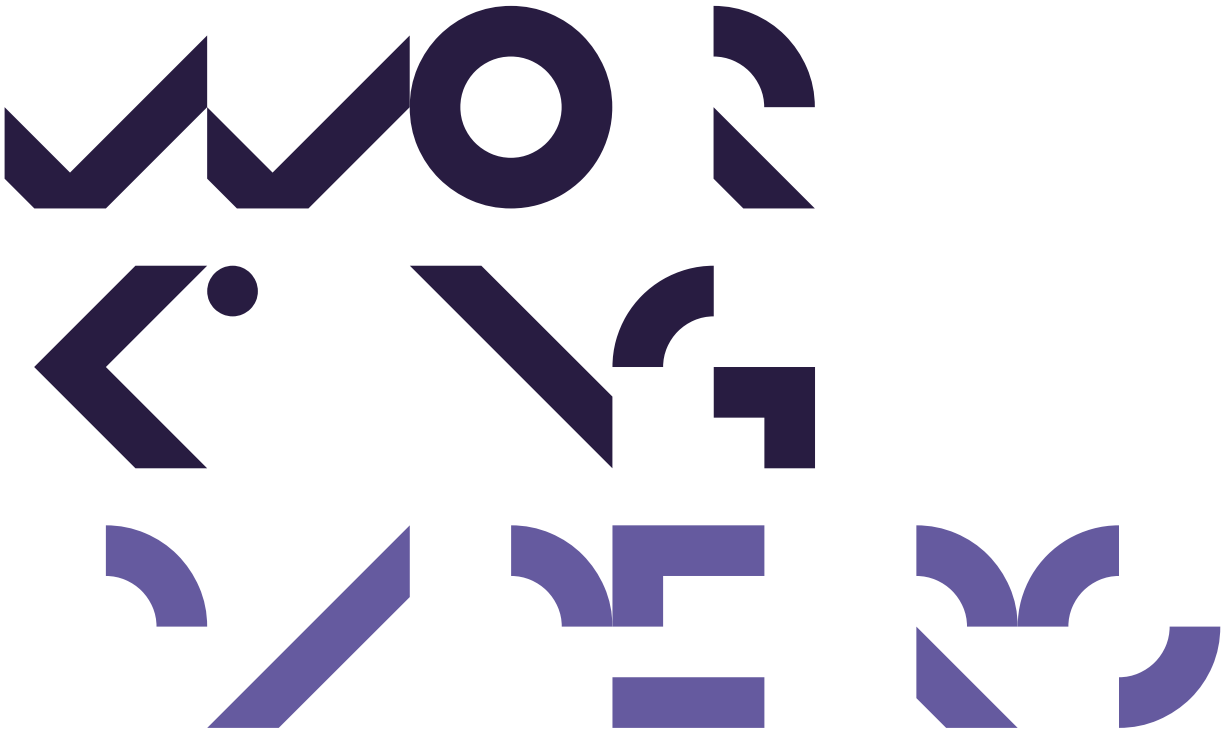

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Awareness programs and change in taste-based caste prejudice

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Abstract

Becker's theory of taste-based discrimination predicts that relative employment of the discriminated social group will improve if there is a decrease in the level of prejudice for the marginally discriminating employer. In this paper we experimentally test this prediction offered by Becker (1971) in the context of caste in India, with management students (potential employers in the near future) as subjects. First, we measure caste prejudice and show that awareness through a TV social program reduces implicit prejudice against the lower caste and the reduction is sustained over time. Second, we find that the treatment reduces the prejudice levels of those in the left tail of the prejudice distribution - the group which can potentially affect real outcomes as predicted by the theory. And finally, a larger share of the treatment group subjects exhibit favorable opinion about reservation in jobs for the lower caste.

JEL Classification: C91, O1, J15

Keywords: Caste prejudice, taste-based discrimination, implicit association test, laboratory experiment, media influence

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1 Introduction

Caste-based[1] discrimination in India has very deep roots and thus presents a good setting for studying the origins of discrimination. At the same time, quota-based affirmative action policy has been adopted in a larger scale in India than elsewhere with reservation of public sector jobs, political seats and slots in higher educational institutions for the lowest-caste groups in society. No reservation however exists in the private sector. Despite a social setting different from that in which racial prejudice against African Americans is observed, the issue of caste-based discrimination can be studied under the framework of the Beckerian theory (Becker, 1971) of taste biases.

Becker's theory makes an important prediction - a decrease in prejudice level against a social group will lead to an increase in employment and reduction in wage inequality for that social group but it is not the average prejudice level but the prejudice level held by the marginally discriminating employer, which matters. However the implication of this prediction has not been analyzed in the context of caste in India. Furthermore, few studies are able to exogenously manipulate the prevalent prejudice levels and thereby cleanly identify effect of prejudice on wage and hiring outcomes. This problem is further compounded by the fact that the menu of possible interventions by which prejudice may be affected is rather limited.

