DISCRIMINATION

BEHAVIORAL ECONOMICS

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Introduction

Why important?

- Often, people seem to favor individuals from their own group in terms of whom to hire, whom to help out, whom to become a friend with, whom to rent a flat, etc.
- Discrimination on various markets can be a source of persistent inequality and social exclusion.

Indications of discrimination are widespread

- African-Americans are less likely to be employed, more likely to be arrested by police and more likely to be incarcerated.
- Women are very scarce at top positions in business, academic and political ladders despite the fact they get better grades in school and are more likely to graduate from college.

Introduction

Measuring discrimination using observational data is challenging.

- Regression analysis: focus on the coefficient for minority, after controlling for as many proxies of productivity as possible.

- Omitted variable bias
  - Results might suggest differential treatment of the minority group, even if the group membership does not play any role in the decision-making.
  - E.g. race or gender is correlated with other proxies of productivity which are unobserved to the researcher.
  - The control variables might be affected by discrimination, too. E.g. minority group may be less educated due to low access to high-quality schools.

- Experiments developed to address these limitations.

Main questions

- **What are the standard economic explanations of discrimination?**
- How can we measure existence of discrimination? Lab experiments, audit studies, correspondence experiments.
- Do we also discriminate sub-consciously?
- What are the consequences of discrimination?
- What affects discrimination?

Taste-based discrimination

- Members of a minority group (or women) are treated less favorably than members of a majority group with identical characteristics.

- Discrimination due to preferences, people dislike individuals with certain group attributes.

- $Y_i = bX_i + aZ_i + e_i$
  - Y is wage, X is a vector of all characteristics relevant for productivity, Z indicates membership in a minority group
  - $a < 0$ implies discrimination

Taste-based discrimination

- Original model by Becker (1957) for the context of the labor market
  - Distaste reflected in refusing to hire or paying lower wages.
  - Wage differential between otherwise identically productive minority and majority workers.
  - Such approach reduces profit (by not hiring minority workers).
  - In perfectly competitive markets, discriminating employers would be wiped away and taste-based discrimination would disappear.

Statistical discrimination

- Phelps (1972), Arrow (1973), Aigner and Cain (1977)
- Important role of imperfect information
  - Agents have limited information about skills of an *individual* applicant.
  - *Group-specific* membership may provide additional valuable information about expected productivity.
  - Rational choice: favor the applicant from the group with higher average productivity.
  - Expected productivity will equal true productivity on average within each group.
  - At the same time, some minority workers will be treated less favorably than majority with the same true productivity.

Statistical discrimination

- More information about individual characteristics should reduce discrimination.

- In contrast to taste-based discrimination, statistical discrimination is theoretically efficient.

- Can be argued to be “fair” in that it treats identical people with the same expected productivity and is not motivated by animus.

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Minimal group experiments

- Three components of social identity (Tajfel and Turner 1979)
  - Categorization: people are assigned to social categories
  - Identification: Association with a group → in-group vs. out-group
  - Comparison of in-group with other groups → in-group bias

- Minimal group experiments in social psychology
  - Subjects randomly assigned to groups which are intended to be as meaningless as possible. E.g., artwork preferences or t-shirts with different colors.
  - They allocate points to anonymous members of their own group and the other group.
  - Disadvantage: no conflict with self-interest.

- Minimal group experiments in economics (Chen and Li 2009)
  - A set of allocation tasks in which self-interest matters. E.g. the respondent incurs cost to help or to penalize the other person.

- Pure categorization is sufficient to create group effects.

Lab experiment with real life groups

Fershtman and Gneezy (2001)

- A series of lab experiments
  - Advantage: isolating statistical and taste-based motives (getting closer to testing theory)

- Motivation
  - Is there discrimination based on ethnicity?
  - Is there an in-group bias or systematic discrimination of one group?
  - Taste for discrimination vs. outcome of ethnic stereotyping?
  - Are ethnic stereotypes accurate?

Lab experiment with real life groups

Fershtman and Gneezy (2001)

- Setting: Israeli Jewish society
  - Ashkenazic Jews are migrants from US, Europe
  - Eastern Jews are migrants from Asia and Africa
  - Can be distinguished by surname
  - Persistent economic gaps: Ashkenazic have higher education and earnings
- Sample (N=966): undergrads (lab experiment)
- Three games
  - Trust game
  - Ultimatum game (not focus here)
  - Dictator game
- Manipulations: ethnicity of Player A and of Player B

Lab experiment with real life groups

Fershtman and Gneezy (2001)

- Trust game
  - P1 sends to P2
  - Experimenter triples the amount
  - Recipient decides how much to return
- A. Jews receive much larger transfers than E. Jews

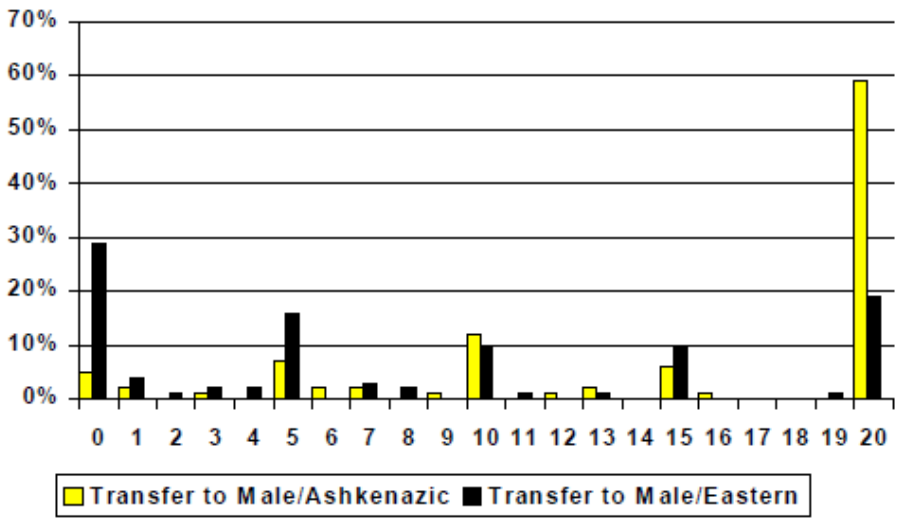


FIGURE I

Transfer to Male Players in the Trust Game

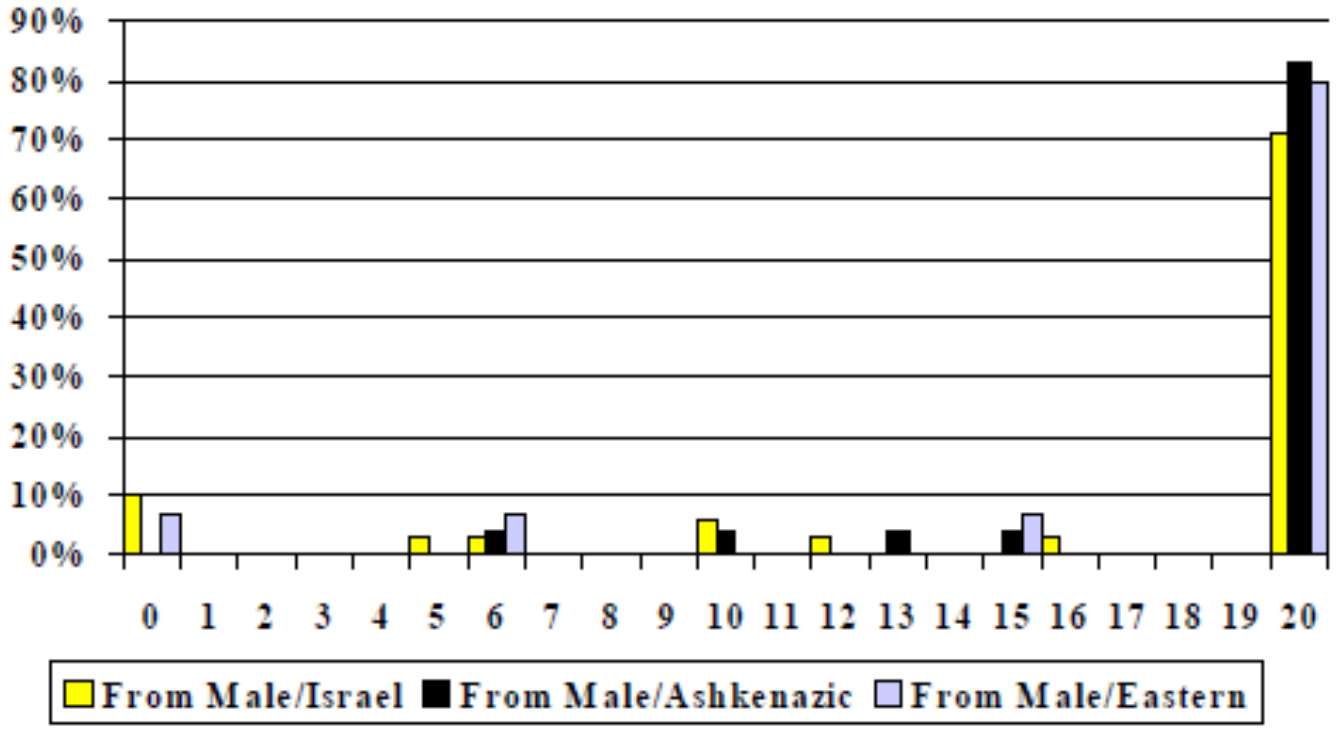
Lab experiment with real life groups

Fershtman and Gneezy (2001)

- Does it reflect in-group bias or systematic discrimination of one group?
  - No discrimination: $(Y_{EE} - Y_{EA}) = (Y_{AE} - Y_{AA}) = 0$
  - Systematic discrimination of E. Jews: $(Y_{EA} - Y_{EE}) = (Y_{AA} - Y_{AE}) > 0$
  - In-group bias: $(Y_{EE} - Y_{EA}) = (Y_{AA} - Y_{AE}) > 0$
- Systematic mistrust of E. Jews, both among A. Jews and E. Jews.

