Backlash or Bonding?

Effect of Integration Policies in a Context of Affirmative Action

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Paris School of Economics
Job Market Talk

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Access to selective institutions is not integration

- Affirmative action (AA) is widely used to address historical marginalization
  - In India, AA is implemented as caste-based quotas
  - Improves access: attainment, political empowerment, upward mobility
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- Beyond access, AA may also shape social connections in higher education
- Social ties formed in college can shape economic opportunities (Chetty et al. 2022a,b)
  - Cross-caste ties may be limited by identity-based frictions (Akerlof and Kranton, 2000) or backlash against AA

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  - Cross-caste ties may be limited by identity-based frictions (Akerlof and Kranton, 2000) or backlash against AA
- Can reducing residential segregation foster social connections?
  - Roommate assignment as a policy of caste integration
  - Effects are theoretically ambiguous and may differ across groups

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	Contact can help	Contact can hurt
Disadvantaged	**Better performing peers**, social capital	**Social frictions**, unfavourable comparisons

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- Gap 1: How social networks formed in higher education shapes economic outcomes, particularly in low- and middle-income countries remains understudied.
- Gap 2: In competitive settings with affirmative action, does intergroup contact reduce prejudice or trigger backlash, and through what mechanisms?

This Paper: caste integration through roommates in a public university

Research questions

1. What are the effects of caste integration on academic performance and labour-market outcomes for both upper and lower caste students?
2. Does it affect mental health of either group?
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- Students assigned to mixed-caste versus same-caste rooms within each category.

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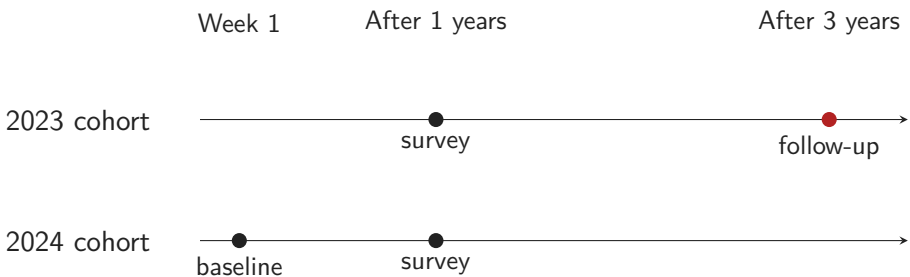
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Data and Model

- Original survey data of 2400 students for outcomes + admin data on room assignment and caste identity
- Theoretical model of social integration to guide empirical tests on mechanisms

Original surveys of 2,400 students across two cohorts



Plus administrative entrance-exam records, caste identity and hostel allocation

Integration has benefits, but also entails costs that differ across groups

Lower-caste students

- Short run: **grades improve**, but mental health falls
- Medium run: grade gain persists, and mental health effect fades
- Internships: less likely to receive offers (7.3pp, 15% lower)

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Upper-caste students

- Short run: grades fall, and mental health falls but not significantly
- Medium run: grade loss persists
- Internships: **20% reduction** in stipends

Social learning in the short run and backlash in the medium run

Support for AA

Lower-caste students

- Short run: AA seen as less unfair by the beneficiaries
- Medium run: Support for AA stays positive

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Upper-caste students

- Short run: Increase in belief that AA benefits its recipients
- Medium run: Support for AA fades, and reduced support of AA in **employment**.

Contribution: integration is more than contact

- **Social capital and economic mobility** (Juliana Londoño-Vélez, 2026;S. D. Zimmerman 2019;Chetty et al. 2022; Barrios-Fernández et al. 2026;)
  → **This paper:** Across caste linkages (SES + identity frictions); Roommates within college returns to social connections
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  → **This paper:** Detailed measurements on academic and social interactions between roommates, student clubs, leadership positions
- **Contact theory and support for redistribution** (Alesina and Giuliano, 2011; Alesina et al., 2018, Lowe 2021, Mousa 2020, Rao 2019)
  → **This paper:** Support for AA on costs and benefits to both beneficiaries and non-beneficiaries, in both the short and medium run.

Outline

1. Motivation and contribution
2. Setting and data
3. Short-run results
4. Mechanisms
    - Mechanism on grades
    - Social integration: mental health and internships
5. Medium-run outcomes
6. Attitudes toward AA
7. Conclusion

Context - highly competitive public institute with Affirmative Action

- Setting is in an elite engineering college in India
- Entrance is through a national exam in Maths, Physics, and Chemistry and is very competitive - about 1.6 million takers (for 16,000 seats)
- Transparent admissions process: entrance exam scores and program-specific cutoffs are publicly disclosed.
- Fixed quotas: 22.5% seats for SC/ST, 27% for OBC, 10% seats for EWS[1]
- Since 2018 special quota for women — 20% seats, supernumerary, caste composition is same for women in practice
- Size of the cohort is around 1200 and come from all parts of India

Note: Scheduled Castes (SC) are commonly referred to as Dalits; Scheduled Tribes (ST) as Adivasis/tribals; OBC stands for Other Backward Castes; EWS refers to Economically Weaker Sections among castes without affirmative action.

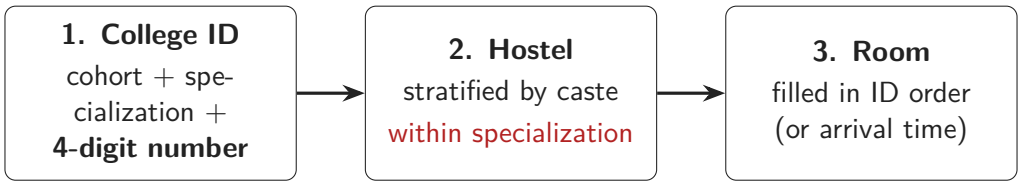
Caste, merit, and selective admission

- Entrance exams are the main route to selective higher education in India
- Caste-based reservations shape how exam scores translate into admission, and cutoffs differ substantially across groups
- Caste is not phenotypically or visually ascriptive, and surnames can be informative but only a certain extent (Deshpande 2011)

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- Caste is not phenotypically or visually ascriptive, and surnames can be informative but only a certain extent (Deshpande 2011)
- Selective engineering colleges are pathways to economic mobility, particularly in developing countries
- Labor-market effects of integration may extend beyond college as students occupy elite jobs, such as top bureaucrats, managers in MNCs, and start-up founders

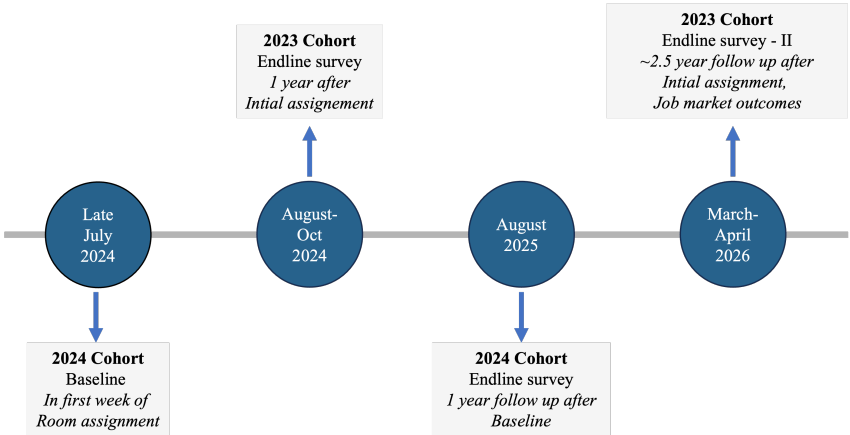
Room Assignment: Two stage random assignment



Checks against manipulation:

- Only 1% of students knew their roommate before arrival
- Wardens do not accommodate official room changes
- Result: Theoretical vs Observed mixing fits the 45 degree line ▸ Theoretical vs. observed mixing
- Balance on observables ▸ SES and College Prep ▸ Balance: Pre College Networks

Timeline of Data collection



▸ Response Rates

Figure: Timeline of Surveys: Baseline for 2024, Endline for 2023, 2024 cohorts and Endline-II for 2023 cohort

Primary outcomes, and secondary outcomes to probe mechanisms

Primary Economic outcomes

- Academic performance: GPA
- Labour market: internships, stipends
- Mental health: PHQ-4, stress, relative well-being

Beliefs about affirmative action (AA)

	Benefits	**Costs**
Targeted group	social justice	mismatch, weaker incentives
Non-targeted group	diversity	unfair vs. merit, institutional quality

Measured at the start of year 2 (short run) and at year 3 (medium run, 2023 cohort only).

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Secondary outcomes

- Academic and social interactions
- Type and direction of help
- Friendships
- Club leadership, job sector preferences

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Summary Stats at Baseline by Caste

	Upper caste		Lower caste		Difference
	N	Mean	N	Mean	(UC − LC)
A. Socio-economic background					
Family income $\geq$ 9L INR	859	0.66	895	0.42	$+0.24^{***}$
Assets index	824	0.15	809	−0.18	$+0.33^{***}$
B. JEE preparation & academic background					
Entrance exam score (out of 360)	1112	201.6	1091	141.2	$+60.4^{***}$
Class 12 score (%)	942	93.3	934	90.3	$+2.9^{***}$
Took more than one JEE attempt	945	0.15	934	0.28	-0.14^{***}
C. Mental health at baseline					
Mental Health index	502	0.03	490	−0.05	$+0.08^{**}$
PHQ-4 (anxiety + depression)	455	0.02	438	−0.04	+0.06
D. Attitudes towards Affirmative Action					
AA support: reserved group	455	−0.31	440	0.37	-0.68^{***}
AA support: non-reserved group	453	−0.35	442	0.48	-0.83^{***}

▸ Summary (1/2) ▸ Summary (2/2)

Roommates matter for Social and Academic Support

	Upper caste		Lower caste		Difference
	N	Mean	N	Mean	(UC − LC)
A. Social interaction with roommate (once a week or more)					
Study together	286	0.46	296	0.57	−0.11***
Eat together	288	0.60	298	0.65	−0.05
Go out together	286	0.30	297	0.34	−0.04
Play sports together	286	0.41	299	0.50	−0.09**
B. Substantial help received from roommate					
Exam prep	296	0.67	308	0.67	+0.00
Internships	294	0.31	297	0.33	−0.01
Emotional support	293	0.52	305	0.57	−0.05
Financial support	292	0.30	296	0.46	−0.17***

Same-caste rooms only, 2023 and 2024 cohorts. Panel A: activity with a roommate once a week or more. Panel B: roommate was 'Sometimes' or 'Mostly' helpful. *** $p < 0.01$, ** $p < 0.05$ (t-test).