In this paper we experimentally test the predictions offered by Becker in the context of caste, with management students (potential employers in the near future) as subjects. We design a unique lab-based experiment by which prejudice levels of the subjects are exogenously altered. Our experiment exposes groups of observationally equivalent Masters level business school students at a prominent business school in Delhi to either a TV program on caste injustices or an innocuous TV cartoon program. Their prejudice levels are then measured by a caste relevant Implicit Attitude Test (IAT; Rudman et al. (2001)) available through the Project Implicit website[2] and their opinions regarding job reservation recorded.

Our results show that the treated group who watch the TV program show significantly lower implicit bias and state a significantly higher preference for private sector job reservation. These effects persist even 3 months after the treatment is carried out. We rule out that the changed behavior in our study is induced by a celebrity effect of a famous Bollywood movie star hosting the program. Instead, we show that the treatment shifts the prejudice distribution of our sample of highly-educated business school students (likely future employers) mainly at the lower tail. This fact, coupled with the additional finding that the treatment significantly increases a desire for

[1] Caste is an age-old system of rigid social and ritual stratification of Indian society, implying the total exclusion of certain groups from the rights and opportunities for advancement. The most marginalized groups are the Scheduled Castes (SCs or Dalits) and the Scheduled Tribes (STs or tribals living in remote areas, or Adhivasis). Caste status is endogamous, rarely can be changed (except through religious conversion) and implies a rigid occupational specialization. The modern day caste-system is subdivided into almost 3,000 *jati* groupings, that are related in a complex way to the original *varna* subdivision (Deshpande, 2011).

[2] Project Implicit is a multi-university research collaboration started in 1998 by aimed at systematically developing methods to elicit and measure automatic preferences.

private sector reservation indicates that caste-based discrimination in India by high-educated urban individuals is taste-based.

Thus our study is one of the first to characterize the nature of employer discrimination related to caste by exogenously manipulating prejudice levels in the lab. We also show that public awareness campaigns play an important instrumental role in reducing caste prejudice and its effect is persistent over time.

The rest of the paper is organized as follows: section 2 discusses the related literature, section 3 sketches a theoretical framework, section 4 lays out the experimental design and procedure, section 5 presents results, validation exercises and considers mechanisms and Section 6 provides a brief conclusion.

2 Related Literature

An extensive literature on racial discrimination largely looking at the black-white differences in the US has evolved over the years (see (Altonji and Blank, 1999)). Few empirical studies, however, directly measure taste-based prejudice and relate it labor market inequalities. Charles and Guryan (2008) who study the black-white wage gap in the US find that one quarter of the racial wage gap can be explained by prejudice. Carlsson and Rooth (2011) find similar results in the context of the ethnic wage gap in Sweden. In India, despite legislated policies on affirmative action, there still remains substantial employer discrimination by caste (documented by Siddique (2011), Banerjee et al. (2009)). But we know little about the nature of the employer discrimination and what strategies to pursue to ameliorate employment conditions of the low caste. Unlike most studies which rely on evidence for discrimination indirectly (e.g. Anwar (2012) and Fershtman and Gneezy (2001) look at differences in the belief distribution and altruistic preference respectively), IAT allows us to directly measure levels of prejudice. Rooth (2010) takes this idea to Swedish data and relates automatic preferences with discrimination in hiring immigrants in Sweden.

We also draw on another emerging literature showing that public awareness programs distributed via social media have a big impact on behavior. Such programs generally operate by changing the social norm as opposed to through purely economic channels such as price, income, quota etc. For instance in Brazil La Ferrara et al. (2012) finds that a television soap opera portraying small families lead to significantly lower fertility among women who are exposed to it. Such an effect has also been found by Kearney and Levine (2014) who combine Nielsen ratings, Google searches and Twitter tweets following a US TV program (16 and Pregnant) documenting the late-term pregnancies and early days of motherhood of teen mothers. They quantify its effects on teen childbearing outcomes and attribute a 5.7% reduction in teen childbearing in the 18 months following the program which amounts to around one third of the overall decline in teen childbearing over this period. While this study found a longer lasting effect of a TV social program on behavior, other programs (paid political advertising via television ads) had short-lived effects on (voter) preferences such as the

one analyzed by Gerber et al. (2011).

Psychologists have taken this a layer deeper by examining how such interventions affect our behavioral primitive - automatic preference, which in turn aggregates to social norms. Such automatic preference is unwitting, unintentional and uncontrollable and thereby different from explicit preference; yet it has real consequence in terms of affecting social judgment and real outcomes such as hiring decisions (Rooth, 2010). Rudman et al. (2001) found that diversity education administered by a likeable black professor over a period of 14 weeks reduced implicit prejudice by increasing contact with black students. Even in the short term, Dasgupta and Rivera (2008) find that situational exposure to positive gay role models reduced implicit prejudice against gay and lesbian people[3]. In fact one of the early studies in Economics to use automatic preferences in understanding discrimination, Bertrand et al. (2005), notes that "manipulating" implicit preference and thereby remedying implicit discrimination is feasible and important as discriminating behavior can be partially reduced without requiring the discriminating agent to act against her will.