Lab experiment with real life groups

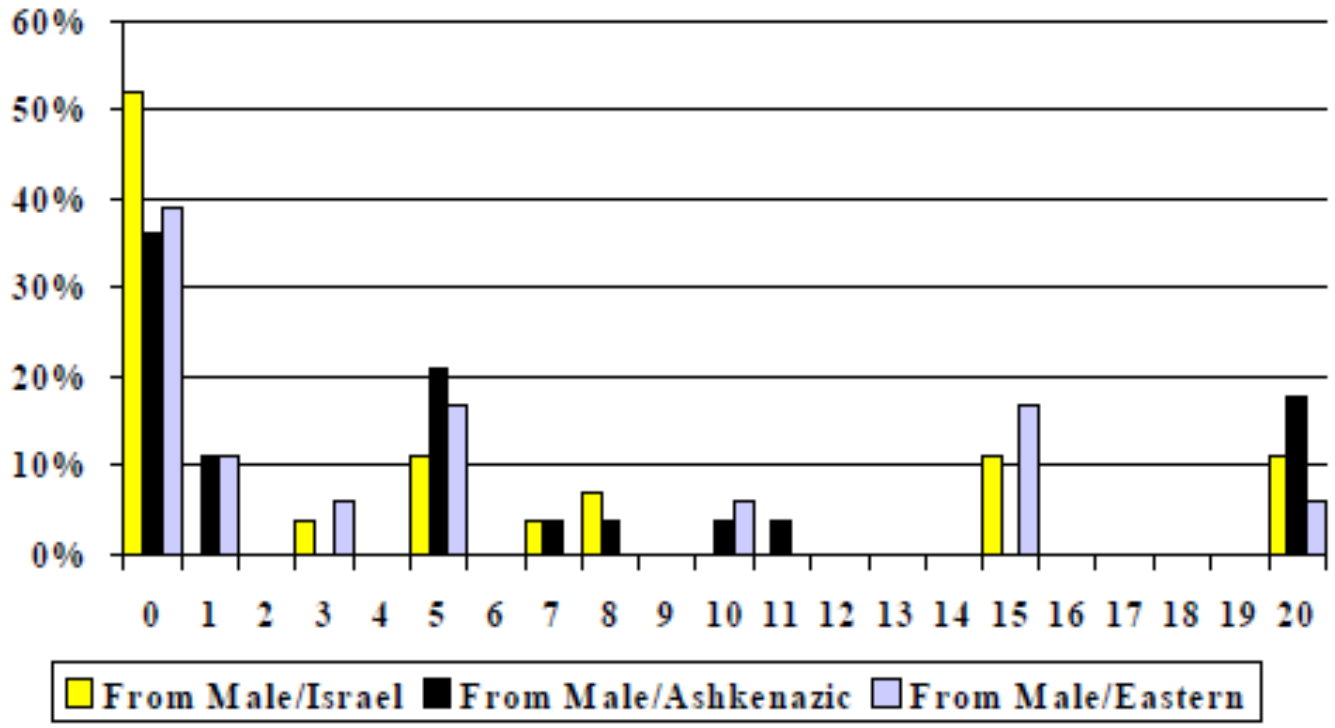
Fershtman and Gneezy (2001)



Transfer to Male/Ashkenazic by Males According to Origin in the Trust Game

Lab experiment with real life groups

Fershtman and Gneezy (2001)



Transfer to Male/Eastern by Males According to Origin in the Trust Game

Lab experiment with real life groups

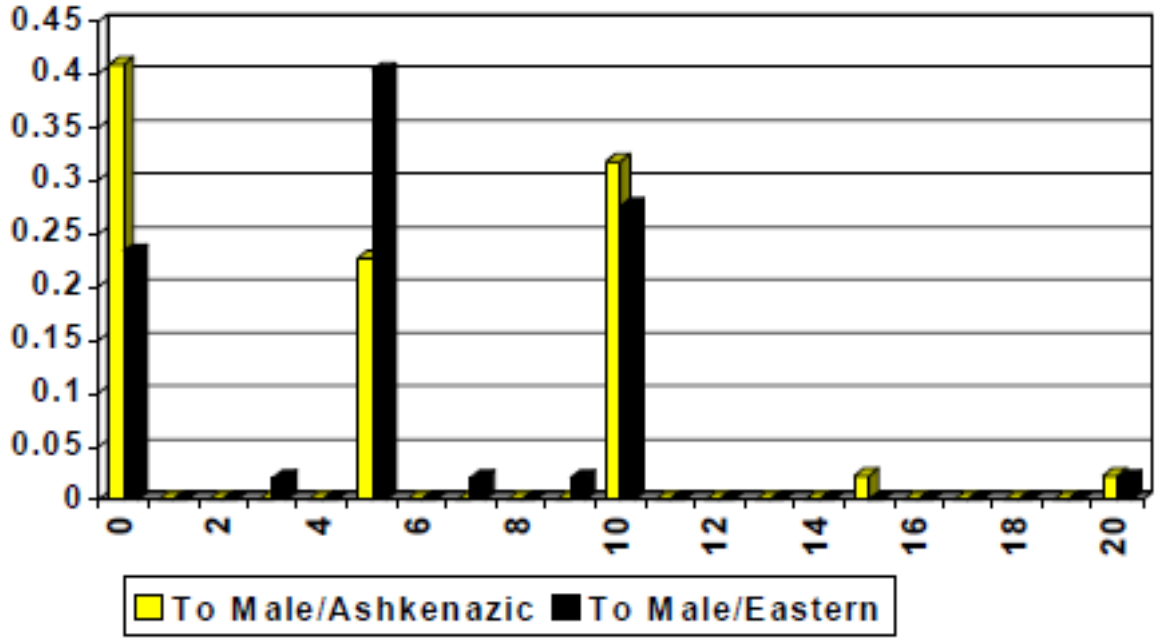
Fershtman and Gneezy (2001)

- Is differential trust rational?
  - No, there is no difference in average amounts returned by E. and A. Jews → differential trust is not a rational response
  - What else can explain differences in trust?
    - Taste-based discrimination?
    - Inaccurate stereotypes?
- Dictator game
  - Tests taste-based discrimination
  - P1 sends to P2
  - P2 receives 3x
  - End of game

Lab experiment with real life groups

Fershtman and Gneezy (2001)

- Not much evidence for taste-based discrimination
  - Although the distributions are somewhat different, on average, the two groups receive similar transfers.



Lab experiment with real life groups

Fershtman and Gneezy (2001)

- Major differences how males are treated based on ethnicity
  - Not driven by in-group bias
  - E. Jews not less trustworthy
  - Not because of animus (taste)

- Thus, the results seems to arise due to "statistical discrimination based on bad statistics" (inaccurate stereotyping)

- Limitations
  - What if students applied a stereotype that is accurate for the general population of E Jews, but perhaps less accurate for the selected population E Jews students.

Groupy and non-groupy behavior

Kranton et al (2020)

- Use both methods within a single sample
  - Minimal groups: artwork preferences (Klee vs. Kandinsky)
  - Real-life groups: political preferences (Democrat vs. Republican)

- Focus on potential heterogeneity
  - So far, focus on average effects

- Results – not everybody exhibits an in-group bias
  - For some subjects, a group division per se generates bias
  - For some subjects, a group division must be related to socially meaningful identity.
  - For many, a group division does not matter at all.

Audit studies

- Basic set up
  - Auditors/testers matched for all relevant characteristics other that the one which is presumed to lead to discrimination.
  - Trained to coordinate interviewing styles.
  - Apply for a job, rental, mortgage,….
  - Differential treatment indicates discrimination.

Audit studies

Author: Martin Aranguren (Sciences Po), working paper "Racial discrimination in helping situations depends on the cost of help: a large field experiment in the streets of Paris)". I thank Martin for permitting me to use the picture.

Audit studies

Neumark et al. (1996)

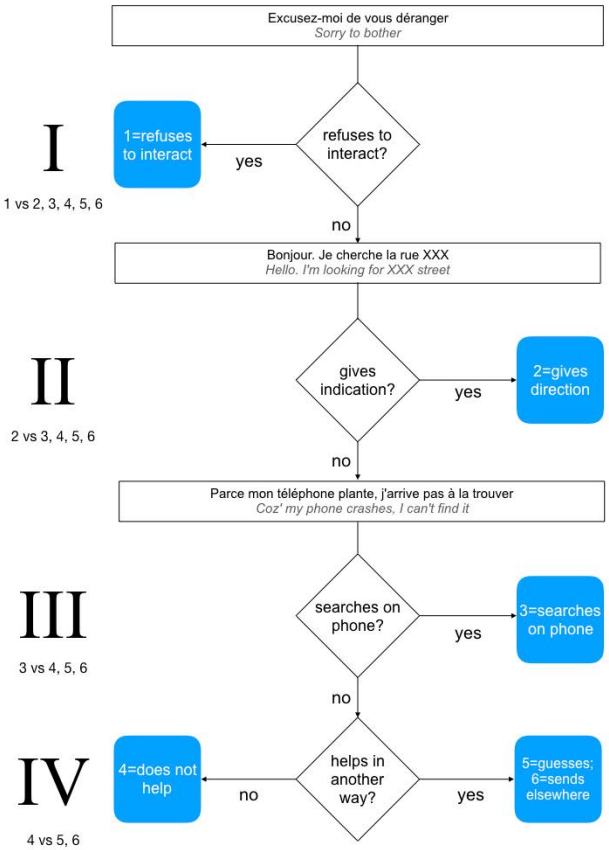
- Gender discrimination
- Two male and two female college students applied in person for jobs as waiters and waitresses.
- Auditors: similarly dressed, trained to act similarly, rotation of three similar resumes.
- 65 restaurants in Philadephia, different price categories. One male and one female applied in each restaurant.