▸ Mechanism 2 ▸ Full table (A, B) ▸ Panel C

Identification: ANCOVA within Hostel-by-Cohort and Specialization Cells

Main specification (estimated separately for LC and UC):

$$Y_{ikcst} = \beta_0 + \underbrace{\beta_1 \, \text{Mixed}_{ikc0}}_{\text{coefficient of interest}} + \beta_2 \, Y_{ikcs0} + \gamma_{kc} + \delta_{sc} + X_{ikcs0} + \varepsilon_{ikcst}$$

- Mixed_{ikc0}: assigned to $\geq$1 other-caste roommate in hostel k, cohort c, first year
- γ_{kc}: hostel $\times$ cohort FE — controls for gender, room size, hostel composition
- δ_{sc}: specialization $\times$ cohort FE — controls for differences across specializations
- Y_{ikcs0}: Baseline outcome, only for 2024 cohort
- X: number of roommates; missing-indicator for baseline
- SE clustered at the **room level**

Alternative specifications: I also use additional variation from **3-sharing rooms**, comparing partially and fully mixed rooms to same-caste rooms

▸ Room types

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Mixing reduces grades for Upper castes but increases support for AA

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Mixed Room	-0.103**	-0.062	0.115**	0.048
	(0.050)	(0.044)	(0.057)	(0.058)
DV Mean in same caste rm	0.474	0.027	-0.251	-0.265
R-squared	0.473	0.149	0.172	0.184
N	947	935	820	817
Sharpened q-value	0.044	0.108	0.044	0.206

▸ Panel C ▸ Robustness ▸ Gender heterogeneity

Mixing improves GPA at the cost of Mental health for lower caste

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N	947	935	820	817
Sharpened q-value	0.044	0.108	0.044	0.206
Panel B: Lower Caste Sample				
Mixed Room	0.091*	-0.082**	-0.022	0.110**
	(0.052)	(0.042)	(0.045)	(0.056)
DV Mean in same caste rm	-0.445	0.001	0.239	0.237
R-squared	0.433	0.146	0.110	0.131
N	896	928	829	820
Sharpened q-value	0.053	0.049	0.309	0.049
P val ($\beta_LC == \beta_UC$)	0.033	0.509	0.086	0.648

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Mechanism 1, grades: learning flows only from better-prepared roommates

L **with a better-prepared** *U***:** learns



U **with a less-prepared** *L***:** little to learn



$$g_i = \theta_i + \beta\,\lambda_{ij}\,(\theta_j - \theta_i)_+ - \mu_{c_i}\,d_{ij} + \varepsilon_i$$

Prediction

*U***:** grades fall. They get less help than upper-caste students in same-caste rooms, and they also pay the cost of mixing.

*L***:** ambiguous. The gain from a better-prepared roommate is set against the cost of mixing and the help that lower-caste students in same-caste rooms get from their roommates. The sign depends on which effect dominates.

▸ Grades equation

Roommate performance drives lower-caste GPA gains

	Upper Caste			Lower Caste		
	CGPA : First Year	CGPA : First Year	CGPA : First Year	CGPA : First Year	CGPA : First Year	CGPA : First Year
Mixed Room	-0.103**	-0.118*	-0.100	0.091*	0.021	0.001
	(0.050)	(0.064)	(0.064)	(0.052)	(0.065)	(0.066)
Roommate's Entrance Score (SD)		-0.011	0.044		0.091**	0.136**
		(0.040)	(0.055)		(0.043)	(0.058)
Mixed Room × Roommate's Entrance Score			-0.084			-0.068
			(0.058)			(0.064)
DV Mean, Non-mixed	0.474	0.474	0.474	-0.445	-0.445	-0.445
R-squared	0.473	0.469	0.470	0.433	0.439	0.440
N	947	919	919	896	867	867

▸ Batch Match

Academic help flows only from better prepared roommates

	Upper Caste		Lower Caste	
	Study Interactions	Provided exam prep	Study Interactions	Provided exam prep
Mixed Room	-0.016	0.144*	-0.042	-0.142**
	(0.060)	(0.082)	(0.057)	(0.071)
DV Mean, Non-mixed	-0.080	-0.081	0.047	0.089
R-squared	0.173	0.092	0.116	0.078
N	906	835	938	841

▸ Got Help ▸ Got OHM Help ▸ Provided Help

Upper caste grade losses: forgone same network collaborations

Descriptive evidence, same-caste rooms

- Upper-caste students in same-caste rooms get more academic help from their roommates ▸ Got Help
- Academic collaboration is stronger in same-caste upper caste rooms when the roommates share a department or course sequence than when they do not
  ▸ Course sequence ▸ Interaction figures ▸ CGPA vs. entrance score

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Treatment effects

- Upper-caste grade losses rises with caste distance: 0.09**, no such effect of lower-castes ▸ Caste distance

Taking stock so far: grades

Lower caste

- GPA gains come from better-prepared roommates
- Academic help flows only from better-prepared roommates

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Upper caste

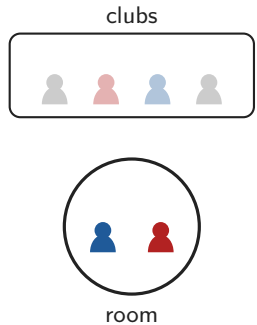
- Grade losses reflect forgone collaboration with same-caste roommates, not roommate attributes
- Losses rise with caste distance

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Model: social time goes to the roommate or to clubs

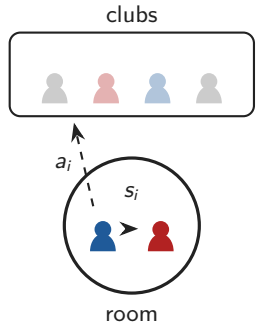
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▸ Capital

Model: social time goes to the roommate or to clubs

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- Social connections provide belonging capital → Wellbeing or bridging capital → Economic opportunities
- Choice is s_i : social time with roommate and a_i is social time in student clubs such that $s_i + a_i = 1$

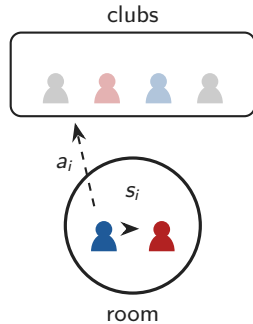


$$B_i = \lambda_{ij}\, s_i + \iota_i\, a_i \quad \text{(belonging)}$$
$$R_i = 1 - B_i \quad \text{(bridging)}$$

▸ Capital

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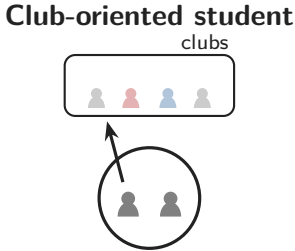
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- Choice is s_i : social time with roommate and a_i is social time in student clubs such that $s_i + a_i = 1$
- In a mixed room there are frictions, and student clubs offer a possible substitute ▸ Early frictions



$$B_i = \lambda_{ij}\, s_i + \iota_i\, a_i \quad \text{(belonging)}$$
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▸ Capital

Mechanism 2, wellbeing: Social frictions



Prediction

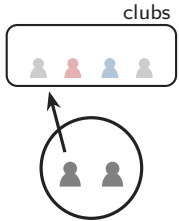
Access to clubs depends on social advantage: lower castes are more likely to be room-oriented and upper castes are more active in clubs.

Cost of a mixed room is largest for room-oriented students, and largest of all when the roommate retreats to clubs.

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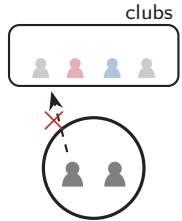
Mechanism 2, wellbeing: Social frictions

Club-oriented student



belonging has a substitute

Room-oriented student



clubs out of reach: no substitute

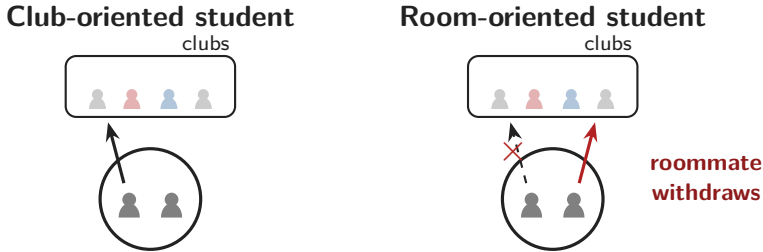
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Mechanism 2, wellbeing: Social frictions



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Cost of a mixed room is largest for room-oriented students, and largest of all when the roommate retreats to clubs.

▸ Capital

Lower social interactions and support in mixed rooms

	Upper Caste		Lower Caste	
	Social Interactions	Got Emotional /Financial Help	Social Interactions	Got Emotional /Financial Help
Mixed Room	-0.085	-0.040	-0.181***	-0.130*
	(0.077)	(0.075)	(0.069)	(0.072)
DV Mean, Non-mixed	-0.098	-0.113	0.120	0.103
R-squared	0.150	0.092	0.126	0.089
N	864	878	879	882

▸ Got Help ▸ Got OHM Help ▸ Provided Help ▸ MH Mediation ▸ Social index components

Roommate social advantage worsens lower caste students' mental health

	Upper Caste		Lower Caste	
	(1) Roommate's SES	(2) Difference in SES	(3) Roommate's SES	(4) Difference in SES
Mixed Room	-0.059	-0.073	-0.074	-0.066
	(0.056)	(0.054)	(0.047)	(0.046)
Roommate's SES Index (SD)	0.000		0.037	
	(0.040)		(0.033)	
Mixed Room × Roommate's SES Index	0.037		-0.079**	
	(0.063)		(0.039)	
Roommate − Own SES Index (SD)		0.009		0.027
		(0.059)		(0.045)
Mixed Room × Roommate − Own SES Index		-0.021		-0.036
		(0.073)		(0.049)
DV Mean, Non-mixed	0.027	0.027	0.001	0.001
R-squared	0.154	0.158	0.157	0.154
N	772	726	799	760

▸ Entrance score

Mental health costs: Caste distance and Networks

- **Descriptive evidence, same-caste rooms:**
- **PHQ-4 is the main driver** of the mental health index for both groups, LC slightly more worried
  ▸ MH index and components
- Loneliness correlated with PHQ-4 (reverse coded): -0.49

▸ Roommate's score ▸ MH robustness

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  ▸ MH index and components
- Loneliness correlated with PHQ-4 (reverse coded): -0.49
- **Treatment effects of mixed rooms:**
- Mental health cost rises with caste distance for lower castes: -0.086**, much less for upper castes: -0.036
  ▸ Caste distance
- A same-caste roommate almost eliminates mental health cost for upper castes: partial mixed -0.011 vs. full mixed -0.088*; no such difference for lower castes
  ▸ Partial vs. full ▸ Room types

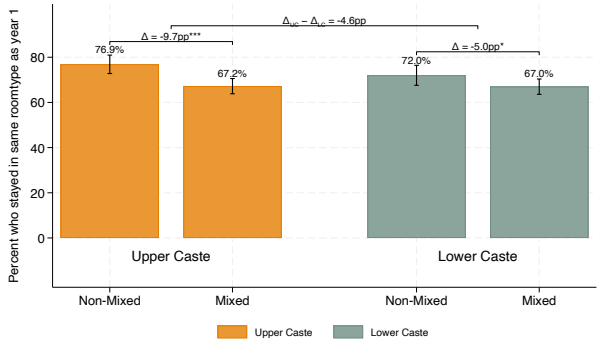
▸ Roommate's score ▸ MH robustness

Effect of a mixed room (SD)

	Upper	Lower
Mental health index	-0.062	-0.082^{**}
PHQ-4 index	-0.093	-0.084
Worry index	-0.024	-0.048
Relative wellbeing	-0.007	0.005

Higher = better mental health. ** $p < 0.05$.