An IAT is a widely used computer based tool, designed to capture the automatic preferences vis-a-vis social groups, products or identity. It compares the speed of categorization in two different sorting conditions (Nosek et al., 2005). For example, the concepts "Low Caste" and "Bad" tend to be more strongly associated than the concepts "Low Caste" and "Good"; thus respondents are able to identify and categorize items faster in a condition in which items represent "Low Caste" and "Bad" than in which items representing "Low Caste" and "Good". The test computes scores by calculating the difference in speed of association between the two sorting conditions. The details of the scoring algorithm can be found in Greenwald et al. (2003).

In this paper we target a group of likely future Indian employers – the graduates of two prestigious business schools in Delhi – and explore their implicit attitudes relating to caste and test whether we can experimentally affect such attitudes and more directly, hiring preferences. Our aim is to look deeper into the nature of employer caste bias in India, its consequences on real labor market outcomes and instruments by which caste bias can be reduced.

3 Theoretical Framework

In this section we revisit the seminal work of Becker (1971) on discrimination to examine what type of clear prediction can be derived in terms of employment and wage inequality in the presence of discrimination[4].

We assume that employers belong to the upper caste but workers may be hired from either low caste (l) or high caste (h). An employer's utility is V_i and it depends on the profit earned

[3]For an excellent review of the literature on psychology see Hardin and Banaji (2012).

[4]Models of statistical discrimination (due to Arrow (1973)), the alternative theory of discrimination, cannot generate observed patterns in employment and unemployment (for a review of how the two strands of theory compare see Lang and Lehmann (2012)). Thus taste-based discrimination models remain the most relevant tool to study hiring preferences of employers.

P_i and the taste disutility d_i from employing a lower caste laborer (let us assume that $d_i \sim F(.)$ with support from 0 to 1). Thus $V_i = P_i - d_i L_l$ where $P_i = f(L_l + L_h) - w_l L_l - w_h L_h$ is the earned profit from employing L_l low caste and L_h upper caste labor and $f(.)$is a CRS production function. Employers maximize V_i by choosing L_l and L_h. For interior solution $L_l^*, L_h^* > 0$ the first order conditions are $f'(L_l^* + L_h^*) = w_l + d_i$ and $f'(L_l^* + L_h^*) = w_h$. Thus an upper caste employer endowed with a taste disutility d_i, faces a perceived marginal cost of employing a low caste laborer $w_l + d_i$, whereas he faces w_h when facing a high caste laborer. Thus i hires a high caste laborer as long as $w_h < w_l + d_i$ and a low caste laborer otherwise. Market clearing condition implies that w_h^* and w_l^* is obtained through equating labor supply and demand and the employer who is an indifferent discriminator, indexed by d^*, is the one for whom $w_h^* = w_l^* + d^*$. Thus all employers with $d_i > d^*$ i.e. of mass $1 - F(d^*)$ will employ upper caste workers and those with $d_i < d^*$ i.e. of mass $F(d^*)$ will employ lower caste. Becker terms the employer prejudice level d^* as the "marginally discriminating employer".

Now let us consider a thought experiment where due to some external intervention the distribution of d_i shifts to the left i.e. $d_i \sim G(.)$ such that $G(d_i) > F(d_i), \forall i$.

Prediction 1: The proportion of employers who will be willing to hire lower caste labor will be greater under $G(.)$ than under $F(.)$ i.e. $G(d^*) > F(d^*)$.

Prediction 2: The wage inequality between lower and higher caste labor will be lower (i.e. w_l/w_h will be higher) under $G(.)$ than under $F(.)$.

Prediction 3: The extent of labor market inequalities (wage and employment) is driven by the discrimination level of the marginally discriminating employer.

Prediction 3 offers the important insight that wage and employment gaps should be systematically related not to the average prejudice level but to the marginal discriminator's prejudice level. It is difficult to empirically validate this prediction as it is hard to obtain the distribution of prevailing prejudice, which is further compounded by the fact that prejudice itself is difficult to measure precisely. It is even harder to know who the marginal discriminator is. Becker provides a simple rule of thumb that under some (not-so-outrageous) conditions, the marginal discriminator is the one who has the *p-th* percentile prejudice level given that the p is the proportion of the discriminated group in the population. In other words, if the share of the lower caste in India's population is 25% then the marginally discriminating upper caste employer is the one who has the 25th percentile prejudice level.

Closely tied to this theory, our study addresses three important questions. First, our experiment is one of the first to measure the (implicit) prejudice distribution among potential employers in the private corporate sector. Second, we aim to understand whether the instrument of awareness program is an effective policy instrument in so far as reducing the distribution of prejudice among potential employers. Third and most importantly, we examine which percentile the change in the prejudice distribution, if any, is coming from - this allows us to verify if the designed intervention is able to reduce the prejudice levels of the marginally discriminating employer. Getting more

lower caste labor hired by high caste employers is possible only when the change in distribution of d_i is driven by a change in the marginally discriminating employer and not the average level of discrimination held by all employers. Finally, we cannot observe actual hiring decisions of the student subjects but we can proxy it by their opinion about job reservation. While admittedly the two are not the same, opinion about job reservation can be a good indicator of a future manager's preference about a low caste person's inclusion in the labor force. With that caveat, we shall analyze Prediction 1 i.e. if a shift in the distribution of d_i affects opinion about reservation-based affirmative action.

