5.505 | -0.054 | -0.138 |
| | (1.766) | (1.500) | (1.623) | (1.397) | (0.410) | (0.422) |
| Roommate's UCT score | 1.168 | 0.967 | 1.385 | 1.138 | -0.173 | -0.207 |
| | (1.365) | (1.249) | (1.361) | (1.243) | (0.312) | (0.317) |
| | | | | | | |
| Mean of dep.var | -0.285 | -0.275 | -0.281 | -0.268 | 0.066 | 0.069 |
| $R^2$ | 0.453 | 0.380 | 0.447 | 0.387 | 0.160 | 0.193 |
| Observations | 316 | 316 | 332 | 332 | 332 | 316 |

Table B6: Effect on friendships

| Dependent variable: | No. Times hang out with individuals of different race over past month | | | Last time hang out with individuals of different race | | | % of friends of a different race (excl. roommate) | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample: | Full sample | Whites | Blacks | Full sample | Whites | Blacks | Full sample | Whites | Blacks |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Mixed room | 0.698 | 1.608 | 0.566 | -0.774 | -1.423 | -0.631 | 0.111 | 0.143 | 0.063 |
| | (0.252) | (0.594) | (0.292) | (0.283) | (0.853) | (0.331) | (0.032) | (0.057) | (0.040) |
| | [0.031] | [0.038] | [0.264] | [0.031] | [0.256] | [0.264] | [0.005] | [0.069] | [0.389] |
| | | | | | | | | | |
| $R^2$ | | | | | | | 0.264 | 0.329 | 0.142 |
| Observations | 481 | 111 | 320 | 480 | 111 | 319 | 462 | 110 | 306 |

| Dependent variable: | % of study-mates of a different race | | | Preferred number of individuals of different race in: | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Leisure group | | | Academic group | | |
| Sample: | Full sample | Whites | Blacks | Full sample | Whites | Blacks | Full sample | Whites | Blacks |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Mixed room | 0.060 | 0.151 | 0.045 | 0.251 | 0.403 | 0.125 | 0.244 | 0.134 | 0.297 |
| | (0.040) | (0.091) | (0.045) | (0.165) | (0.224) | (0.226) | (0.152) | (0.250) | (0.194) |
| | [0.275] | [0.256] | [0.530] | [0.275] | [0.254] | [0.579] | [0.275] | [0.598] | [0.389] |
| | | | | | | | | | |
| Mean of dep.var | 0.171 | 0.148 | 0.163 | 2.720 | 2.320 | 2.788 | 2.849 | 2.547 | 2.908 |
| $R^2$ | 0.277 | 0.433 | 0.095 | 0.168 | 0.299 | 0.082 | 0.148 | 0.265 | 0.100 |
| Observations | 438 | 97 | 296 | 483 | 112 | 322 | 483 | 112 | 321 |

## Table B7: Effect on explicit attitudes

| Dependent variable: | Talked about race | | | Comfortable talking about race | | | Disagree to abolish affirmative action | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample: | Full sample | Whites | Blacks | Full sample | Whites | Blacks | Full sample | Whites | Blacks |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Mixed room | 0.430 | -0.756 | 1.017 | 0.056 | 0.016 | 0.043 | -0.011 | 0.003 | 0.010 |
| | (0.226) | (0.575) | (0.277) | (0.042) | (0.090) | (0.053) | (0.051) | (0.129) | (0.053) |
| | [0.171] | [0.529] | [0.004] | [0.347] | [0.982] | [0.876] | [0.822] | [0.982] | [0.976] |
| | | | | | | | | | |
| Mean of dep.var | 1.550 | 1.472 | 1.564 | 0.799 | 0.829 | 0.797 | 0.740 | 0.423 | 0.835 |
| $R^2$ | | | | 0.097 | 0.215 | 0.121 | 0.235 | 0.152 | 0.080 |
| Observations | 456 | 108 | 300 | 445 | 106 | 292 | 451 | 107 | 296 |