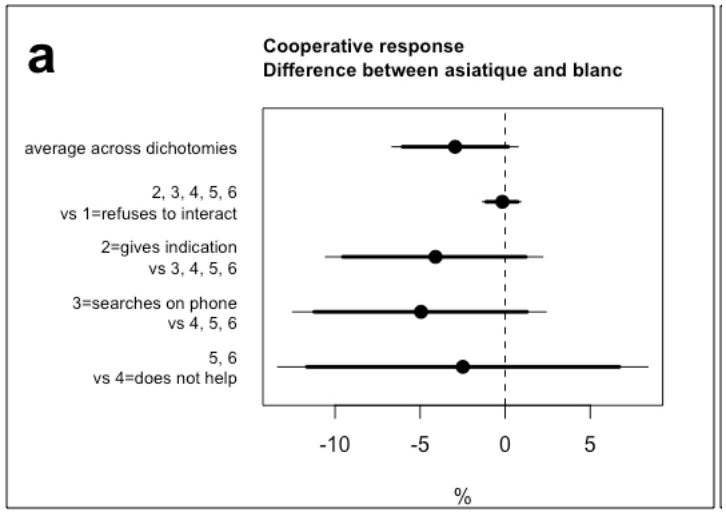
- Results
  - High price restaurants: male received offers in 48% of cases, female in 9% of cases.
  - Low price restaurants: male received offers in 10% of cases, female in 38% of cases.

Audit studies

Aranguren (2023)

- Auditors ask pedestrians crossing a busy street in Paris, waiting for the green light, for directions.
- 4,500 observations.





Audit studies

- Limitations
  - Although pairs of testers are matched on several characteristics and trained, it is likely there are still numerous differences between auditors in the pair.
  - Not double-blind, demand effect.
    - Auditors know the purpose of the study.
    - May generate conscious or subconscious motivations to behave in certain ways.

- Correspondence studies developed to address these weaknesses.
  - Instead of real auditors, fictitious applicants.

Correspondence field experiments

Basic set up

- Sending fictitious applications, responding to job or rental advertisement.
- Researchers send resumes or letters of interest, with identical information (qualification) except of a signal of a group attribute which is randomly manipulated.
  - E.g. names of the applicants (e.g. female names, African-American names, Arabic names, etc).
- Discrimination is estimated by comparing the outcomes for the fictitious applicants with and without the perceived minority trait (mainly limited to measuring call-backs).

Are Emily and Greg more employable than Lakisha and Jamal?

Bertrand and Mullainathan (2004)

- Research questions
  - Are callback rates lower for applicants with African-American sounding names?
  - Does the quality of applicant reduce the gap?
- Setting
  - US labor market in Chicago and Boston
  - Various types of jobs: sales, clerical, administrative
  - Sending 5000 resume by mail or fax responding to job adds
- Experimental manipulations
  - Perception of race by names: e.g., Emily Walsh vs. Lakisha Washington; Greg Baker vs. Jamal Jones)
  - Quality of applicant (experience, education, etc.)
- Outcome: likelihood of invitation

Are Emily and Greg more employable than Lakisha and Jamal?

Bertrand and Mullainathan (2004)

- Very influential study.

- Inspired studies in many other countries studying discrimination based on various group attributes.
  - Race and national origin
  - Gender and motherhood
  - Religion
  - Disability
  - Age
  - Sexual orientation

- http://users.ugent.be/~sbaert/research_register.htm

Are Emily and Greg more employable than Lakisha and Jamal?

Bertrand and Mullainathan (2004)

Finding 1: Strong evidence of discrimination: AA applicants are 30% less likely to be invited for a job interview.

TABLE 1—MEAN CALLBACK RATES BY RACIAL SOUNDINGNESS OF NAMES

	Percent callback for White names	Percent callback for African-American names	Ratio	Percent difference (p-value)
Sample:				
All sent resumes	9.65	6.45	1.50	3.20
	[2,435]	[2,435]		(0.0000)
Chicago	8.06	5.40	1.49	2.66
	[1,352]	[1,352]		(0.0057)
Boston	11.63	7.76	1.50	4.05
	[1,083]	[1,083]		(0.0023)
Females	9.89	6.63	1.49	3.26
	[1,860]	[1,886]		(0.0003)
Females in administrative jobs	10.46	6.55	1.60	3.91
	[1,358]	[1,359]		(0.0003)
Females in sales jobs	8.37	6.83	1.22	1.54
	[502]	[527]		(0.3523)
Males	8.87	5.83	1.52	3.04
	[575]	[549]		(0.0513)

Notes: The table reports, for the entire sample and different subsamples of sent resumes, the callback rates for applicants with a White-sounding name (column 1) an an African-American-sounding name (column 2), as well as the ratio (column 3) and difference (column 4) of these callback rates. In brackets in each cell is the number of resumes sent in that cell. Column 4 also reports the p-value for a test of proportion testing the null hypothesis that the callback rates are equal across racial groups.

Statistical discrimination?

- Responsiveness of the gap in call-backs to the amount of information provided.
- Prediction: the more information provided, the lower the gap.

- Supported by some studies but not others
- Kaas and Manger (2012): discrimination of applicants with Turkish-sounding names in Germany
  - Large gap when no reference letter included.
  - Gap eliminated when a letter containing information about productivity included.
- Bertrand and Mullainathan (2004)
  - Manipulated quality of resumes. Higher-quality had more info (email address, certification degree, foreign language skills, awarded honors).
  - Larger gap for higher-quality resumes.

Correspondence field experiments

Advantages

- Strict comparability across groups for all information that is seen by the employers or landlords.
- Eliminates demand effects.
- Low marginal cost: high number of observations.

Limitations

- Measuring call-back, not job offers and wages.
- Focus on entry-level jobs, not on positions requiring more skills and experience.

Main questions

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Implicit discrimination

- Economics
  - Discrimination is an outcome of *conscious* choices
    - Personal reasons (taste-based discrimination)
    - Group membership provides information (statistical discrimination)
- Psychology
  - Discrimination can be an outcome of *unconscious* behavior
    - Implicit discriminination

- Automatic decisions are made based on a stereotype (deeply rooted mental associations): implicit mode
- If the same people gave it more attention (explicit mode), they could decide differently

Measuring implicit discrimination – IAT

- Developed by social psychologists to detect implicit stereotypes: https://implicit.harvard.edu/implicit
- Main idea: the easier a mental task is, the quicker it is performed.
- A word/picture appears on the screen and participants are instructed to categorize it to the left or to the right according to different labels displayed on the top of the screen, as quickly as possible.
- Two rounds (in random order):
  - The classification is stereotypic: e.g. categorize African-American and negative adjectives to one side of the screen (and European-American and positive adjectives to the other side)
  - The classification is non-stereotypic: e.g. categorize African-American and positive adjectives to one side of the screen (and European-American and negative adjectives to the other side)

Measuring implicit discrimination – IAT

Good	Pleasure, Enjoy, Adore, Happy, Appealing, Laughing, Friend, Beautiful
Bad	Sickening, Negative, Hurtful, Selfish, Bothersome, Humiliate, Tragic, Sadness
Black British	
White British	

Implicit association test (IAT)