4 Experiment Design and Procedure

Subjects are randomized into two treatment groups, which differ in the content of the video they watch. In one treatment they watch parts of an episode of a reality TV show - Satya Meva Jayate (SMJ), which documents the atrocities often meted out to lower caste people in India and the inequality of opportunity that follows. It further attempts to deliver a strong social message which indicts caste-based discriminatory behavior.

SMJ hosted by one of the most popular film stars in Bombay, was widely watched across India and dealt with a socially pressing issue in each episode. "Dignity for All" was one of the episodes and it dealt with caste-based social segmentation and discrimination in India. Subjects watch 30 minutes[5] of the episode "Dignity for All" from the website of Satya Meva Jayate. In the control group subjects watch an episode of Tom and Jerry for thirty minutes. Tom and Jerry is chosen as a counterfactual as it has little cultural moorings and thus is likely to provide subjects with a neutral reference frame[6].

After watching the video for thirty minutes, subjects are directed to the Project Implicit website where they are asked to take the Caste - IAT. It is specifically designed to capture caste-based automatic preferences. In the test, subjects quickly categorize different word based stimuli (in our case it is surnames which denote caste) into left or right categories. If the stimulus belongs to the right (left) category, the right (left) key has to be pressed. An implicit prejudice against low caste will potentially show up as a response time differential. Based on this, IAT scores are computed and results generated. We ask the students to write down the results on the response sheet. It is important to note that the test scores are not observed, but what one observes is only the result of the test-taker. It is important to note that the results from the test are stated as one of the seven

[5]The episode is one hour long, out of which 30 minutes including the most relevant parts are shown to the subjects.

[6]Tom and Jerry, a video series with universal appeal, consists of an ongoing cat and mouse chase, where the less clever but stronger and larger cat tries in vain to capture the tiny yet clever mouse. It turns out that more often than not, it is the tiny mouse which outwits the cat in the series. Thus not only the *cartoonisque* manner of representation but also the the characters exhibit no hierarchical content and thus is an appropriate counterfactual for us. If anything, it is a show of solidarity with the weak (mouse) and therefore may only bias the IAT ranks upward and thereby negate the treatment effect.

alternatives. Since a subject sees one and only one of the following alternatives (see the Appendix for a screen-shot), it is impossible for her to falsify the true result and write something socially more desirable. In order to further prevent any falsification, the experimenter randomly matched the result on the computer screen with the one that the subject writes down on paper. The result is stated as one of the following seven alternatives -

- Strong automatic preference for Scheduled Caste compared to Forward Caste (level = 3)
- Moderate automatic preference for Scheduled Caste compared to Forward Caste (level = 2)
- Slight automatic preference for Scheduled Caste compared to Forward Caste (level = 1)
- No preference of for one caste over another (level = 0)
- Slight automatic preference for Forward Caste compared to Scheduled Caste (level = -1)
- Moderate automatic preference for Forward Caste compared to Scheduled Caste (level = -2)
- Strong automatic preference for Forward Caste compared to Scheduled Caste (level = -3)

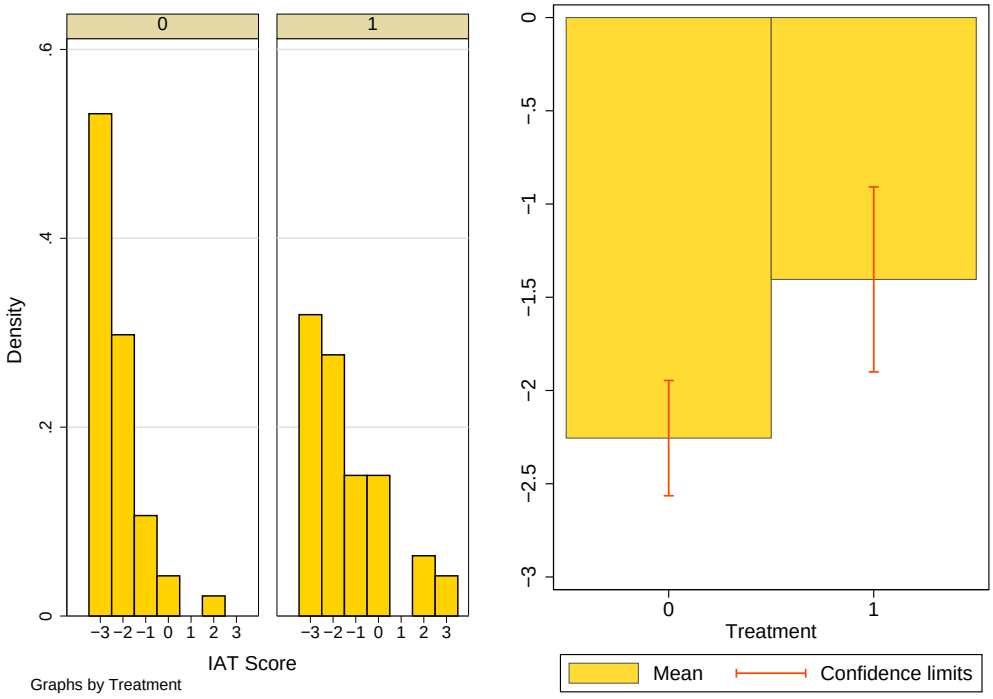
For the purpose of empirical analysis, we convert the result into numerical scores levels as indicated above. The above design allows us to draw treatment effects between results from caste-based IAT score of those who watch the episode "Dignity for All" and that of those who watch Tom and Jerry.