Mixed-room assignments are less likely to persist



- Overall in Year 2, the share of mixed rooms is **8.3 percentage points lower** than would be expected under random allocation

▸ Transitions table

Taking stock: social frictions increasing mental health costs

Lower caste

- **Wellbeing:** social frictions and disadvantage can impose costs

▸ Discrim/Excl ▸ Discrim/Excl 3yr

Taking stock: social frictions increasing mental health costs

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- **Wellbeing:** social frictions and disadvantage can impose costs

Upper caste

- **Wellbeing:** less consistent with roommate attributes. Reduced access to same-caste networks appears more important along with some social frictions

▸ Discrim/Excl ▸ Discrim/Excl 3yr

Taking stock: social frictions increasing mental health costs

Lower caste

- **Wellbeing:** social frictions and disadvantage can impose costs

Upper caste

- **Wellbeing:** less consistent with roommate attributes. Reduced access to same-caste networks appears more important along with some social frictions

- **Friction (upper caste):** significantly more likely to feel excluded from study groups (b=0.118, p<0.10)

- **Friction (lower caste):** significantly more reported discrimination, emerging by year 3 (b=0.330, p<0.05)

▸ Discrim/Excl ▸ Discrim/Excl 3yr

Do the effects persist or fade over time?

Do the short-run effects persist, and do they reach the labour market?

Main outcome

Internships

Medium run effects on

- Grades
- Mental health
- Support for AA

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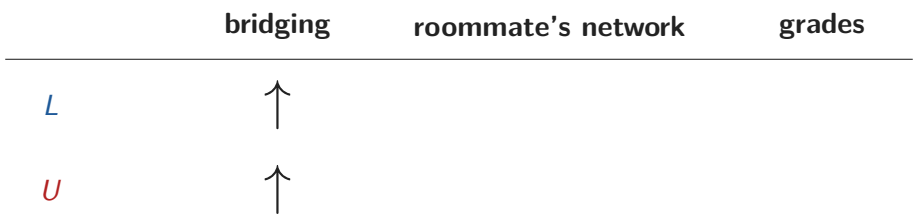
Design

2023 entry cohort, followed shortly before the end of year 3. Effects are ITT effects of initial roommate assignment.

Plan

First the mechanisms behind internship outcomes, then the results.

Mechanism 3, internships: bridging, networks and grades



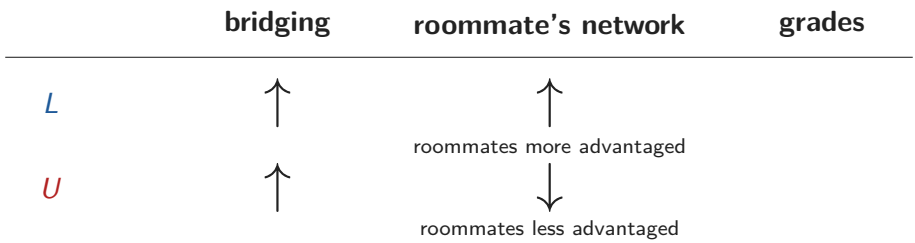
Prediction

LC: internship outcomes weakly rises, with bridging capital returns and grades.

UC: bridging capital returns are ambiguous and lower grades.

▸ Payoffs ▸ Placement ▸ Competitive

Mechanism 3, internships: bridging, networks and grades



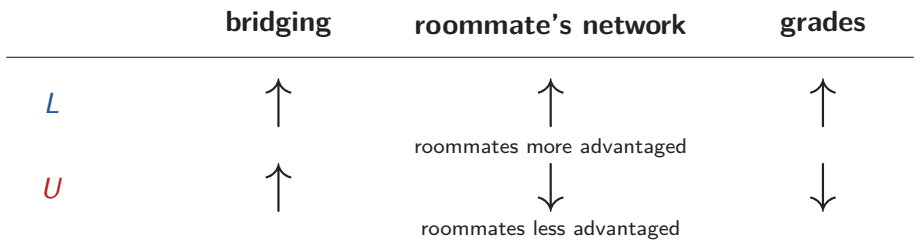
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▸ Payoffs ▸ Placement ▸ Competitive

Mechanism 3, internships: bridging, networks and grades



$$\text{Placement}_i = \underbrace{R_i}_{\text{bridging}} \times \underbrace{\pi(A_j)}_{\text{roommate's network}} + \pi_g \underbrace{g_i}_{\text{grades}}$$

Prediction

LC: internship outcomes weakly rises, with bridging capital returns and grades.

UC: bridging capital returns are ambiguous and lower grades.

▸ Payoffs ▸ Placement ▸ Competitive

Outline

1. Motivation and contribution
2. Setting and data
3. Short-run results
4. Mechanisms
   - Mechanism on grades
   - Social integration: mental health and internships
5. **Medium-run outcomes**
6. Attitudes toward AA
7. Conclusion

Medium run: internship stipend loss for UC

	CGPA : Third Year	Got an internship offer	Salary: 3rd year activity (in 1000 INR)	Mental health: 3yr	AA support: reserved group	AA support: non-reserved group
Panel A: Upper Caste Sample						
Mixed Room	-0.125*	-0.044	-32.542***	-0.044	-0.028	-0.074
	(0.075)	(0.038)	(11.716)	(0.049)	(0.065)	(0.073)
DV Mean in same caste rm	0.518	0.782	163.631	0.089	-0.138	-0.197
R-squared	0.327	0.260	0.418	0.068	0.070	0.079
N	471	469	446	472	452	454
Sharpened q-value	0.244	0.370	0.029	0.370	0.556	0.370

▸ 2 years out ▸ Panel C

Medium run: Similar academic gains, no internship gains

	CGPA : Third Year	Got an internship offer	Salary: 3rd year activity (in 1000 INR)	Mental health: 3yr	AA support: reserved group	AA support: non-reserved group
Panel A: Upper Caste Sample						
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N	471	469	446	472	452	454
Sharpened q-value	0.244	0.370	0.029	0.370	0.556	0.370
Panel B: Lower Caste Sample						
Mixed Room	0.085	-0.073*	-9.535	-0.016	0.112*	0.086
	(0.077)	(0.042)	(7.774)	(0.043)	(0.061)	(0.066)
DV Mean in same caste rm	-0.459	0.487	66.921	-0.072	0.118	0.165
R-squared	0.207	0.263	0.234	0.059	0.080	0.072
N	500	474	485	494	468	467
Sharpened q-value	0.321	0.259	0.321	0.710	0.259	0.321

▸ 2 years out ▸ Panel C

Networks story?: Lower leadership and preference for finance jobs

	Upper Caste			Lower Caste		
	Clubs Leadership	Preferred job sector: Finance/Consulting	Expected salary (INR 1000s)	Clubs Leadership	Preferred job sector: Finance/Consulting	Expected salary (INR 1000s)
Mixed Room	-0.091**	-0.078**	-80.385	0.005	-0.029	-34.579
	(0.039)	(0.033)	(358.694)	(0.036)	(0.029)	(320.247)
DV Mean, Non-mixed	0.079	0.479	5332.267	-0.083	0.234	4301.939
R-squared	0.113	0.131	0.142	0.087	0.095	0.066
N	968	961	1062	953	950	1061

Taking stock: medium-run results

Lower caste

- Academic gains persist three years out, but there are no internship gains

Taking stock: medium-run results

Lower caste

- Academic gains persist three years out, but there are no internship gains

Upper caste

- Internship stipend loss persists three years out
- Lower leadership and a stronger preference for finance jobs point to reduced network access

Outline

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Support for AA reduces for UC in jobs: 3 years after entry

	Upper Caste			Lower Caste		
	Education	Jobs	Politics	Education	Jobs	Politics
Mixed Room	-0.077	-0.170**	-0.145	0.033	0.084	-0.036
	(0.095)	(0.085)	(0.094)	(0.081)	(0.077)	(0.088)
DV Mean, Non-mixed	-0.232	-0.189	-0.184	0.196	0.174	0.152
R-squared	0.035	0.032	0.027	0.032	0.046	0.037
N	459	461	456	465	464	456

▸ Prior merit beliefs

Outline

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7. **Conclusion**

Conclusion

- Social integration can benefit academically to lower castes but poses psychological costs on them
- For Upper castes 20% losses in internship wages and reduced support of AA in jobs
- Need to do follow and study long run affects

Moving Forward

- Mentoring interventions as an alternative for upper castes
- Mental health support and providing safe social spaces in colleges
- Unmanaged frictions — induce backlash Cf. *Students for Fair Admissions v. Harvard* (2023)

Thank You!