Stereotypic treatment

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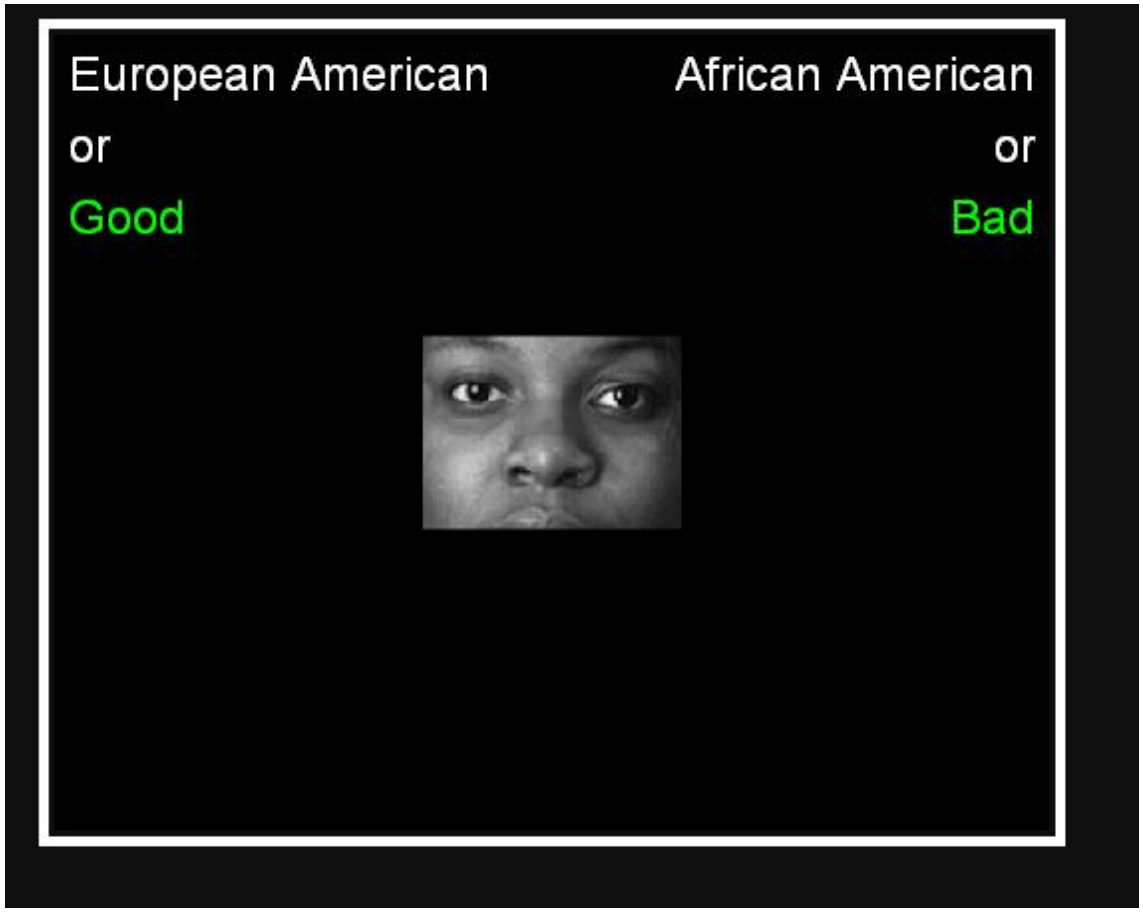

Implicit association test (IAT)

Non-stereotypic treatment

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Provision of information about own IAT results

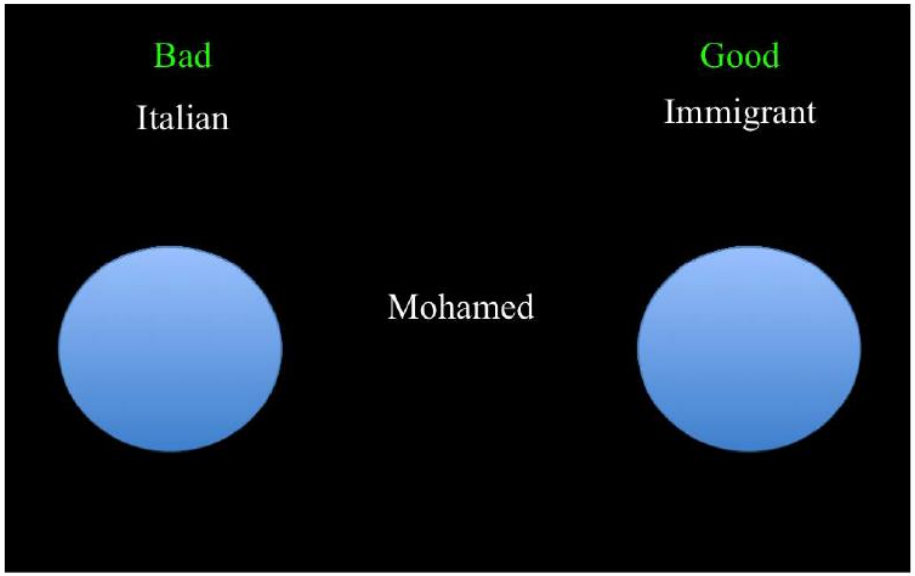
Alesina et al. (2018)

- If individuals become aware of their stereotypes, do they change behavior?
- Sample: 1,384 middle schools teachers from Italy, 6,031 students
- Manipulations
  - Treatment: Receiving own IAT score before term grading of students
  - Control group: Receiving own IAT score later on
- Outcome variables
  - Grades assigned to native students and to immigrant students

Provision of information about own IAT results

Alesina et al. (2018)

- Implicit association test



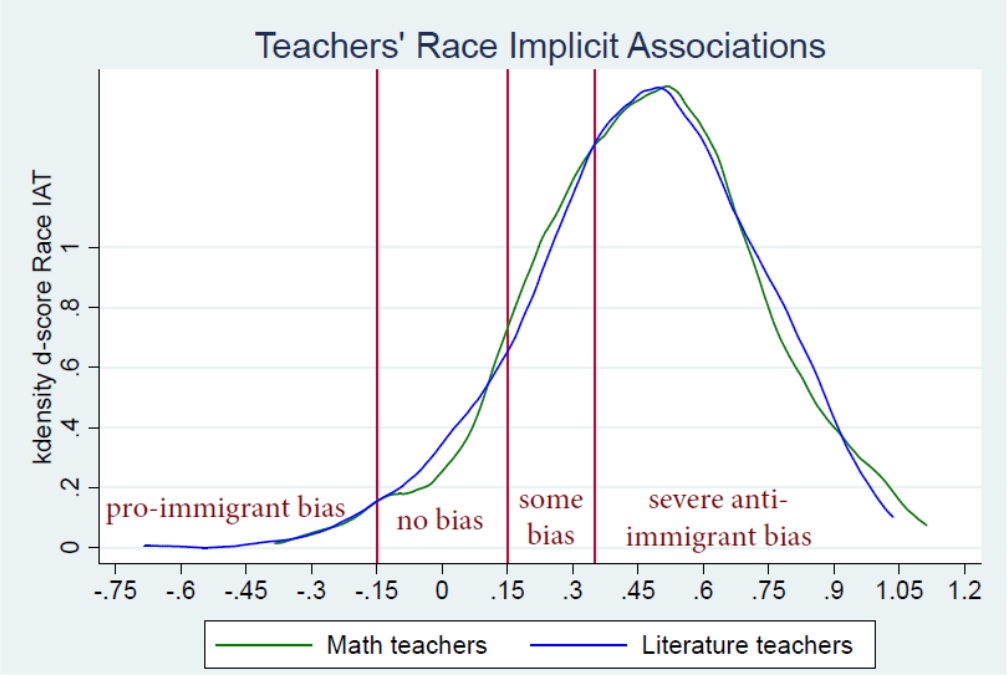
1. Immigrant *(Immigrato)*: Youssef, Mohamed, Gheorghe, Alejandro, Li Yi, Pascual
2. Italian *(Italiano)*: Marco, Simone, Daniele, Francesco, Lorenzo, Mattia
3. Good *(Bravo)*: Prepared *(Preparato)*, Intelligent *(Intelligente)*, Capable *(Capace)*, Studious *(Studioso)*, Able *(Abile)*, Precise *(Attento)*, Willing *(Volenteroso)*, Respectful *(Rispettoso)*
4. Bad *(Impreparato)*: Disrespectful *(Irrispettoso)*, Slow *(Tardo)*, Incapable *(Incapace)*, Boisterous *(Irrequieto)*, Lazy *(Pigro)*, Distracted *(Distratto)*, Demotivated *(Demotivato)*, Insufficient *(Scarso)*

Provision of information about own IAT results

Alesina et al. (2018)

- Prior grading
  - Discrimination: immigrant students receive lower grades compared to natives.
  - Even if holding constant performance on standardized, blindly-graded tests (not by students' teachers).

- Implicit association test
  - Strong negative stereotypes towards immigrant students. 2/3 of teachers exhibit moderate to severe stereotypes, 91% exhibit some stereotypes.
  - Math teachers with stronger stereotypes against immigrants give them lower grades, holding constant standardized test score.
  - No such relationship for literature teachers.

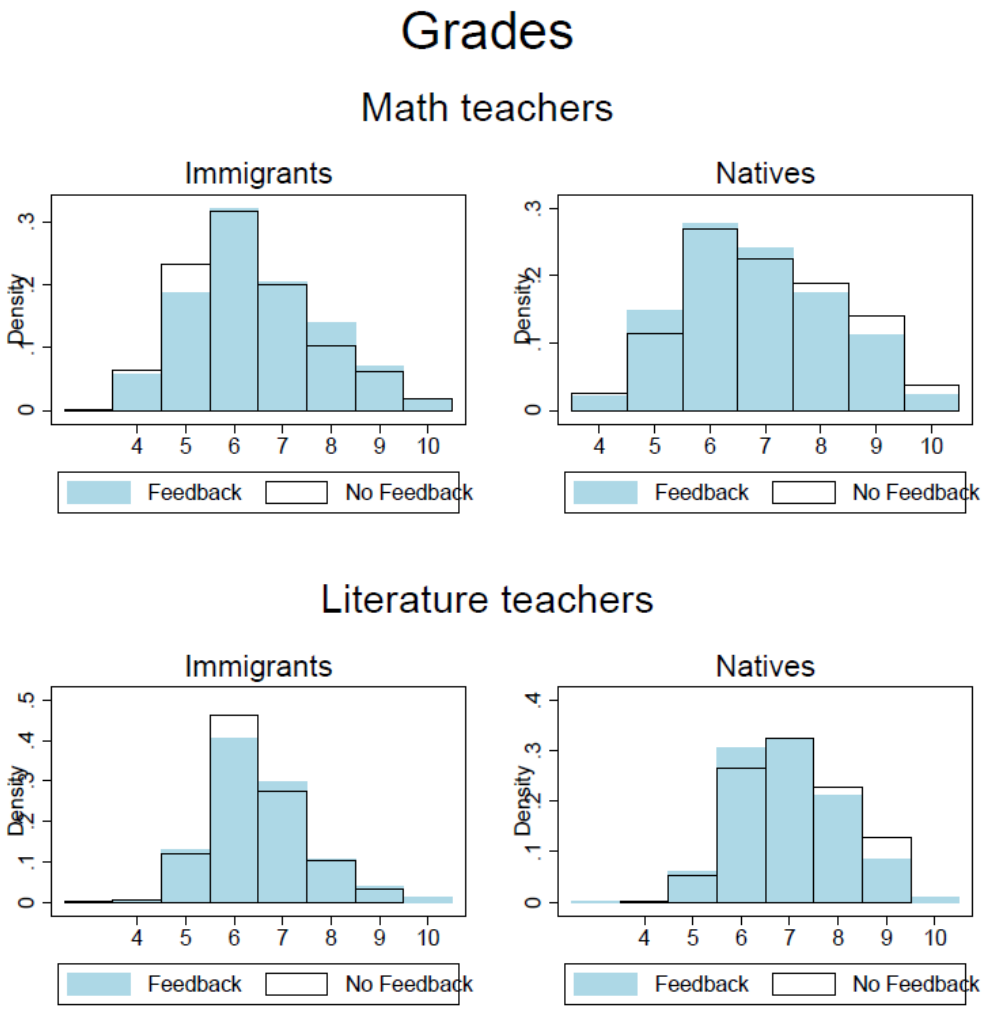


Provision of information about own IAT results

Alesina et al. (2018)