In order to address whether the treatment effect is sustained over time, we followed the participants in the treatment over time. They take the caste-based IAT three months later again – this time without watching the relevant episode SMJ allowing us to map how the implicit preference change over time.

The experiment was conducted among MBA subjects at two reputed management training institutes in Delhi in India. MBA subjects provide an interesting subject pool for this experiment. The students are geared towards a private sector career where not only is there no caste-based reservation but representation of the lower castes is also small. The subject pool is also overwhelmingly upper caste and come from higher income strata. Unlike groups which are statedly biased and openly discriminate against lower castes, subjects in our sample represent that part of the population who most likely perceive themselves to be "neutral" and "unbiased" between castes but resist affirmative action mainly on grounds of efficiency.

Groups of students were randomly assigned to treatment or control. The instructions carefully explained the nature of the test. Since IAT required the test taker to associate different surnames with left and right categories, several examples of surnames and their caste affiliations were discussed. The experiment was done in two phases - in phase one (conducted in October, 2013 at International Management Institute), the treatment group had 29 subjects while the control had 30 subjects; in phase two (conducted in January, 2013 at Institute of Management Technology), the treatment and control groups had 18 and 17 subjects, respectively. Thus in all, the treatment and the control

Figure 1: Distribution of IAT Level by Treatment status



Treatment 0 refers to the control group i.e. the group which watched Tom and Jerry. Treatment 1 refers to the treatment group i.e. the group which watched the Dignity for All episode of Satya Meva Jayate.

groups had 47 subjects each. However, out of the 29 subjects who had appeared in the treatment group phase one, 25 subjects came back to retake the test after 3 months (attrition rate was only 13% and the average rank of those who were unavailable was 2)[7]. Subjects were paid Rs. 300 each for participating in the experiment for a session which lasted between 50 minutes and one hour. Subjects who took the IAT again three months later, were paid Rs. 200.

5 Results

Figure 1 shows the distribution of the IAT levels by treatment status. Visual inspection reveals that the IAT level distribution for the treated group has more variance and is clearly right-translated compared to the distribution for the control group. We formally test the difference in the distributions by treatment status. We perform the Jonckheere-Terpstra test which tests the null hypothesis that the distribution of the response variable does not vary across treatment groups. For our sample, the null is strongly rejected (p-value=0.007).

Descriptive statistics on the dependent variable and controls, separated by treatment status are

[7]Given this data and anecdotal investigations into the reasons for attrition, we believe that selection will not be an issue in the subsequent empirical analysis.

shown in Table 1 below. The dependent variable is the IAT Level which ranges from -3 (strong automatic preference for Forward Caste compared to Scheduled Caste) to 3 (strong automatic preference for Scheduled Caste compared to Forward Caste). Both Treatment and Control groups show an implicit preference for the Forward Caste. However, the mean difference in IAT levels between Treated and Control is positive and highly significant, meaning that the Treated are more positively inclined toward the Scheduled Caste[8]. The magnitude of the difference corresponds to nearly one IAT level. Thus, while the Control group on average has a moderate automatic preference for Forward Caste compared to Scheduled Caste, the Treated group has a slight automatic preference for Forward Caste compared to Scheduled Caste.

Table 1: Descriptive Statistics

	Control		Treatment		Difference
	Mean	S.D.	Mean	S.D.	
IAT level	-2.26	1.05	-1.4	1.69	0.851**
Share of Female	0.34	0.48	0.38	0.49	-0.04
Age	23.81	1.66	24.3	1.25	-0.49
Sec. exam level	86.93	6.08	87.06	5.68	-0.13
Watched show before	0.32	0.47	0.51	0.51	-0.19
Religiosity	2.53	0.88	2.6	0.92	-0.06
Reservation for Public Sector	0.27	0.45	0.4	0.5	0.13
Reservation for Private Sector	0.04	0.2	0.19	0.32	0.15**
N	47		47		

† Note: *** p<0.01, ** p<0.05, * p<0.1 corresponding to mean difference using a t-test.