Questions and Comments

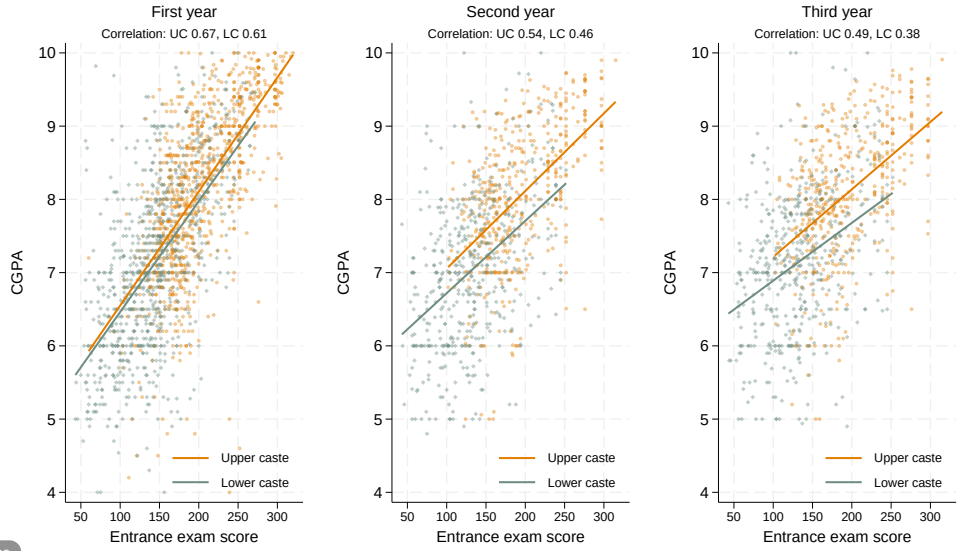
Email: balasai.vanukuri@psemail.eu

Academic Overlap with Roommate: GPA, Group Work, Study Interactions, Effort

	Upper Caste				Lower Caste			
	CGPA : First Year	Group work	Study Interactions	Effort in academics	CGPA : First Year	Group work	Study Interactions	Effort in academics
Mixed Room	-0.078	0.166*	-0.002	-0.049	0.133	0.123	0.044	-0.027
	(0.082)	(0.092)	(0.082)	(0.085)	(0.090)	(0.095)	(0.091)	(0.102)
Same Course Sequence as Roommate	0.094	0.456***	0.310***	0.038	0.047	0.385***	0.297***	0.010
	(0.081)	(0.126)	(0.108)	(0.097)	(0.095)	(0.126)	(0.106)	(0.115)
Mixed Room × Same Course seq	-0.060	-0.243	-0.059	0.188	-0.069	-0.132	-0.132	-0.013
	(0.113)	(0.158)	(0.133)	(0.129)	(0.124)	(0.154)	(0.130)	(0.141)
DV Mean, Non-mixed	0.474	-0.002	-0.080	-0.051	-0.445	-0.003	0.047	0.057
R-squared	0.475	0.186	0.187	0.099	0.432	0.154	0.128	0.109
N	939	901	901	975	895	937	937	985

◂ Grades ◂ UC losses ▸ Department ▸ Interaction figures

CGPA and Entrance Exam Score, Years 1 to 3



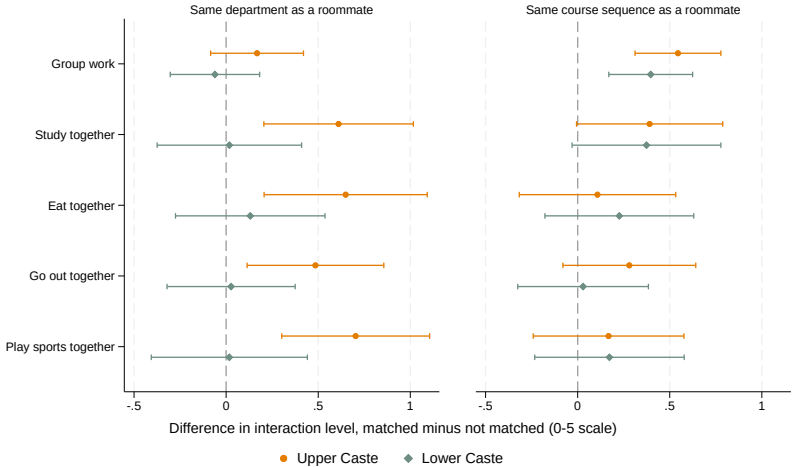
UC losses

Academic Overlap: Department Match, GPA, Study Interactions

	Upper Caste		Lower Caste	
	(1) CGPA : First Year	(2) Study Interactions	(3) CGPA : First Year	(4) Study Interactions
Mixed Room	-0.001	0.109	0.175*	0.011
	(0.078)	(0.088)	(0.097)	(0.088)
Same Department as Roommate	-0.140	0.390***	0.007	0.082
	(0.088)	(0.110)	(0.104)	(0.107)
Mixed Room × Same Department	-0.148	-0.220*	-0.141	-0.087
	(0.104)	(0.125)	(0.121)	(0.121)
DV Mean, Non-mixed	0.474	-0.080	-0.445	0.047
R-squared	0.483	0.186	0.435	0.117
N	947	906	896	938

◂ UC losses ▸ Course sequence ▸ Interaction figures

Roommate Interactions by Department and Sequence Match



Same-caste rooms only. Matched minus not matched with a roommate (0–5 scale), 95% CI.

◂ Academic overlap ◂ UC losses

Upper castes are more active in clubs and hold more positions

	Lower caste		Upper caste		Difference
	N	Mean	N	Mean	(LC − UC)
A. Active membership in clubs					
Cultural clubs	300	0.28	304	0.40	-0.13^{***}
Hostel clubs	300	0.33	305	0.41	-0.08^{**}
Co-curricular clubs	299	0.18	305	0.30	-0.11^{***}
B. Leadership Positions held					
Cultural clubs	332	0.38	336	0.50	-0.11^{***}
Technical clubs	332	0.16	336	0.29	-0.13^{***}
Institute board	332	0.17	336	0.27	-0.11^{***}
Hostel positions	332	0.22	336	0.30	-0.09^{**}

Same-caste rooms only. Club types where participation depends on advantage; sports, volunteering are exceptions (required to do the 100-hour activity by institute) are in the full table. *** $p < 0.01$, ** $p < 0.05$ (t-test).

◂ Mechanism 2 ▸ Full table (A3) ▸ Effect of mixing

Time Use, Club Membership and Positions, Same-Caste Rooms

	Upper Caste			Lower Caste			Upper Caste - Lower Caste	
	N	Mean	Sd	N	Mean	Sd	Difference	P-Val
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Time use								
Study hours : normal week	334	10.987	12.079	344	13.907	15.307	-2.920	0.006
Study hours: exam week	334	32.710	22.183	344	29.846	22.796	2.864	0.098
Hours in student clubs	334	9.970	13.626	343	8.714	12.733	1.256	0.216
Hours in internships/jobs	333	5.111	9.940	343	6.216	11.704	-1.105	0.186
Hours in part-time jobs	333	1.988	7.963	342	3.085	10.155	-1.097	0.118
Hours in other tasks	332	9.816	15.028	342	9.557	14.329	0.259	0.819
B. Indicator for active membership								
Participation in cultural clubs	304	0.401	0.491	300	0.277	0.448	0.125	0.001
Participation in hostel clubs	305	0.410	0.493	300	0.327	0.470	0.083	0.034
Participation in co-curricular clubs	305	0.295	0.457	299	0.184	0.388	0.111	0.001
Participation in volunteering clubs	305	0.239	0.427	301	0.292	0.456	-0.053	0.140
Participation in sports	303	0.370	0.484	300	0.427	0.495	-0.057	0.153
C. Positions held in clubs and activities								
Cultural clubs	336	0.497	0.501	332	0.383	0.487	0.114	0.003
Technical clubs	336	0.286	0.452	332	0.157	0.364	0.129	0.000
Institute board	336	0.274	0.447	332	0.166	0.372	0.108	0.001
Hostel positions	336	0.304	0.460	332	0.217	0.413	0.087	0.011
Volunteering clubs	336	0.077	0.268	332	0.123	0.329	-0.046	0.048
Cultural fest	336	0.304	0.460	332	0.407	0.492	-0.103	0.005

Notes: Same-caste rooms only. Time use in weekly hours (self-reported). Panels B and C are indicators. P-value from an unequal-variance t-test of equal means.

◂ Clubs slide

Effect on Student Club and Sports Active Participation

	Upper Caste			Lower Caste		
	Participation in clubs and sports	Participation in student clubs	Participation in sports and volunteering clubs	Participation in clubs and sports	Participation in student clubs	Participation in sports and volunteering clubs
Mixed Room	0.019	0.003	0.050	0.017	0.066	-0.054
	(0.047)	(0.057)	(0.053)	(0.047)	(0.053)	(0.059)
DV Mean, Non-mixed	0.034	0.105	-0.077	-0.033	-0.103	0.065
R-squared	0.098	0.086	0.098	0.090	0.093	0.075
N	893	893	893	885	882	885

◂ Social/Clubs

Effect on Social Interactions with Roommate: Index Components

	Upper Caste				Lower Caste			
	(1) Social Interactions	(2) Eating together	(3) Sports	(4) Going out together	(5) Social Interactions	(6) Eating together	(7) Sports	(8) Going out together
Mixed Room	-0.085	-0.074	-0.058	-0.116	-0.181***	-0.192**	-0.209***	-0.150*
	(0.077)	(0.087)	(0.081)	(0.089)	(0.069)	(0.075)	(0.080)	(0.080)
DV Mean, Non-mixed	-0.098	-0.094	-0.140	-0.074	0.120	0.125	0.156	0.088
R-squared	0.150	0.125	0.158	0.133	0.126	0.112	0.134	0.105
N	864	864	860	861	879	876	875	873

Notes: Columns 1-4: upper caste; columns 5-8: lower caste. Columns 1 and 5 are the Social Interaction index; the others are its components. All regressions include hostel-by-cohort and specialization fixed effects and control for the number of roommates. Standard errors clustered at the room level. ***, **, * indicate significance at 1%, 5%, 10%.