Effect of revealing IAT scores to teachers

- Teachers react by increasing the grades to immigrants and decreasing the grades to natives.
- Only teachers with positive explicit views toward immigrants react to the treatment.
- Revealing IAT scores may be an effective policy to reduce discrimination.



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Stereotype threat

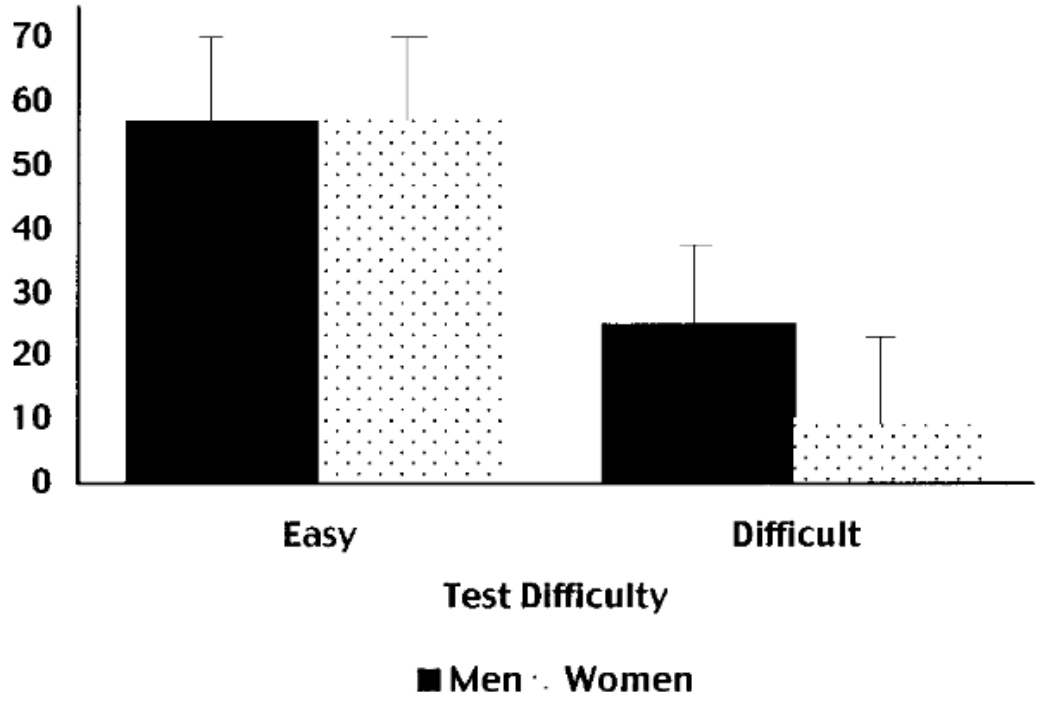
- Average differences in productivity across groups → statistical discrimination.
- Reverse channel: Stereotyping some groups as less productive → lower productivity of these groups.
- Threat of being viewed via a negative stereotype creates anxiety that disrupts cognitive performance.
- Seminal lab study, Steele and Aronson (1995)
  - Test involving intellectual tasks
  - Asking test takers to indicate their race before the test: lower performance of African-Americans.
  - Information that the test did not measure abilities (reducing stereotype threat): reduction of the gap.

Stereotype threat, gender and math

Spencer et al. (1999)

Study 1

- Sample (N=54): men and women with strong mathematical background (psychology university students, completed Calculus course with A or B grade, strongly agree they are good at math).
- Experimental manipulation: difficulty of the test
- Results mimic previous studies

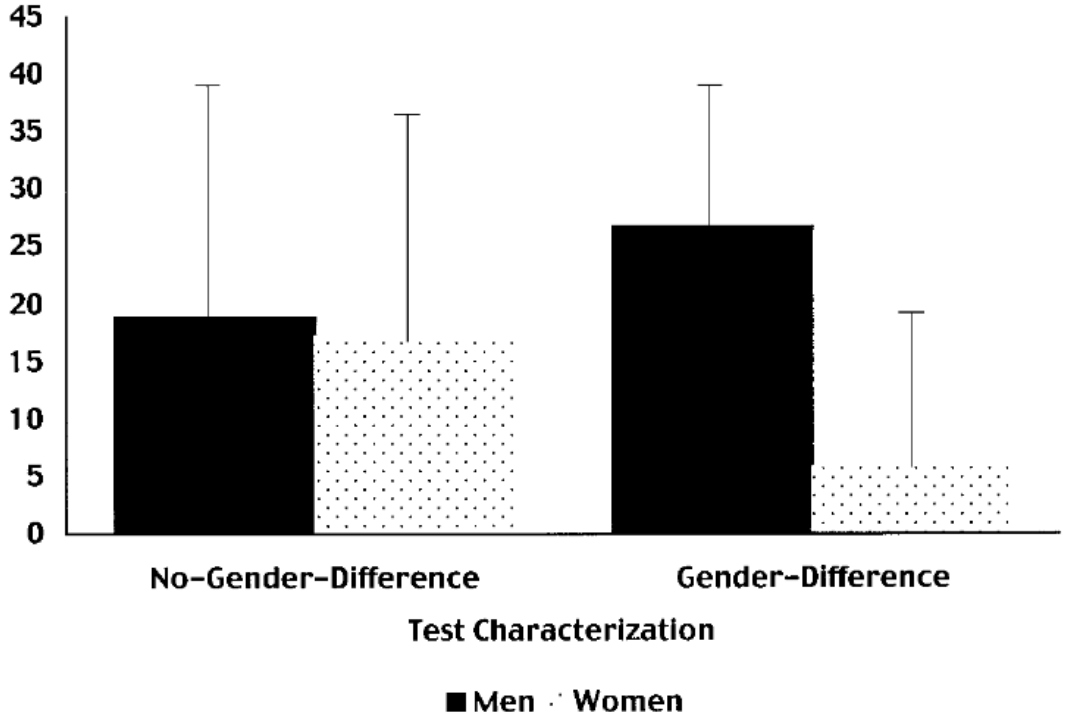


Stereotype threat, gender and math

Spencer et al. (1999)

Study 2

- Sample (N=54): same criteria as in Study 1. Task: difficult test
- Manipulation: relevance of gender stereotype
  - Control condition: The test had not shown gender differences in the past
  - Treatment condition: The test had shown gender differences in the past



Stereotype threat, castes in India

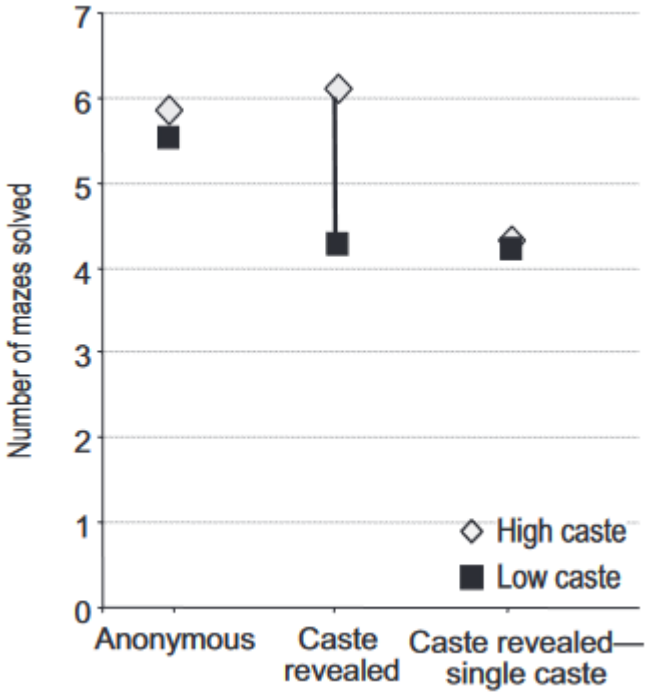
Hoff and Pandey (2006)

- Sample (N=336): young boys from the extreme ends of the caste hierarchy, northern India.
  - High caste: traditional landlord, warrior, priestly and trading castes.
  - Low caste: historically (not now) leather tanning, associated with ritual pollution. Untouchable caste – historically denied political and civil rights. In 1947, discrimination ended de jure.
- Task: solving mazes. New to the subjects, no specific stereotypes.
- Experimental conditions:
  - Control: anonymous (A)
  - Treatment : caste publicly revealed (C), caste publicly revealed + single caste (CS)

Stereotype threat, castes in India

Hoff and Pandey (2006)

- Publicly revealing caste caused a decrease in the performance of low-caste participants.
- Potential mechanisms: effect of social identity vs. intimidation of low-caste subjects by high-caste subjects.
  - Lower performance of low-caste subjects both in C and in CS: social identity.