| Dependent variable: | Not conscious dancing with a person of another race | | | Not conscious having boyfriend/girlfriend of another race | | |
|---|---|---|---|---|---|---|
| Sample: | Full sample | Whites | Blacks | Full sample | Whites | Blacks |
| | (10) | (11) | (12) | (13) | (14) | (15) |
| Mixed room | 0.088 | 0.193 | -0.001 | 0.106 | 0.191 | 0.041 |
| | (0.042) | (0.084) | (0.055) | (0.049) | (0.135) | (0.059) |
| | [0.163] | [0.138] | [0.981] | [0.154] | [0.529] | [0.876] |
| | | | | | | |
| Mean of dep.var | 0.775 | 0.671 | 0.808 | 0.667 | 0.347 | 0.765 |
| $R^2$ | 0.139 | 0.423 | 0.106 | 0.268 | 0.426 | 0.124 |
| Observations | 449 | 106 | 296 | 453 | 108 | 297 |

## Table B8: Effect on prosocial behavior

| Dependent variable: | Member of Volunteer Organization | | | Money given to a charity | | | Cooperate in Prisoner dilemma | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample: | Full sample | Whites | Blacks | Full sample | Whites | Blacks | Full sample | Whites | Blacks |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Mixed room | 0.100 | 0.203 | 0.047 | 64.155 | 113.494 | 32.840 | 0.082 | 0.259 | 0.095 |
| | (0.062) | (0.113) | (0.073) | (76.134) | (300.461) | (42.021) | (0.057) | (0.108) | (0.069) |
| | [0.386] | [0.217] | [0.699] | [0.436] | [0.731] | [0.699] | [0.406] | [0.076] | [0.526] |
| | | | | | | | | | |
| Mean of dep.var | 0.449 | 0.446 | 0.455 | 130.162 | 252.101 | 81.393 | 0.555 | 0.500 | 0.570 |
| $R^2$ | 0.084 | 0.339 | 0.063 | 0.166 | 0.256 | 0.129 | 0.117 | 0.359 | 0.061 |
| Observations | 467 | 110 | 312 | 405 | 99 | 260 | 493 | 114 | 330 |

| Dependent variable: | Belief partner will cooperate in prisoner dilemma | | |
|---|---|---|---|
| Sample: | Full sample | Whites | Blacks |
| | (10) | (11) | (12) |
| Mixed room | 0.073 | 0.140 | 0.096 |
| | (0.055) | (0.115) | (0.069) |
| | [0.406] | [0.432] | [0.526] |
| | | | |
| Mean of dep.var | 0.605 | 0.592 | 0.605 |
| $R^2$ | 0.076 | 0.265 | 0.045 |
| Observations | 493 | 114 | 330 |

Table B9: Effect on friendships, attitudinal measures and prosocial behaviour without missing values

| Dependent variable: | Index of friendship | Index of explicit attitudes | Index of prosocial behavior | Global index of social behavior |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Mixed room | 0.447 | 0.455 | 0.427 | 0.655 |
| | (0.182) | (0.210) | (0.229) | (0.227) |
| | [0.052] | [0.073] | [0.073] | [0.021] |
| | | | | |
| $R^2$ | 0.400 | 0.322 | 0.272 | 0.354 |
| Observations | 117 | 117 | 117 | 117 |
| *Panel B. Blacks* | | | | |
| Mixed room | 0.371 | 0.076 | 0.220 | 0.380 |
| | (0.155) | (0.131) | (0.139) | (0.165) |
| | [0.064] | [0.558] | [0.220] | [0.068] |
| | | | | |
| $R^2$ | 0.135 | 0.069 | 0.046 | 0.133 |
| Observations | 332 | 332 | 332 | 332 |
| *Panel C. Full sample* | | | | |
| Mixed room | 0.444 | 0.238 | 0.168 | 0.541 |
| | (0.116) | (0.102) | (0.119) | (0.128) |
| | [0.001] | [0.046] | [0.167] | [0.000] |
| | | | | |
| $R^2$ | 0.298 | 0.161 | 0.113 | 0.251 |
| Observations | 499 | 499 | 499 | 499 |

# C   Appendix

Here we show additional mediation analysis, namely on the Black and full sample. We also show the results of traditional mediation analysis as a robustness check. Tables C1 and C2 contain individual and roommate controls in the analysis.