◂ Social/Help

Effect on Help Received from Roommate

	Upper Caste				Lower Caste			
	Got Help (Composite Ind)	Got exam prep	Got Internship Help	Got Emotional /Financial Help	Got Help (Composite Ind)	Got exam prep	Got Internship Help	Got Emotional /Financial Help
Mixed Room	-0.102	-0.170*	-0.120	-0.040	-0.028	0.120	-0.009	-0.130*
	(0.068)	(0.090)	(0.079)	(0.075)	(0.063)	(0.075)	(0.078)	(0.072)
DV Mean, Non-mixed	-0.065	-0.040	-0.038	-0.113	0.085	0.048	0.052	0.103
R-squared	0.100	0.097	0.099	0.092	0.084	0.081	0.074	0.089
N	886	880	875	878	895	887	864	882

◂ Study ◂ Social/Help

Effect on Help Received from Other Hostel Mates

	Upper Caste				Lower Caste			
	Got Help (Composite Index)	Got Academic Help	Got Internship Help	Got Emotional /Financial Help	Got Help (Composite Index)	Got Academic Help	Got Internship Help	Got Emotional /Financial Help
Mixed Room	-0.045	-0.076	-0.060	-0.003	0.051	0.072	0.046	0.052
	(0.058)	(0.071)	(0.073)	(0.071)	(0.057)	(0.072)	(0.068)	(0.071)
DV Mean, Non-mixed	0.047	0.083	0.047	0.017	-0.054	-0.091	-0.043	-0.032
R-squared	0.093	0.090	0.096	0.088	0.081	0.082	0.087	0.066
N	846	844	836	837	844	839	821	832

◂ Study ◂ Social/Help

Effect on Help Provided to Roommate

	Upper Caste				Lower Caste			
	Provided Help (Composite Ind)	Provided exam prep	Provided Internship Help	Provided Emotional /Financial Help	Provided Help (Composite Ind)	Provided exam prep	Provided Internship Help	Provided Emotional /Financial Help
Mixed Room	0.093	0.144*	0.065	0.106	-0.115**	-0.142**	-0.054	-0.167**
	(0.064)	(0.082)	(0.074)	(0.073)	(0.058)	(0.071)	(0.070)	(0.069)
DV Mean, Non-mixed	-0.113	-0.081	-0.094	-0.154	0.116	0.089	0.105	0.150
R-squared	0.115	0.092	0.116	0.107	0.089	0.078	0.085	0.093
N	838	835	829	836	847	841	828	834

◂ Study ◂ Social/Help

Mental Health, Controlling for Roommate Interaction

	Upper Caste			Lower Caste		
	Mental health index	Mental health index	Mental health index	Mental health index	Mental health index	Mental health index
Mixed Room	-0.062	-0.034	-0.034	-0.080*	-0.024	-0.026
	(0.045)	(0.035)	(0.035)	(0.041)	(0.032)	(0.032)
Social Interactions		0.019	0.031		0.067***	0.046**
		(0.017)	(0.020)		(0.019)	(0.023)
Study Interactions			-0.023			0.039
			(0.026)			(0.025)
DV Mean, Non-mixed	0.027	0.027	0.027	0.001	0.001	0.001
R-squared	0.151	0.158	0.159	0.152	0.148	0.151
N	935	856	856	928	872	872

◂ Social/Help

Summary Statistics on Characteristics (1/2)

	Upper Caste			Lower Caste			Upper Caste - Lower Caste	
	N	Mean	Sd	N	Mean	Sd	Difference	P-Val
A. Socio Economic Indicators								
Mother's education (bachelors or higher)	902	0.855	0.353	881	0.571	0.495	0.284	0.000
Father's education (bachelors or higher)	896	0.756	0.430	876	0.614	0.487	0.141	0.000
Knows someone studied in IITs	912	0.265	0.442	907	0.184	0.388	0.081	0.000
Assets Index	824	0.150	0.547	809	-0.180	0.647	0.329	0.000
Taken a loan	885	0.148	0.355	890	0.230	0.421	-0.082	0.000
Family income (9L or above)	859	0.655	0.476	895	0.415	0.493	0.241	0.000
Owns a laptop/computer	824	0.900	0.300	809	0.759	0.428	0.142	0.000
Consumption Index	510	0.010	0.871	503	-0.097	0.740	0.107	0.036
B. Entrance Exam Preparation and Academic Background								
JEE Advanced score	1112	201.611	47.275	1091	141.166	47.111	60.445	0.000
Took more than 1 attempt	945	0.145	0.352	934	0.281	0.449	-0.136	0.000
Years: JEE preparation	964	2.473	1.386	964	2.175	1.365	0.298	0.000
Average daily study hours JEE	963	8.443	3.375	962	8.874	3.472	-0.431	0.006
JEE Prep Cost (in lakhs INR)	875	1.332	1.142	884	1.276	1.154	0.056	0.307
Score in Class XII	942	93.286	6.537	934	90.338	6.494	2.947	0.000
Score in Class X	939	95.044	7.282	935	92.877	8.109	2.167	0.000

▸ Part 2/2 ◂ Baseline

Summary Statistics on Characteristics (2/2)

	Upper Caste			Lower Caste			Upper Caste - Lower Caste	
	N	Mean	Sd	N	Mean	Sd	Difference	P-Val
C. Pre-college Friendship Networks								
Close friends count	488	11.004	10.604	484	9.531	9.869	1.473	0.025
Close friends in IITs	488	0.079	0.989	484	-0.034	1.067	0.113	0.087
Friends who did not clear entrance exam	488	4.973	8.160	484	5.983	9.111	-1.010	0.069
Share of friends from different caste	425	-0.340	1.025	418	0.485	0.759	-0.825	0.000
D. Attitudes towards Affirmative Action and Redistribution								
AA support: reserved group	455	-0.312	0.681	440	0.368	0.622	-0.679	0.000
AA support: non-reserved group	453	-0.349	0.730	442	0.476	0.699	-0.825	0.000
E. Mental Health at Baseline								
Mental health at Baseline	502	0.032	0.476	490	-0.045	0.489	0.077	0.012
PHQ4: anxiety and depression	455	0.017	0.813	438	-0.039	0.763	0.056	0.286
Relative wellbeing index	450	0.071	0.510	426	-0.049	0.498	0.120	0.000
Worry index	502	0.011	0.586	490	-0.064	0.687	0.075	0.065
Satisfied with Specialization/Department	474	0.538	0.499	461	0.638	0.481	-0.100	0.002

◂ Part 1/2 ◂ Baseline

Two years, upper-caste grade loss persist

	CGPA : Second Year	Internship: 2nd Summer	Salary: 2nd year activity (1000 INR)	Plan to do internship: 3rd year
Panel A: Upper Caste Sample				
Mixed Room	-0.119*	-0.070	-10.287	-0.022
	(0.070)	(0.045)	(6.403)	(0.027)
DV Mean in same caste rm	0.539	0.584	37.809	0.910
R-squared	0.367	0.077	0.104	0.172
N	471	455	458	468
Sharpened q-value	0.156	0.156	0.156	0.417

◂ 3 years out ▸ Panel C

Two years, lower-caste gains persist, internship gains

	CGPA : Second Year	Internship: 2nd Summer	Salary: 2nd year activity (1000 INR)	Plan to do internship: 3rd year
Panel A: Upper Caste Sample				
Mixed Room	-0.119*	-0.070	-10.287	-0.022
	(0.070)	(0.045)	(6.403)	(0.027)
DV Mean in same caste rm	0.539	0.584	37.809	0.910
R-squared	0.367	0.077	0.104	0.172
N	471	455	458	468
Sharpened q-value	0.156	0.156	0.156	0.417
Panel B: Lower Caste Sample				
Mixed Room	0.119*	0.036	5.985*	-0.004
	(0.072)	(0.044)	(3.542)	(0.045)
DV Mean in same caste rm	-0.478	0.303	9.938	0.678
R-squared	0.266	0.085	0.077	0.122
N	500	462	468	476
Sharpened q-value	0.196	0.556	0.196	0.933

◂ 3 years out ▸ Panel C

3 Years after Admission, Panel C: full sample

	CGPA : Third Year	Got an internship offer	Salary: 3rd year activity (in 1000 INR)	Mental health: 3yr	AA support: reserved group	AA support: non-reserved group
Panel C: Full Sample						
Mixed Room	-0.016	-0.046	-21.309***	-0.028	0.042	-0.001
	(0.055)	(0.029)	(7.213)	(0.033)	(0.046)	(0.053)
DV Mean in same caste rm	-0.000	0.631	112.238	0.004	-0.004	-0.009
R-squared	0.365	0.270	0.365	0.049	0.042	0.049
N	971	943	931	966	920	921
Sharpened q-value	0.745	0.261	0.018	0.527	0.527	0.820
P val ($\beta_LC == \beta_UC$)	0.064	0.621	0.077	0.814	0.072	0.073

◂ 3yr Outcomes

2 Years after Admission, Panel C: full sample

	CGPA : Second Year	Internship: 2nd Summer	Salary: 2nd year activity (1000 INR)	Plan to do internship: 3rd year
Mixed Room	0.003	-0.019	-3.465	-0.001
	(0.051)	(0.031)	(3.712)	(0.030)
DV Mean in same caste rm	-0.001	0.436	23.062	0.791
R-squared	0.415	0.084	0.059	0.094
N	971	917	926	944
Sharpened q-value	0.971	0.971	0.971	0.971
P val ($\beta_LC == \beta_UC$)	0.037	0.071	0.017	0.605

◂ 2yr Outcomes

Heterogeneous Effects on AA Attitudes by Baseline Cross-Caste Friendship

	Upper Caste		Lower Caste	
	AA support: reserved group	AA support: non-reserved group	AA support: reserved group	AA support: non-reserved group
Mixed Room	0.007	-0.071	0.000	0.158
	(0.093)	(0.106)	(0.073)	(0.099)
Baseline Social Segregation	-0.119**	-0.128**	-0.107	-0.206**
	(0.057)	(0.062)	(0.073)	(0.104)
Mixed Room × Baseline Social Segregation	0.131*	0.123	0.068	0.108
	(0.070)	(0.076)	(0.088)	(0.110)
DV Mean, Non-mixed	-0.251	-0.265	0.239	0.237
R-squared	0.129	0.158	0.077	0.120
N	351	353	344	344

◂ Merit Belief

Heterogeneous Effects on AA Attitudes by Own Entrance Exam Score

	Upper Caste		Lower Caste	
	AA support: reserved group	AA support: non-reserved group	AA support: reserved group	AA support: non-reserved group
Mixed Room	0.037	-0.063	0.036	0.172***
	(0.060)	(0.063)	(0.052)	(0.067)
Own Entrance Score (SD)	-0.235***	-0.315***	-0.276***	-0.360***
	(0.068)	(0.085)	(0.049)	(0.063)
Mixed Room × Own Entrance Score	0.118*	0.185**	0.142***	0.147**
	(0.068)	(0.079)	(0.054)	(0.068)
DV Mean, Non-mixed	-0.251	-0.265	0.239	0.237
R-squared	0.184	0.196	0.150	0.184
N	803	800	814	806