There are no significant differences according to treatment status in any of the control variables – i.e. share of female, age, secondary level exam level, religiosity[9] or whether subjects had watched the show before. In both groups, around two thirds of the subjects are male, the mean age is around 24 years and the score on their (national) secondary level exam is 87%, indicating that the subject pool is drawn from the higher end of the ability distribution. While 51% of the Treatment group had watched the show before, only 32% of the Control group had done so. The difference in the two shares is not, however, statistically significant[10]. We can infer from these descriptive statistics that our subject pool, consisting of 1st and 2nd year business students drawn from business school in Delhi, is a homogeneous one.

[8]The observed difference is not an institute specific feature - the average IAT levels in IMI are -2.3 and -1.2 while those in IMT are -2 and -1.6, for control and treatment groups, respectively.

[9]Measured on an integer scale of 1 to 4 where 1 is Not at all religious and 4 is Highly religious.

[10]We may be concerned that the Control group who was not exposed to the show may not have recalled watching it in the post-experiment survey. We cannot rule out that 'Watched show before' could be measured with error. This may potentially bias its effect downwards as well any variables correlated with it. The regression results are, however, robust to the addition of this variable, allaying any concerns about the presence of substantial measurement error.

Regression Results

Results from simple OLS regressions treating the IAT level as a continuous variable are presented in Table 2 below. Control variables are added in successive specifications but improve the fit only marginally, which is to be expected based on the findings of the means analysis above. The basic result is that being exposed to the treatment (watching the TV show on caste injustices) increases the IAT level by around 0.87, i.e. nearly a full IAT level, which corresponds roughly to the difference in raw means. The only other significant estimate is on previous exam level and shows that the higher the secondary exam level the lower is the IAT level[11]. Thus, the more high achieving students show a larger caste bias - a percentage point increase in secondary exam score leads to an increase of about 5% of an IAT level. The ordered nature of the dependent variable suggests an ordered categorical model (ordered probit) would be more appropriate than OLS. Model (6) estimates an ordered probit model and the main result remains unchanged. In a small sample such as this one, we are naturally concerned about the influence of outliers. The results of outlier tests based on the interquartile range showed no presence of serious outliers in the IAT level.

Table 2: Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.851***	0.860***	0.866***	0.900***	0.865***	0.732***
	(0.290)	(0.291)	(0.298)	(0.294)	(0.306)	(0.246)
Age			-0.0110	-0.0748	-0.0616	-0.0912
			(0.106)	(0.109)	(0.113)	(0.0896)
Sec. Exam Score				-0.0529*	-0.0511*	-0.0461**
				(0.0268)	(0.0272)	(0.0211)
Watched show before					0.157	0.162
					(0.309)	(0.239)
Religiosity					-0.0558	-0.0341
					(0.166)	(0.129)
Constant	-2.255***	-2.182***	-1.916	4.162	3.781	
	(0.205)	(0.230)	(2.562)	(3.981)	(4.127)	
Observations	94	94	94	94	94	94
R-squared	0.085	0.090	0.091	0.129	0.132	0.056

† Note: Numbers below the coefficients represent the Standard errors. *** p<0.01, ** p<0.05, * p<0.1. Outlier test showed 0.00% severe outliers. R-squared in (6) refers to pseudo-R-squared.

[11]It is worth noting though that the relation between IAT levels and secondary exam score is not strictly linear. This is evident from including a quadratic term of the exam score in the regression which shows that beyond 85% exam score caste bias starts to decrease again (not reported).

Validation Exercise

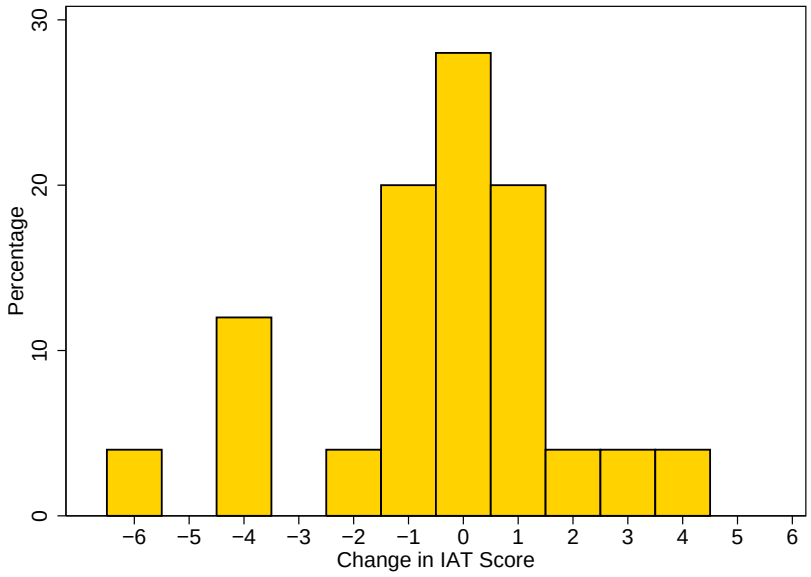
Since the IAT test measures implicit or deep-seated bias, we may worry that simply being exposed to a one ½ hour TV show induces a potentially spurious or short-term change in the treated subjects' preferences for the Scheduled Caste compared to the Forward Caste. We will explore this question in two ways: (1) We validate the findings above by comparing the differences in answers to two survey reported questions on whether the subject is in favor of public and private sector reservation for the lower castes. This also allows us to examine Prediction 1 from Section 2, namely a reduction in the discrimination leads to an increase in lower caste labor hiring (as proxied by job reservation opinion). (2) As mentioned earlier, we test the longer-run effect of the awareness program on implicit bias by asking treated subjects to take the IAT test 3 months after watching the TV show, but without watching the relevant episode SMJ again.