Effects of discrimination on effort

Glover et al. (2017)

- Do discriminatory beliefs affect minority worker's job performance in a real-world workplace?

- Sample: majority and minority (North African origin) workers in French grocery stores.
  - 34 stores, 204 workers, 4,371 worker-day observations.
  - Cashiers work with different managers on different days.
  - New cashiers not allowed to submit schedule preferences, thus do not choose the managers they work with.
  - Individual performance measured on daily level: absence, time worked, scanning speed, time between customers.

- Manager's bias: IAT

Effects of discrimination on effort

Glover et al. (2017)

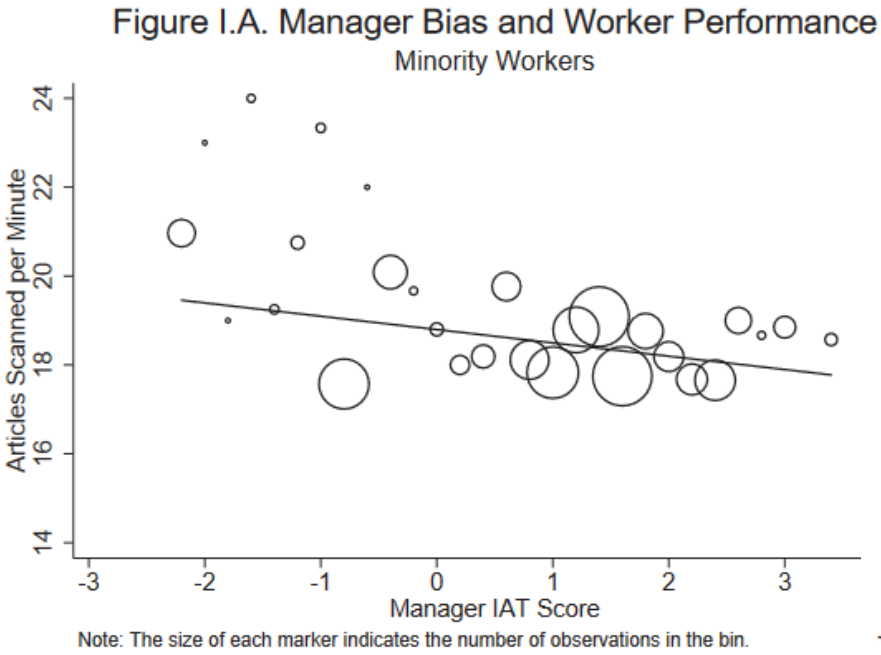
- Do minority cashiers perform worse on days they work with biased managers?
- But: potential differences between biased and non-biased managers (e.g. skills) which may affect workers' performance.
- Solution: difference-in-difference method.
  - Comparing change in minority workers' performance under more- and less-biased managers to change in non-minority workers' performance.

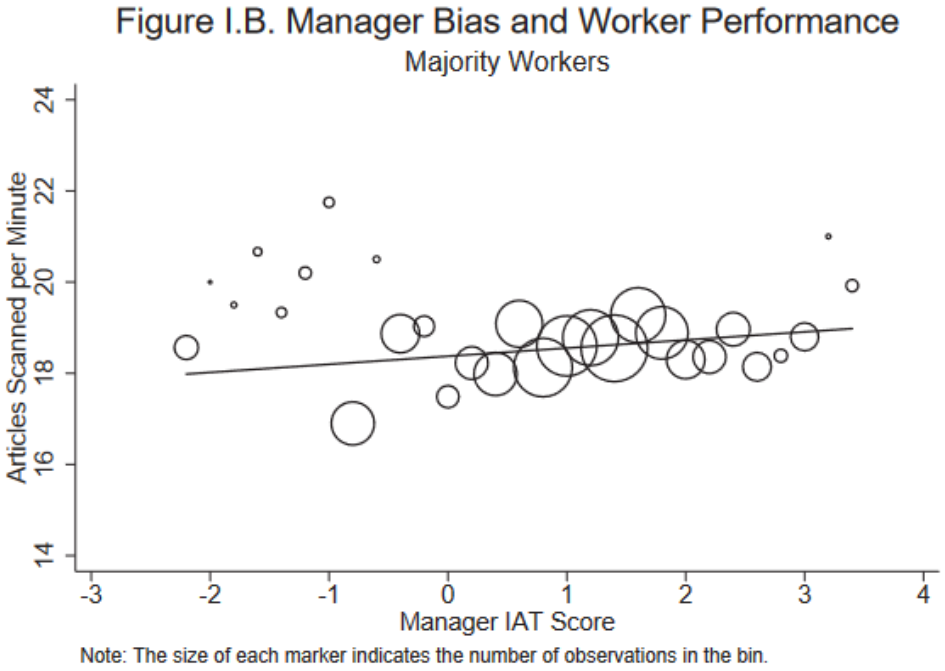
Results

- Manager bias leads minorities to perform worse: higher absence, less time spent at work, slower scanning, longer time between customers.
- Additional analysis:
  - Not due to assignment of more unpleasant tasks.
  - Potential mechanisms: Lower interaction of managers with workers. Stereotype threat.

Effects of discrimination on effort

Glover et al. (2017)





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Role models and quotas

- Gender and politics
  - Parliamentarians worldwide: 18.4% women in 2008; 26.5% women in 2023
  - Heads of government: 13 women in 2008, 16 women in 2023
  - Not due to legal restrictions: women can vote and run for office.
  - Possible explanation: voter and party bias favoring male politicians.

- Quotas
  - Main idea: voters have more information about male leaders and perceive female leaders as risky. Quota can help them to learn that women can lead effectively, gender bias will diminish.
  - Potential backlash: quotas viewed as restricting choices, higher dislike of women leaders.
  - Impacts on voter attitudes?

Role models and quotas

Beaman et al. (2009)

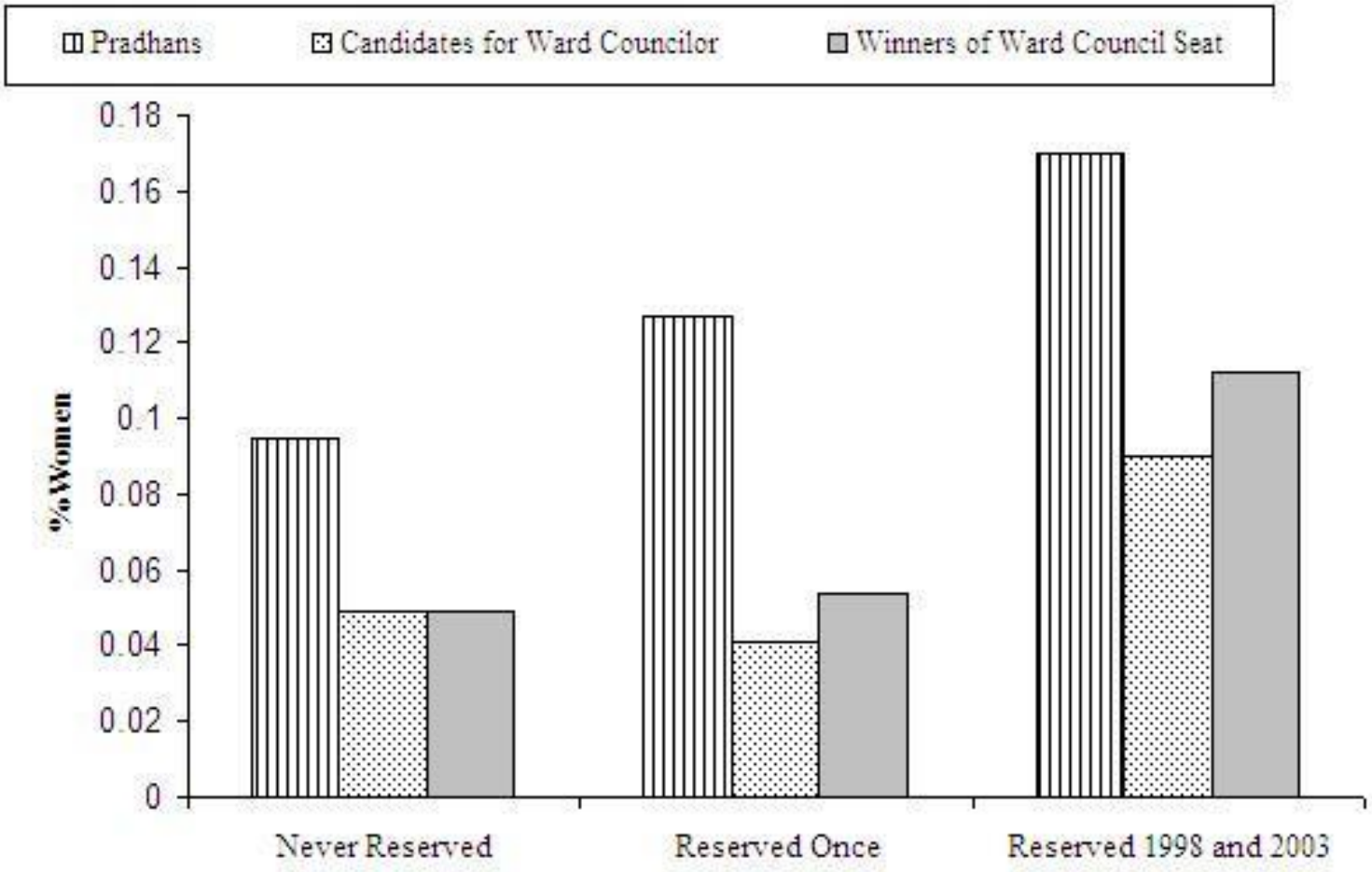
- Village councils in West Bengal, India.
- Random variation in mandated exposure to female leaders.
- Since 1998, 1/3 of councilor positions in each council and 1/3 of Pradhan (chief councilor) positions across councils randomly "reserved" for women (only women can run for these positions).