◂ Merit Belief

Heterogeneous Effects on Main Outcomes by Gender

	Upper Caste				Lower Caste			
	CGPA : First Year	Mental health index	AA support: reserved group	AA support: non-reserved group	CGPA : First Year	Mental health index	AA support: reserved group	AA support: non-reserved group
Mixed Room	-0.108*	-0.051	0.168***	0.109	0.102*	-0.052	-0.037	0.084
	(0.056)	(0.053)	(0.060)	(0.070)	(0.061)	(0.047)	(0.051)	(0.064)
Female	-0.056	-0.215***	0.279***	0.276***	-0.103	-0.137	0.053	-0.016
	(0.103)	(0.071)	(0.080)	(0.089)	(0.110)	(0.112)	(0.085)	(0.109)
Mixed Room × Female	0.079	-0.026	-0.416***	-0.386***	0.028	-0.107	-0.041	0.053
	(0.120)	(0.096)	(0.114)	(0.132)	(0.133)	(0.129)	(0.108)	(0.132)
DV Mean, Non-mixed	0.474	0.027	-0.251	-0.265	-0.445	0.001	0.239	0.237
R-squared	0.459	0.112	0.134	0.150	0.409	0.107	0.081	0.090
N	947	935	820	817	896	928	829	820

◂ Table 1 ◂ Merit Belief

Effect on Experiences of Discrimination and Exclusion: After 1 year

	Upper Caste			Lower Caste		
	Experience of Discrimination (SD)	Exclusion in Study Groups (SD)	Exclusion in Social Events (SD)	Experience of Discrimination (SD)	Exclusion in Study Groups (SD)	Exclusion in Social Events (SD)
Mixed Room	0.010	0.117*	0.077	0.081	-0.024	0.032
	(0.074)	(0.067)	(0.072)	(0.073)	(0.076)	(0.069)
DV Mean, Non-mixed	-0.005	-0.086	0.006	0.005	0.086	-0.006
R-squared	0.054	0.059	0.055	0.074	0.064	0.063
N	966	966	966	978	978	978

◂ Taking Stock

Effect on Experiences of Discrimination and Exclusion: Three Years after Admission

	Upper Caste			Lower Caste		
	Experience of Discrimination (SD)	Exclusion in Study Groups (SD)	Exclusion in Social Events (SD)	Experience of Discrimination (SD)	Exclusion in Study Groups (SD)	Exclusion in Social Events (SD)
Mixed Room	0.085	0.059	-0.003	0.344**	0.016	0.047
	(0.099)	(0.083)	(0.096)	(0.137)	(0.103)	(0.099)
DV Mean, Non-mixed	-0.077	-0.124	-0.030	0.068	0.110	0.026
R-squared	0.029	0.034	0.041	0.035	0.023	0.013
N	431	431	431	450	450	450

◂ Taking Stock

Table 1, Panel C: full sample

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel C: Full Sample				
Mixed Room	-0.015	-0.073**	0.049	0.100**
	(0.038)	(0.032)	(0.040)	(0.047)
DV Mean in same caste rm	0.021	0.014	-0.002	-0.012
R-squared	0.506	0.109	0.138	0.135
N	1843	1863	1649	1637
Sharpened q-value	0.706	0.106	0.318	0.108
P val ($\beta_LC == \beta_UC$)	0.033	0.509	0.086	0.648

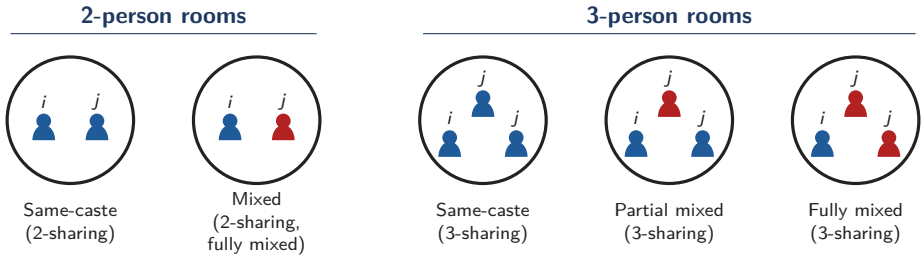
◂ Table 1

Room Composition Transitions: Year 1 to Year 2

	Upper Caste				Lower Caste			
Year 1 Room Type	Non-Mixed	Partial-Mixed	Full-Mixed	N	Non-Mixed	Partial-Mixed	Full-Mixed	N
A. 2-Person Rooms (Year 1)								
Non-Mixed	78.8	2.1	19.1	236	81.7	3.0	15.3	202
Full-Mixed	32.3	5.8	61.9	223	30.4	6.2	63.4	224
B. 3-Person Rooms (Year 1)								
Non-Mixed	75.8	12.4	11.8	161	63.7	22.9	13.4	179
Partial-Mixed	34.9	42.7	22.5	347	36.9	45.0	18.1	331
Full-Mixed	28.5	23.6	47.9	165	27.4	21.7	50.9	175

◂ Room transitions

Room types: same-caste, partially mixed and fully mixed



- **Blue**: the student's own caste group; **red**: the other caste group; i is the student whose outcome is measured and j are the roommates
- **Partial mixed**: one same-caste and one other-caste roommate. **Fully mixed**: all roommates from the other caste
- Partial and full mixing are separately identified only in 3-person rooms; every mixed 2-person room is fully mixed by construction

◂ Specification ◂ MH drivers ▸ MH: partial vs. full ▸ Table 1: partial vs. full

Mental Health by Roommate's Entrance Exam Score

	Upper Caste		Lower Caste	
	(1) Roommate's Score	(2) Difference in Score	(3) Roommate's Score	(4) Difference in Score
Mixed Room	-0.084	-0.063	-0.043	-0.042
	(0.053)	(0.052)	(0.045)	(0.046)
Roommate's Entrance Score (SD)	-0.022		-0.005	
	(0.039)		(0.043)	
Mixed Room × Roommate's Entrance Score	-0.004		-0.009	
	(0.044)		(0.045)	
Roommate − Own Entrance Score (SD)		-0.064**		0.023
		(0.031)		(0.031)
Mixed Room × Roommate − Own Score		0.065*		-0.034
		(0.038)		(0.038)
DV Mean, Non-mixed	0.027	0.027	0.001	0.001
R-squared	0.143	0.146	0.149	0.152
N	909	892	901	887

◂ MH drivers ◂ SES version

Effect on Mental Health: Index and Components

	Mental health index (1)	PHQ4 index (2)	Relative well being index (3)	Worry index (4)
Panel A: Upper Caste Sample				
Mixed Room	-0.062	-0.093	-0.007	-0.024
	(0.044)	(0.068)	(0.042)	(0.045)
DV Mean in same caste rm	0.027	0.016	-0.006	0.052
R-squared	0.149	0.153	0.076	0.135
N	935	875	839	890
Sharpened q-value	0.342	0.342	0.873	0.784
Panel B: Lower Caste Sample				
Mixed Room	-0.082**	-0.084	0.005	-0.048
	(0.042)	(0.064)	(0.042)	(0.045)
DV Mean in same caste rm	0.001	-0.010	0.012	-0.046
R-squared	0.146	0.125	0.082	0.124
N	928	877	850	892
Sharpened q-value	0.197	0.377	0.904	0.381
Panel C: Full Sample				
Mixed Room	-0.073**	-0.099**	0.006	-0.038
	(0.032)	(0.047)	(0.030)	(0.033)
DV Mean in same caste rm	0.014	0.003	0.003	0.003
R-squared	0.109	0.103	0.042	0.091
N	1863	1752	1689	1782
Sharpened q-value	0.035	0.035	0.420	0.163
P val ($\beta_LC == \beta_UC$)	0.553	0.911	0.877	0.693

Notes: Higher values indicate better mental health. Column 1 is the composite Mental Health Index; column 2 the PHQ-4 index (reverse-coded); column 3 the relative wellbeing index; column 4 the worry index. Hostel-by-cohort and specialization-by-cohort fixed effects; number of roommates as control; standard errors clustered at the room level.

◂ MH drivers

Mental Health: Partial vs. Full Mixed Rooms, by Room Size

	(1) Full Sample	(2) 2-Person Rooms	(3) 3-Person Rooms
Partial Mixed Room	-0.048	0.000	-0.047
	(0.041)	(.)	(0.048)
Full Mixed Room	-0.086***	-0.112**	-0.075
	(0.033)	(0.047)	(0.050)
P-val (Partial = Full)	0.309	0.017	0.462
DV Mean, Non-mixed	0.014	0.019	0.008
R-squared	0.110	0.159	0.142
N	1863	723	1138

Notes: Outcome: Mental Health Index (higher = better). Partial mixed: one same-caste and one other-caste roommate (3-person rooms). Full mixed: all roommates from the other caste; every mixed 2-person room is fully mixed by construction. P-value tests Partial = Full. Hostel-by-cohort and specialization-by-cohort fixed effects.

◂ MH drivers

Mental Health Index Robustness: Alternative Specifications

Specification	Coefficient (SE)	N
Panel A: Upper Caste Sample		
Main specification	-0.062 (0.044)	935
Full mixing (vs. partial)	-0.088* (0.045)	935
Full mixing, 3-person rooms	-0.018 (0.074)	567
Two-person rooms only	-0.152** (0.063)	358
Demographic controls	-0.055 (0.046)	935
Caste distance (continuous)	-0.036 (0.028)	933
Caste fixed effects	-0.058 (0.045)	935
Panel B: Lower Caste Sample		
Main specification	-0.082** (0.042)	928
Full mixing (vs. partial)	-0.081* (0.045)	928
Full mixing, 3-person rooms	-0.113* (0.063)	570
Two-person rooms only	-0.094 (0.066)	348
Demographic controls	-0.084** (0.042)	928
Caste distance (continuous)	-0.086** (0.036)	928
Caste fixed effects	-0.083** (0.042)	928

▸ Partial/Full ▸ 3-Room ▸ 2-Room ▸ +Controls ▸ Cast Dist ▸ Caste FE

◂ MH drivers ◂ Table 1

Table 1 Robustness: Alternative Specifications

Specification	Coefficient (SE)	N
Panel A: Upper Caste Sample		
Main specification	-0.103** (0.050)	947
Full mixing (vs. partial)	-0.112* (0.057)	947
Full mixing, 3-person rooms	-0.071 (0.082)	569
Two-person rooms only	-0.160* (0.086)	371
Demographic controls	-0.117** (0.049)	947
Caste distance (continuous)	-0.090** (0.040)	945
Caste fixed effects	-0.092* (0.050)	947
Panel B: Lower Caste Sample		
Main specification	0.091* (0.052)	896
Full mixing (vs. partial)	0.087 (0.058)	896
Full mixing, 3-person rooms	0.070 (0.090)	539
Two-person rooms only	0.077 (0.085)	350
Demographic controls	0.092* (0.052)	896
Caste distance (continuous)	0.019 (0.049)	896
Caste fixed effects	0.083 (0.052)	896