Table C1: Mediation analysis on the Black and Full sample

| Mediator: | Index of friend-ship | Index of explicit attitudes | Index of prosocial behavior | Global index of social behavior |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Blacks* | | | | |
| *Single mediator model* | | | | |
| Natural indirect effect | -0.0228 | -0.0004 | 0.0004 | -0.0236 |
| | (0.0177) | (0.0071) | (0.0141) | (0.0211) |
| | [0.1970] | [0.9520] | [0.9750] | [0.2630] |
| Natural direct effect | -0.1184 | -0.0583 | -0.0543 | -0.0638 |
| | (0.0745) | (0.0727) | (0.0722) | (0.0837) |
| | [0.1120] | [0.4230] | [0.4520] | [0.4460] |
| Proportion | 0.1615 | 0.0073 | -0.0081 | 0.2703 |
| | (0.1438) | (0.1230) | (0.2630) | (0.3510) |
| | [0.2610] | [0.9530] | [0.9750] | [0.441] |
| | | | | |
| *Multiple mediators model* | | | | |
| Indirect effect | -0.0074 | | | |
| | (0.0124) | | | |
| | [0.5500] | | | |
| *Panel B. Full sample* | | | | |
| *Single mediator model* | | | | |
| Natural indirect effect | -0.0141 | 0.0190 | -0.0028 | -0.0076 |
| | (0.0277) | (0.0139) | (0.0176) | (0.0347) |
| | [0.6110] | [0.171] | [0.8730] | [0.8270] |
| Natural direct effect | -0.0703 | -0.0693 | -0.0375 | -0.0521 |
| | (0.0629) | (0.0570) | (0.0588) | (0.0746) |
| | [0.2630] | [0.2240] | [0.524] | [0.4850] |
| Proportion | 0.1666 | -0.3779 | 0.0699 | 0.1271 |
| | (0.3505) | (0.4956) | (0.4308) | (0.6034) |
| | [0.6350] | [0.4460] | [0.8710] | [0.8330] |
| | | | | |
| *Multiple mediators model* | | | | |
| Indirect effect | 0.0503 | | | |
| | (0.0786) | | | |
| | [0.5220] | | | |

Table C2: Traditional mediation analysis on all samples

| Mediator: | Index of friend-ship | Index of explicit attitudes | Index of prosocial behavior | Global index of social behavior |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A. Whites* | | | | |
| Indirect effect | -0.032 | 0.009 | 0.014 | -0.028 |
| | (0.045) | (0.038) | (0.023) | (0.060) |
| | [0.477] | [0.808] | [0.545] | [0.640] |
| *Panel B. Blacks* | | | | |
| Indirect effect | 0.001 | 0.001 | -0.005 | -0.004 |
| | (0.006) | (0.003) | (0.007) | (0.007) |
| | [0.889] | [0.757] | [0.497] | [0.602] |
| *Panel C. Full sample* | | | | |
| Indirect effect | -0.004 | 0.015 | -0.001 | -0.006 |
| | (0.015) | (0.008) | (0.003) | (0.020) |
| | [0.820] | [0.082] | [0.809] | [0.772] |

# Programming code

Information about the STATA code used for the estimation of effects and mediation analysis can be found in the **README_EXTENSION.txt** file which is provided to the reader in the package. The code for mediation analysis can be found in **mediationAnalysis.do** file, and the output of that code is in **Results_mediation.xlsx**. The general code for the results in 4.1 may be found in the **Code** folder, and the output is in the **output** folder.