- Results
  - Higher likelihood of women being elected for councilors in councils where the Pradhan position was reserved for a woman in the last ten years. Twice as many women stood for and won these positions.
  - Higher likelihood of women being elected for Pradhan "unreserved" position in councils where there was a female Pradhan in the past ten years (18.5% vs. 11%).
  - Repeated exposure to female leaders improves voter attitudes towards female leaders.

Role models and quotas

Beaman et al. (2009)

Figure 1: 2008 Election Outcome



Role models and quotas

Beaman et al. (2009)

- Measuring voter attitudes
- Evaluation of leaders' effectiveness
  - Recorded speeches. Adapted from actual village meetings. Leader responded to a villager complaint about a broken tube-well.
  - Experimental manipulation: gender of the leader.
  - Men living in villages that had never been reserved: speech judged as more effective when the gender was manipulated to be male.
  - Men living in villages that had been reserved in the past: no gap in the evaluation of the speech
- IAT
  - Association of male and female with leadership and domestic tasks.
  - Men living in villages that had been reserved associated women with leadership activities with higher likelihood than men living in villages that had never been reserved.

Committees and quotas

Bagues and Esteve-Volart (2010)

- Effects of gender composition of hiring committees?
  - Gender composition typically not random
  - Unobserved factors which determine the choice of the committee and the gender balance in hiring

- Public examinations in Spain: random assignment of candidates to evaluation committees.
  - 51 public exams used to make appointments to Spanish Judiciary in 1987-2007
  - 150,000 candidates, at least undergraduate degree in law.
  - 2,467 evaluators

Committees and quotas

Bagues and Esteve-Volart (2010)

- Results
  - Female candidates less likely to be hired when assigned to a committee with greater share of females.
  - Evaluations of male candidates are higher when there are relatively more women in the committee.
  - The pattern is stable in time.
  - Two possible mechanisms
    - Female evaluators overestimate the quality of male candidates
    - Presence of women in committees leads to higher favoritism of male candidates by male members of the committees.

Intergroup contact

- Intergroup contact theory (Allport 1954)
  - Interpersonal contact as most effective way to reduce prejudice.
  - Communication between majority and minority group members → more understanding and appreciation.
  - Works under certain conditions: equal status between groups in the situation, common goal, intergroup cooperation, support of authorities.
  - Support in empirical studies (meta-analysis Pettigrew and Tropp 2000): observational, lab experimental. Few studies in the field.

- "Negative contact hypothesis"
  - Negative contact makes categories more salient than positive contact
  - Potential increase in stereotyping

Intergroup contact

Corno et al. (2022)

- South Africa, apartheid experience, stereotyping of black South Africans.

- University of Cape Town: policy aiming to promote racial integration.
  - Random allocation of students across university residences to roommates.
  - Leads to interaction with individuals of different race.
  - Sample: 495 freshmen living in double rooms at university residences.

- Research questions
  - Change in individual stereotypes towards different race?
  - Due to belief updating (response to roommates characteristics) or mere exposure (increased empathy, reduced anxiety)?
  - Effects on academic outcomes? Mediated by prejudice (higher effects if roommate not prejudiced)?

Intergroup contact

Corno et al. (2022)

- Measures of stereotypes
  - Set of IATs.
  - Associations between generally positive concepts and race (Population IAT).
  - Associations between academic ability and race (Academic IAT).
  - Both groups hold negative stereotypes towards blacks. White students prejudiced in Population IAT, but not in Academic IAT.

- Results
  - Exposure to members of different race leads to change in stereotypes.
  - Whites became less prejudiced against blacks.
  - The treatment closes 84% of the gap in stereotypes in Population IAT.
  - No changes in Academic IAT on average. Students assigned non-white roommates whose ability is a positive surprise revise their priors upwards.

Intergroup contact

Corno et al. (2022)

Dependent variable:	*Population IAT*			*Academic IAT*		
Sample:	*Full Sample*	*Whites*	*Blacks*	*Full Sample*	*Whites*	*Blacks*
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed Room	-0.034	0.282**	-0.079	-0.063	0.042	-0.036
	(0.055)	(0.135)	(0.073)	(0.046)	(0.099)	(0.060)
Controls	X	X	X	X	X	X
Roommate controls	X	X	X	X	X	X
Mean of dep.var. in same race room	-0.166	-0.414	-0.084	-0.208	-0.298	-0.185
R-squared	0.122	0.209	0.095	0.092	0.280	0.096
No. Obs.	495	116	329	495	116	329

Notes: OLS estimates with robust standard errors in parentheses. * p<.10, ** p<.05, *** p<.01. Higher values of the dependent variable (IAT) indicate less prejudice against blacks. All control variables are measured at baseline. All regressions include university residence fixed effects and the dependent variable at baseline. Controls include IAT at baseline, a dummy equal to one if the respondent is female, UCT admission score, wealth index, consumption, foreign, private high school, as defined in the footnote of Table 1. In cols. 1 and 4, controls also include the race of the respondent (white, colored and Indian/others) with black as the omitted category. Controls for roommate include: UCT admission score, wealth index, consumption, foreign and private high school (female not included as all rooms are single sex).

Intergroup contact

Corno et al. (2022)

- Measures of academic performance: GPA (grade point average)

- Results
  - Exposure to members of different race leads to improvement in GPA for black students sharing a room with non-blacks.
  - The treatment closes about 30% of the gap in GPA between whites and blacks.
  - The effect persists in the second year, when most students are not in residences.
  - No impact on academic performance of white students in mixed rooms.
  - Mechanisms?
    - Not due to exposure to a higher ability peer (controls).
    - Stronger for students paired with less-prejudiced roommates.
    - Possibly due to more productive academic interaction, reduction in inter-group anxiety experienced by blacks, reduction of stereotype threat.

Intergroup contact

Corno et al. (2022)

Dependent variable:	*GPA*			*Number of exams passed*			*Eligible to continue*			*Index of Performance*		
	Full sample	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mixed Room	0.170*	-0.119	0.258**	0.463**	-0.364	0.715***	0.126***	0.033	0.169***	0.333***	-0.099	0.481***
	(0.096)	(0.244)	(0.122)	(0.198)	(0.561)	(0.252)	(0.031)	(0.067)	(0.042)	(0.110)	(0.270)	(0.145)
	[0.078]*	[0.848]	[0.029]**	[0.031]**	[0.848]	[0.007]***	[0.000]***	[0.848]	[0.000]***			
UCT entry score	7.826***	10.001***	5.616***	13.239***	9.943	11.595***	0.611*	-0.187	0.710	7.846***	7.653***	6.321***
	(1.085)	(2.566)	(1.321)	(2.270)	(6.763)	(2.940)	(0.362)	(0.773)	(0.483)	(1.218)	(2.425)	(1.595)
Roommate's UCT entry score	-0.149	1.882	-0.088	-0.434	0.938	-0.784	0.226	0.672	0.167	0.094	2.094	-0.001
	(0.679)	(1.621)	(0.875)	(1.297)	(3.605)	(1.759)	(0.184)	(0.443)	(0.250)	(0.712)	(1.719)	(0.976)
Controls	X	X	X	X	X	X	X	X	X	X	X	X
Roommate controls	X	X	X	X	X	X	X	X	X	X	X	X
Academic program FE	X	X	X	X	X	X	X	X	X	X	X	X
Mean of dep. var. in same race room	-0.018	0.673	-0.242	4.944	6.481	4.444	0.869	0.922	0.849	-0.031	0.727	-0.280
R-squared	0.421	0.562	0.388	0.704	0.702	0.714	0.319	0.408	0.416	0.442	0.405	0.452
No. Obs.	487	116	325	487	116	325	487	116	325	487	116	325

Notes: OLS Estimates with robust standard errors in parentheses. P-values adjusted for multiple inference are shown in squared brackets. Adjusted p-values are constructed using the resampling method of Westfall and Young (1993) with 10.000 interactions. * p<.10. ** p<.05. *** p<.01. Asterisks in the top row denote significance according to the robust standard errors; asterisks near the p-value denote significance after the FWER correction. All regressions include university residence. Controls and roommate controls are measured at baseline and are the same as in table 4. In cols.1, 4, 7 and 10 controls also include the race of the respondent (white, coloured and Indian/others) with black as the omitted category.

Intergroup contact

Corno et al. (2022)

- Further results: mostly self-reported measures

- Inter-racial interactions outside the room
  - Students in mixed room report to hang out more often with people of different race.
  - Higher desired and actual number of friends and study-mates of different race.
  - More frequents discussions about race and more comfortable feelings about these discussions.

- Pro-social behavior
  - Weaker evidence of effects on cooperative behavior in the prisoner dilemma game.