▸ Partial/Full ▸ 3-Room ▸ 2-Room ▸ +Controls ▸ Cast Dist ▸ Caste FE

◂ Table 1

Robustness: Partial vs. Full Mixing

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Partial Mixed Room	-0.085	-0.011	0.136*	0.081
	(0.062)	(0.061)	(0.077)	(0.086)
Full Mixed Room	-0.112*	-0.088*	0.104*	0.031
	(0.057)	(0.045)	(0.059)	(0.064)
P-val (Partial = Full)	0.668	0.158	0.649	0.575
DV Mean in same caste rm	0.474	0.027	-0.251	-0.265
R-squared	0.473	0.152	0.173	0.185
N	947	935	820	817
Panel B: Lower Caste Sample				
Partial Mixed Room	0.098	-0.084	-0.011	0.153**
	(0.070)	(0.055)	(0.052)	(0.067)
Full Mixed Room	0.087	-0.081*	-0.029	0.083
	(0.058)	(0.045)	(0.051)	(0.063)
P-val (Partial = Full)	0.881	0.960	0.723	0.296
DV Mean in same caste rm	-0.445	0.001	0.239	0.237
R-squared	0.433	0.146	0.110	0.132
N	896	928	829	820

Robustness: Partial vs. Full Mixing, 3-Person Rooms

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Partial Mixed Room	-0.071	0.027	0.194**	0.094
	(0.068)	(0.070)	(0.085)	(0.097)
Full Mixed Room	-0.071	-0.018	0.198**	0.057
	(0.082)	(0.074)	(0.095)	(0.107)
P-val (Partial = Full)	0.996	0.437	0.960	0.716
DV Mean in same caste rm	0.526	-0.003	-0.251	-0.301
R-squared	0.494	0.183	0.206	0.198
N	569	567	509	507
Panel B: Lower Caste Sample				
Partial Mixed Room	0.078	-0.098*	-0.016	0.124*
	(0.078)	(0.057)	(0.055)	(0.069)
Full Mixed Room	0.070	-0.113*	-0.059	0.030
	(0.090)	(0.063)	(0.069)	(0.087)
P-val (Partial = Full)	0.922	0.777	0.435	0.183
DV Mean in same caste rm	-0.431	0.019	0.253	0.223
R-squared	0.429	0.207	0.149	0.229
N	539	570	505	501

Robustness: Two-Person Rooms Only

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Mixed Room	-0.160*	-0.152**	-0.008	0.005
	(0.086)	(0.063)	(0.077)	(0.086)
DV Mean in same caste rm	0.437	0.049	-0.250	-0.236
R-squared	0.501	0.249	0.216	0.266
N	371	358	304	303
Sharpened q-value	0.096	0.052	0.712	0.712
Panel B: Lower Caste Sample				
Mixed Room	0.077	-0.094	0.027	0.116
	(0.085)	(0.066)	(0.076)	(0.093)
DV Mean in same caste rm	-0.457	-0.015	0.228	0.249
R-squared	0.488	0.168	0.162	0.112
N	350	348	316	312
Sharpened q-value	0.487	0.423	0.725	0.423
P val ($\beta_LC == \beta_UC$)	0.069	0.397	0.917	0.222

Robustness: Demographic Controls

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Mixed Room	-0.114**	-0.055	0.112**	0.044
	(0.049)	(0.046)	(0.056)	(0.057)
DV Mean in same caste rm	0.474	0.027	-0.251	-0.265
R-squared	0.496	0.157	0.179	0.201
N	947	935	820	817
Sharpened q-value	0.041	0.153	0.047	0.223
Panel B: Lower Caste Sample				
Mixed Room	0.091*	-0.084**	-0.006	0.108*
	(0.052)	(0.042)	(0.044)	(0.056)
DV Mean in same caste rm	-0.445	0.001	0.239	0.237
R-squared	0.466	0.154	0.126	0.136
N	896	928	829	820
Sharpened q-value	0.108	0.108	0.900	0.108
P val ($\beta_LC == \beta_UC$)	0.012	0.540	0.107	0.656

Robustness: Caste Distance

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Caste distance with roommates	-0.090**	-0.036	0.059	0.039
	(0.040)	(0.028)	(0.037)	(0.041)
DV Mean in same caste rm	0.480	0.030	-0.256	-0.273
R-squared	0.475	0.104	0.127	0.183
N	945	933	818	815
Sharpened q-value	0.106	0.259	0.221	0.336
Panel B: Lower Caste Sample				
Caste distance with roommates	0.019	-0.086**	0.047	0.120***
	(0.049)	(0.036)	(0.036)	(0.040)
DV Mean in same caste rm	-0.453	0.020	0.251	0.246
R-squared	0.431	0.116	0.068	0.137
N	896	928	829	820
Sharpened q-value	0.351	0.018	0.130	0.005
P val ($\beta_LC == \beta_UC$)	0.777	0.699	0.829	0.323

Robustness: Caste Fixed Effects

	CGPA : First Year (1)	Mental health index (2)	AA support: reserved group (3)	AA support: non-reserved group (4)
Panel A: Upper Caste Sample				
Mixed Room	-0.092*	-0.058	0.107*	0.036
	(0.050)	(0.045)	(0.057)	(0.058)
DV Mean in same caste rm	0.474	0.027	-0.251	-0.265
R-squared	0.482	0.151	0.178	0.194
N	947	935	820	817
Sharpened q-value	0.132	0.267	0.132	0.544
Panel B: Lower Caste Sample				
Mixed Room	0.083	-0.083**	-0.019	0.113**
	(0.052)	(0.042)	(0.044)	(0.055)
DV Mean in same caste rm	-0.445	0.001	0.239	0.237
R-squared	0.436	0.146	0.137	0.176
N	896	928	829	820
Sharpened q-value	0.074	0.048	0.333	0.048
P val ($\beta_LC == \beta_UC$)	0.097	0.461	0.114	0.510

Roommate Interactions, Same-Caste Rooms: Social Interaction and Help Received

	Upper Caste			Lower Caste			Upper Caste - Lower Caste	
	N	Mean	Sd	N	Mean	Sd	Difference	P-Val
A. Social interaction (once a week or more)								
Study together	286	0.462	0.499	296	0.574	0.495	-0.113	0.006
Eat together	288	0.597	0.491	298	0.651	0.477	-0.054	0.180
Go out together	286	0.304	0.461	297	0.343	0.476	-0.039	0.312
Play sports together	286	0.413	0.493	299	0.498	0.501	-0.086	0.037
B. Substantial help received								
Exam prep: help received	296	0.666	0.473	308	0.666	0.473	-0.000	0.999
Internships: help received	294	0.313	0.464	297	0.327	0.470	-0.014	0.722
Emotional support: help received	293	0.522	0.500	305	0.574	0.495	-0.052	0.206
Financial support: help received	292	0.298	0.458	296	0.463	0.499	-0.165	0.000

Notes: Same-caste rooms only, 2023 and 2024 entry cohorts, one or two roommates. Panel A: activity with a roommate once a week or more. Panel B: roommate was 'Sometimes' or 'Mostly' helpful. P-value from an unequal-variance t-test of equal means.

◂ Table 2

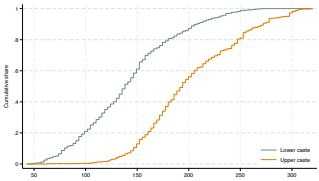
Roommate Interactions, Same-Caste Rooms: Help Provided

	Upper Caste			Lower Caste			Upper Caste - Lower Caste	
	N	Mean	Sd	N	Mean	Sd	Difference	P-Val
C. Substantial help provided								
Exam prep: help provided	277	0.643	0.480	288	0.701	0.458	-0.059	0.137
Internships: help provided	270	0.289	0.454	277	0.336	0.473	-0.047	0.238
Emotional support: help provided	275	0.524	0.500	283	0.618	0.487	-0.095	0.024
Financial support: help provided	275	0.342	0.475	285	0.495	0.501	-0.153	0.000

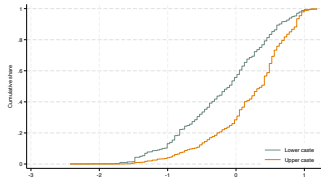
Notes: Same-caste rooms only, 2023 and 2024 entry cohorts, one or two roommates. Panel C: respondent was 'Sometimes' or 'Mostly' supportive to the roommate. P-value from an unequal-variance t-test of equal means.

◂ Table 2

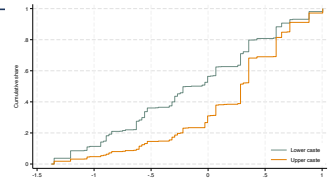
Appendix: upper castes are more advantaged (first-order stochastic dominance)



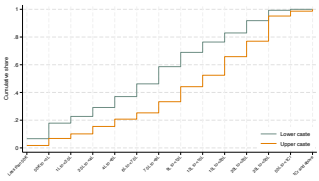
Entrance exam score



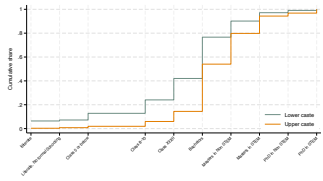
SES index



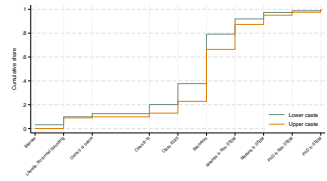
Assets index



Family income



Mother's education



Father's education

CDFs by caste. The upper-caste distribution lies to the right of the lower-caste distribution throughout. Entrance score is unweighted; other outcomes use survey weights.

◂ Setup

Appendix: time, capital and club alignment

Time and social capital $(s_i + a_i = 1)$

$$B_i = \lambda_{ij}\, s_i + \iota_i\, a_i, \qquad R_i = 1 - B_i$$

Belonging is affine in roommate time

$$B_i(s_i) = \iota_i + \tau_i\, s_i, \qquad \tau_i \equiv \lambda_{ij} - \iota_i$$

Room-oriented in a mixed room if $\tau_i = \lambda_M - \iota_i > 0$, club-oriented otherwise.

s_i, a_i: time with roommate, in clubs. λ_{ij}: roommate alignment. $\iota_i = \iota(c_i, A_i)$: club alignment, rising in advantage within caste, higher for U at any advantage level, and zero if club-excluded.

◂ Setup ◂ Wellbeing

Competitive internships: strength of ties matters

Same-caste room



strong tie

Prediction

U: the competitive index falls relative to the non-competitive index, in proportion to own advantage: both the roommate's network and the tie are weaker.