Regarding (1), unlike in the IAT which tests automatic associations, subjects have time to think about the questions on whether they are in favor of job reservation in the public and private sector. Thus their answers to these questions hence would reflect a more reasoned, conscious, and analytic belief.

40% of the subjects in the treatment group favored reservation in the public sector compared to 28% in the control group. A test of the difference showed that it was not statistically significant, Pearson Chi.sq(1)=1.706 (Pr=0.192). When it came to private sector reservation, 19% of the treated vs. 4% of the controlled were in favor. This difference was statistically significant at the 5% level, Pearson chi sq. (1)=5.045 (Pr=0.025). Since public sector reservation is already in place, the issue of introducing private sector reservation is possibly a more contentious one. In this case, we find that the treated group (who is otherwise identical to the control group) displaying a significantly stronger preference for reserving jobs in the private sector for the Scheduled Castes. Regarding (2), Figure 2 shows the distribution of the change in the IAT level after 3 months for the subset of treated individuals who took the re-test. 60% of the retake sample shows either no change or a positive change (more positive towards Scheduled Caste) in their IAT level. This breaks down to 28% showing no change in their IAT level compared to the last test, and 32% having a change of >1 IAT levels compared to the last test. 40% show a deterioration of their IAT level meaning an increase in implicitly held caste bias. Half this group, however, levels only 1 IAT level lower. We can conclude that a clear majority of our sample show no change or improve their IAT level 3 months later.Only 25 treated subjects participated in the 3-month follow-up even though they represent 86% of the first treated group. Whether these individuals participated because they have a more positive attitude towards the Scheduled Caste than other treated subjects in their group or because they responded more to the financial incentive cannot, unfortunately, be determined. There are, however, no significant differences in the compositional characteristics of the follow-up group compared to the treated group they were drawn from.

Finally, we also found that retakers' views on public and private sector reservation showed

Figure 2: Distribution of the change in IAT level after three months



persistence over time. 40% (25%) of retakers favored public (private) sector reservation, which matches almost exactly what we found 3 months earlier for the treatment group as a whole except that retakers were even more positive about private sector reservation (25% vs. 19%).

Mechanisms

Our results quite convincingly show that the awareness promoting TV program reduces treated subjects' implicit caste bias both in the short and longer-run. In this section, we explore some causal mechanisms. The reality show, Satya Meva Jayate (SMJ) was hosted by one of Bollywood's most popular current film stars, Aamir Khan. It is possible that a celebrity effect is at play whereby subjects are strongly influenced to adopt the values and opinions endorsed by a celebrity. Celebrities are perceived to be more trustworthy and credible than non-celebrities (a halo effect) and may come across as possessing a more authentic connection to the behavior or product they are endorsing even though they do not possess any particular expertise in that area. For instance, individuals are far more likely to accept health advice from celebrities even though they may be ill-informed on these issues (Hoffman and Tan, 2013). This may arise in part through celebrities giving a clearer signal by inducing greater recall of the product and thereby enabling individuals to differentiate between otherwise similar products (Clark and Horstmann, 2013). Celebrities may also lead the herd in getting individuals to imitate their choices leading to an informational cascade (Bikhchandani et al., 1992). In our set-up, subjects watched the TV program individually at their own computer workstations and were not allowed to interact or to discuss the contents with other subjects ruling out herd effects through informational cascade. Neither do we believe that a strong

halo effect is present. If this were the case, subjects watching the show for the first time would be affected to a greater extent by this celebrity factor. As mentioned earlier, the control for having watched the show before was positive, but most likely due to low power, was insignificant in the regressions. Furthermore, estimating the IAT level regression on the two subsamples separately (watched before, did not watch before) produced very similar treatment effects - the estimate is 0.84 (Prob>|t|=0.09) for the sample who had watched the show before and 0.79 (Prob>|t|=0.04) for that who had not watched the test before. Formally conducting a Chow test of equality of the treatment effect and group effect across the two subsamples failed to reject the null $F(2,90) = 0.24$, Prob > F = 0.7905. The possibility that we are picking up an experimenter demand effect is minimal too since automatic preferences, as measured by IAT, cannot be altered consciously.