Intergroup contact

Corno et al. (2022)

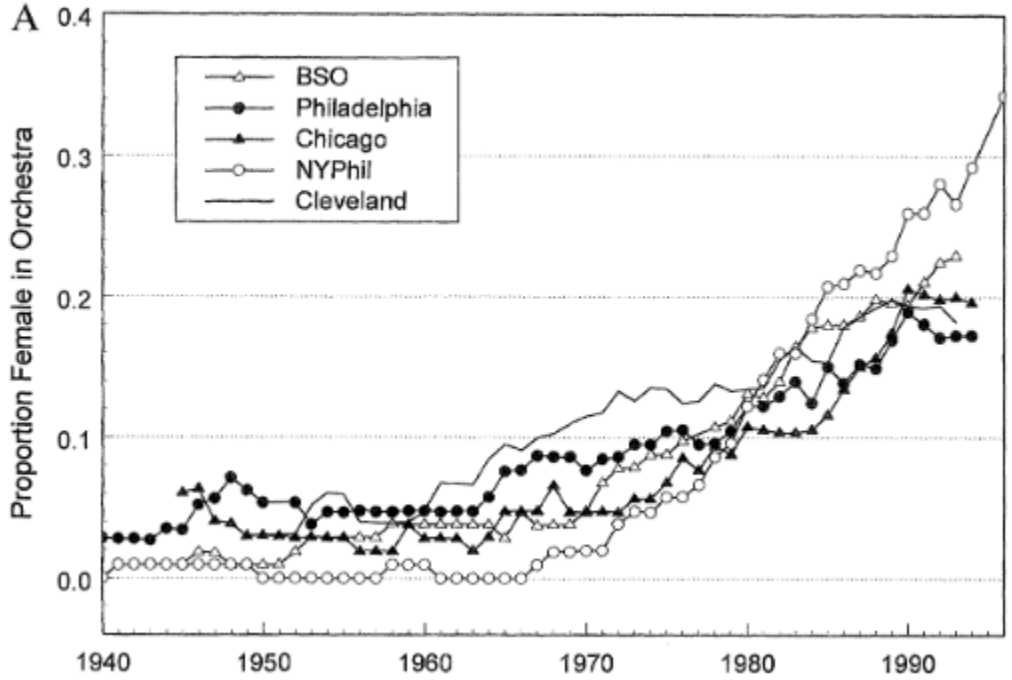
Dependent variable:	*Index of friendship*			*Index of attitudinal measures*			*Index of pro-social behavior*			*Global Index of social behavior*		
Sample:	*Full sample*	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*	*Full sample*	*Whites*	*Blacks*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mixed Room	0.575***	0.767***	0.437**	0.250**	0.433**	0.107	0.119	0.566*	0.297*	0.703***	1.314***	0.453*
	(0.159)	(0.227)	(0.214)	(0.106)	(0.216)	(0.142)	(0.137)	(0.290)	(0.171)	(0.199)	(0.405)	(0.268)
	[0.001]***	[0.004]***	[0.090]*	[0.054]*	[0.140]	[0.839]	[0.377]	[0.140]	[0.090]*			
Controls	X	X	X	X	X	X	X	X	X	X	X	X
Roommate controls	X	X	X	X	X	X	X	X	X	X	X	X
Mean of dep.var. in same race room	-1.469	-1.377	-1.496	-0.150	-0.806	0.054	-0.735	-0.907	-0.672	-1.941	-2.018	-1.915
R-squared	0.147	0.476	0.128	0.162	0.356	0.077	0.098	0.414	0.098	0.130	0.444	0.115
No. Obs.	366	93	273	449	105	296	384	93	250	279	78	201

Notes: OLS Estimates with robust standard errors in parentheses. P-values adjusted for multiple inference are shown in squared brackets. Adjusted p-values are constructed using the resampling method of Westfall and Young (1993) with 10.000 interactions. * p<.10. ** p<.05. *** p<.01. Asterisks in the top row denote significance according to the robust standard errors; asterisks near the p-value denote significance after the FWER correction. The indices used as dependent variables are constructed using a polychoric principal component analysis. The index of friendship (cols.1-3) includes the following variables: (i) no. of times respondent hung out with people of different race in the last month: =0 if never. =1 if once. =2 if 2-5 times. =3 if 5-10 times. =4 if more than 10 times; (ii) last time respondent hung out with people of different race: =0 if never. =1 if last year. =2 if last month. =3 if last week. =4 if yesterday; (iii) fraction of friends and study mates of a different race (excl. roommate); (iv) dummy for whether respondent desires >50% of members of different race in leisure group and academic group. The index of attitudes (cols.4-6) includes the following variables: (i) "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. =4 if always; (ii) a dummy for whether respondent is comfortable talking about race; (iii) a dummy for whether respondent does not agree that affirmative action in University admission should be abolished; (iv) a dummy for whether respondent do not feel conscious dancing with a person of another race; (v) dummy for whether a respondent does not feel conscious having a boyfriend/girlfriend of another race. The index of pro-social behavior (cols.7-9) includes the following variables: (i) member of community service or volunteer organization; (ii) amount of money given to charity in the past year; (iii) dummy for whether respondent cooperated in the prisoner dilemma game; (iv) dummy for whether respondent believed their partner would cooperate in prisoner's dilemma. The global index of social behavior (cols.10-12) includes all the variables listed in the previous three indexes. All regressions include residence fixed effects, individual controls and roommate controls as in Table 4.

"Blind" hiring procedures

Goldin and Rose (2000)

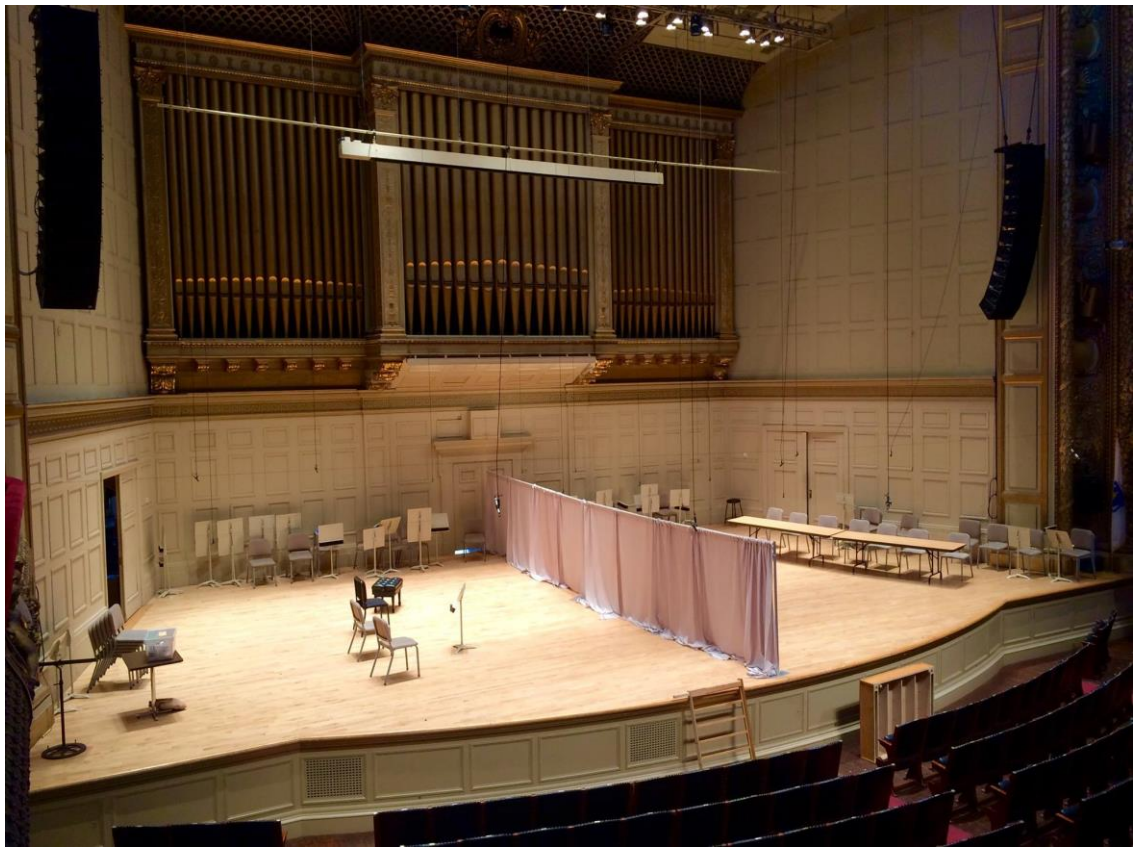
- Recruitment of musicians in symphonic orchestras in USA
- Historically, very few women in orchestras in USA and Europe.
  - Zubin Mehta, conductor of LA Symphony (1964-1978): "I just don't think women should be in orchestras".
  - Many European orchestras had stated policies not to hire women.
  - Vienna Philharmonic admitted its first female members in 1990'.



“Blind” hiring procedures

Goldin and Rose (2000)

- Auditions in front of a committee
  - Over time, orchestras adopted “blind” auditions, using screens separating the candidate from the committee.
  - Different orchestras adopted blind auditions at different time.



Picture: Boston Symphony Orchestra Facebook

“Blind” hiring procedures

Goldin and Rose (2000)

- Results
  - Blind auditions increase the probability a woman will be advanced out of a preliminary round.
  - Blind auditions increase the probability a woman will the winner in the final round.
  - Switch to blind auditions can explain about 1/3 of the increase in the proportion of female among new hires.

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