L: it rises only if the discount on mixed ties is mild relative to the roommate's greater network value.

◂ Mechanism 3 ▸ Payoffs ▸ Placement

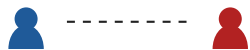
Competitive internships: strength of ties matters

Same-caste room



strong tie

Mixed room



weaker tie

Prediction

U: the competitive index falls relative to the non-competitive index, in proportion to own advantage: both the roommate's network and the tie are weaker.

L: it rises only if the discount on mixed ties is mild relative to the roommate's greater network value.

◂ Mechanism 3 ▸ Payoffs ▸ Placement

Competitive internships: strength of ties matters



Prediction

U: the competitive index falls relative to the non-competitive index, in proportion to own advantage: both the roommate's network and the tie are weaker.

L: it rises only if the discount on mixed ties is mild relative to the roommate's greater network value.

◂ Mechanism 3 ▸ Payoffs ▸ Placement

Appendix: payoffs and placement indices

$$S_i = v(B_i) - c(R_i; \Delta_i) - \chi_{c_i}(d_{ij})\, s_i \qquad \text{wellbeing}$$

$$N_i = A_i + \pi_{ij}\,(R_i) \qquad \text{network capital}$$

$$Y_i = N_i + \pi_g\, g_i \qquad \text{placements}$$

$$U_i = S_i + Y_i \qquad \text{utility}$$

Δ_i: preparation gap. $\pi_{ij} = \pi(A_j)$: roommate's network value. ν: baseline access from sharing a room. π_g: return to grades.

◂ Non-competitive ◂ Competitive

Appendix: grades

$$g_i = \theta_i + \beta\,\lambda_{ij}\,(\theta_j - \theta_i)_+ - \mu_{c_i}\,d_{ij} + \varepsilon_i$$

Lower-caste student, $p \to 1$**:** grades rise if and only if

$$\lambda_{ij} > \frac{\delta_L}{2\delta} + \frac{\mu_L\,d_{ij}}{\beta\,\delta}$$

Upper-caste student, $p \to 1$**:** expected change is $-\beta\,\delta_U/2 - \mu_U\,d_{ij}$, negative whenever $\delta_U > 0$ or $\mu_U d_{ij} > 0$.

◂ Grades

Appendix: placement effects of mixed assignment

Non-competitive internships

$$\mathbb{E}_L[\Delta Y_i] = \mathbb{E}_L[\pi(A_j)R_i] + \nu\,\Gamma + \pi_g\,\bar{g}_L$$
$$\mathbb{E}_U[\Delta Y_i] = \mathbb{E}_U[\pi(A_j)R_i] - \nu\,\Gamma + \pi_g\,\bar{g}_U$$

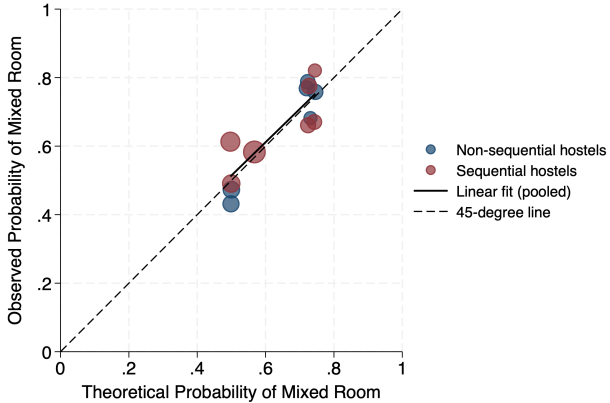
Competitive internships, relative to the non-competitive index, at own advantage $\bar{A}$

$$\mathbb{E}_U[\Delta Y_i^c - \Delta Y_i \mid \bar{A}] = -\bar{A}\,(\bar{\pi}_U - \lambda_M \bar{\pi}_L)$$
$$\mathbb{E}_L[\Delta Y_i^c - \Delta Y_i \mid \bar{A}] = \bar{A}\,(\lambda_M \bar{\pi}_U - \bar{\pi}_L)$$

$\Gamma = \bar{\pi}_U - \bar{\pi}_L \geq 0$. $\bar{g}_c$: expected grade change. R_i: bridging in the mixed room.

◂ Non-competitive ◂ Competitive

Observed Mixing Matches the Theoretical Mixing Across All Hostels



▸ SES and College Prep ▸ Balance: Pre College Networks

Note: Each point is one hostel. X-axis: theoretical share of mixed-caste rooms under random assignment. Y-axis: observed share. Points cluster on the 45-degree line across all 13 hostels, regardless of allocation method (sequential ID or arrival order). The Size of the dot indicates the number of students in the hostel, and the fitted line is weighted by the number of students.

◂ Room assignment

Balance Tables - Socio Economic Characteristics and College Prep

	Lower Caste				Upper Caste			
	N	Non-mixed mean	Diff	P-Val	N	Non-mixed mean	Diff	P-Val
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Survey attrition indicators								
Survey completed	1197	0.872	-0.006	0.804	1253	0.800	-0.005	0.861
Response	1197	0.891	-0.028	0.220	1253	0.838	-0.003	0.894
B. Socio Economic Indicators								
Mother's education (Bachelors or higher)	947	0.434	-0.015	0.677	998	0.669	-0.031	0.361
Father's education (Bachelors or higher)	942	0.528	-0.020	0.567	992	0.639	0.018	0.581
Assets Index	857	-0.171	-0.009	0.856	908	0.166	-0.016	0.727
Taken a loan	890	0.194	0.034	0.241	888	0.148	0.006	0.829
Family income (9L or above)	955	0.425	-0.039	0.286	934	0.699	-0.079	0.047
Speaks English with family	941	0.246	0.048	0.133	926	0.494	-0.027	0.462
Speaks English with friends	941	0.558	0.027	0.451	926	0.705	-0.003	0.934
Knows someone in engg	907	0.490	-0.005	0.888	921	0.682	-0.060	0.088
Knows someone with IIT degree	907	0.168	0.013	0.642	921	0.259	-0.005	0.885
C. JEE Preparation and Academic Background								
Class 12 score (%)	1000	90.175	0.271	0.575	1035	93.089	0.985	0.134
Class 10 score (%)	1001	92.942	-0.374	0.568	1032	94.995	0.424	0.539
Entrance Exam score (out of 360)	1163	139.368	1.192	0.577	1220	204.125	-1.450	0.298
Years: JEE preparation	1036	2.251	-0.020	0.841	1060	2.520	-0.130	0.215
Average daily study hours JEE	1034	8.588	0.467	0.080	1062	8.225	0.167	0.580
Cost of JEE preparation	950	5.058	-0.253	0.202	956	5.051	-0.071	0.729
Took more than 1 attempt	1003	0.317	-0.063	0.066	1044	0.147	-0.004	0.862
Doesn't Know programming	976	0.671	-0.028	0.426	1005	0.455	0.041	0.290
Joint Test p-value				0.540				0.369

Back

Balance Tables - Pre College Networks

	Lower Caste				Upper Caste			
	N	Non-mixed mean	Diff	P-Val	N	Non-mixed mean	Diff	P-Val
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Pre-college Networks								
Close friends count	484	9.173	0.595	0.568	488	10.929	-0.057	0.957
Close friends wrote jee	484	9.624	0.103	0.929	488	10.489	-0.550	0.604
Close friends in IITD	484	2.549	0.407	0.455	488	2.979	-0.104	0.865
Close friends in NITs	484	2.692	0.784	0.189	488	1.851	0.819	0.188
Friends wrote JEE but didn't get in	484	5.684	1.080	0.237	488	4.574	0.911	0.290
Prog: Learned from friends	464	0.031	-0.012	0.451	477	0.036	0.018	0.419
Diff caste close friends bf IIT	418	2.956	0.049	0.668	425	1.779	0.260	0.080
B. Consumption Expenditure at Baseline								
Food expenses	503	1500.000	-63.167	0.676	510	1763.514	-34.175	0.856
Movies and partying expenses	503	1021.429	-82.599	0.461	510	1283.784	-36.779	0.837
Education expenses	503	2567.857	-436.217	0.137	510	2354.730	-262.736	0.311
Other miscellaneous expenses	503	2128.571	-353.494	0.203	510	2111.486	-321.836	0.191
Joint Test p-value				0.866				0.239

Back

AA mechanisms: Prior merit beliefs shape the AA response to mixing

	Upper Caste		Lower Caste	
	AA support: reserved group	AA support: non-reserved group	AA support: reserved group	AA support: non-reserved group
Mixed Room	0.074	0.010	-0.039	0.098
	(0.083)	(0.091)	(0.065)	(0.071)
Baseline Merit Belief(SD)	-0.182***	-0.186***	-0.142***	-0.164***
	(0.060)	(0.061)	(0.053)	(0.057)
Mixed Room × Baseline Merit Belief	0.142**	0.135*	0.051	0.143**
	(0.071)	(0.077)	(0.065)	(0.069)
DV Mean, Non-mixed	-0.251	-0.265	0.239	0.237
R-squared	0.128	0.159	0.108	0.118
N	374	376	354	354

◂ AA 3 years ▸ Cross-Caste Friends ▸ Own Score ▸ Gender

Early Exposure: Worries and Expected Friendship in the First Weeks

	Upper Caste				Lower Caste			
	N	Non-mixed mean	Diff	P-Val	N	Non-mixed mean	Diff	P-Val
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Worry index components at baseline (reverse coded)								
Academics (rev)	502	-0.113	0.178	0.146	490	0.150	-0.155	0.133
Getting an Internship (rev)	502	-0.042	0.093	0.394	490	0.048	-0.110	0.335
Cultural Adaptation (rev)	501	0.269	-0.147	0.107	490	-0.309	-0.123	0.342
Staying Away from Home (rev)	502	-0.004	-0.009	0.925	490	-0.034	0.048	0.666
Discrimination (rev)	501	0.072	0.065	0.462	490	-0.088	-0.261	0.047
Time Management (rev)	502	-0.122	0.123	0.215	490	0.142	-0.036	0.727
B. Roommate friendship								
Expected Friendship with roommate	473	2.372	-0.197	0.039	452	2.242	0.004	0.964

◂ Model

Survey Response Rates by Wave

Wave	Sampled (N)	Responded to $\geq$1 Outcome
2024 Baseline	1,147	86.4%
2024 Endline	1,147	92.1%
2023 Endline (1 Year), Effective		92.8%
2023 Endline (3 Years)	1,120	89.4%

◂ Timeline