We believe, instead, that the treatment effect is a direct effect of the content of the program reducing taste-based discrimination against the lower castes in India. One of the central predictions of Becker's theory of employer discrimination is that the relative hiring gap and the relative wage gap between majority and minority workers will be driven by the discriminatory preferences of the marginal employer who is just indifferent to hiring a majority or a minority worker, assuming firm sizes are all the same. This is because when the supply of minority workers is low, all minority workers will find employment with non-prejudiced employers who will pay them the same wage as majority workers. Where the wage gap arises is when the supply of minority workers exceeds the demand for them by non-prejudiced employers, forcing them to work (at lower wages) with prejudiced employers. The first prejudiced employer who is willing to hire a minority worker at a lower wage thus establishes the relative wage of minority and majority workers and hence the wage gap (Prediction 3). As it turns out, this is the not the most prejudiced employer but in fact the least prejudiced among the group of prejudiced employers.

Empirical support for this proposition has been found for the black-white wage gap in the U.S. (Charles and Guryan, 2008) and for the ethic wage gap in Sweden Carlsson and Rooth (2011). Charles and Guryan (2008) was the first to empirically apply Becker's suggestion that the prejudice level of the marginal employer can be found at the $p-$th percentile of the majority employer prejudice distribution where p is the share of the workforce that consists of minority employees. Both papers access survey self-reported measures of prejudice and construct prejudice distributions on samples of individuals, not necessarily employers. Charles and Guryan (2008), however, do separate analyses for the high-educated (at least a college education) in their sample, who according to them are more likely to be employers than the average person. Individuals in our sample, similarly, are soon-to-be graduates of a prestigious business school in Delhi and represent a group of potential future employers. We estimate a quantile regression of the treatment effect on the prejudice level (measured as -1 times IAT level and thus the expected signs in Table 3 are opposite to that of Table 2) to check whether the treatment effect we find arising in the experiment originates in the lower tail of the prejudice distribution. The results appear in Table 3 below.

Here we can see that the treatment effect arises only at the left tail of the prejudice distribution

Table 3: Quantile Regression of the prejudice level on treatment

Variables	10th	25th	40th	50th	60th	75th	90th
treatment	-3***	-2**	-1	-1	-1	0	0
	(1.032)	(0.765)	(0.911)	(0.861)	(0.795)	(0.211)	(0.0860)
Constant	1	2***	2***	3***	3***	3***	3***
	(0.786)	(0.566)	(0.603)	(0.539)	(0.432)	(0.135)	(0.0549)
Observations	94	94	94	94	94	94	94

† Note: Numbers below the coefficients represent the Standard errors. *** p<0.01, ** p<0.05, * p<0.1. Each column shows the result from p-th quantile rgeression.

of potential employers. For the treated group the prejudice is 3 and 2 levels lower for the control group and significant at the 10th and 25th percentile respectively but not significant elsewhere in the distribution including the median. It should be pointed out the sample is overwhelmingly Hindu upper caste[12], so the distribution approximately simulates the prejudice distribution of majority employers. The share of Scheduled Caste and Scheduled Tribe in the urban India's population is 15.4% while that in rural India is 30%[13]. The proportion of lower caste in the workforce is approximately similar and thus awareness programs are capable of reducing the prejudice of at least the marginal employer. Further, the result from Table 3 above, coupled with the earlier finding that the treatment induced a desire to increase private sector reservation, implies that employer caste bias against the lower castes in India is taste-based because the findings accord with the predictions of Becker's employer discrimination model. Unlike the papers mentioned earlier, however, we are only able to test this on the employers' hiring preference and not for wage inequality. As Prediction 1 in the theory section shows, this is an equivalent test of the theory of taste-based discrimination.

6 Conclusion

We expose business school students at two prominent business schools in Delhi to either a TV program on caste injustices or an innocuous TV cartoon program. Following the viewings, we test subjects' implicit caste biases via a caste IAT available through the Project Implicit website. Our results show that the treated group who watched the TV program showed significantly lower implicit bias and stated a higher preference for private sector job reservation. We also tested whether a longer-run treatment effect existed for a subset of the treated individuals and found that the lower bias levels either persisted or reduced even further 3 months after treatment for a majority of this group. That there is some evidence that the effect persists need further investigation in the future. Clearly, unlike priming, which is a subtle intervention with a short term effect, this intervention

[12]There were 2 lower caste subjects and 1 Muslim subject. Leaving them out does not change significance in mean difference in IAT ranks between treatments $p-$value=0.01.

[13]Census 2011, Government of India.

seems to have a deeper bite. It is not entirely surprising though, since the intervention had a clear, strong moral content and may have set the subjects thinking about why they fared in the IAT as they did. However, the deeper processes involved in the observed long term persistence of effects need further investigations. We also argued that the effect does not come from the fact that a celebrity actor hosted the program as the treatment effect was identical across the group who had watched the show before and the group who watched the show for the first time. We bring further evidence that the treatment shifted the prejudice distribution of our sample of highly-educated business school students (likely future employers) mainly at the lower tail. This fact, coupled with the additional finding that the treatment significantly increased a desire for private sector reservation, indicates that caste-based discrimination in India by high-educated urban individuals is largely taste-based. It points to a potentially powerful role that awareness programs can play in reducing such bias.

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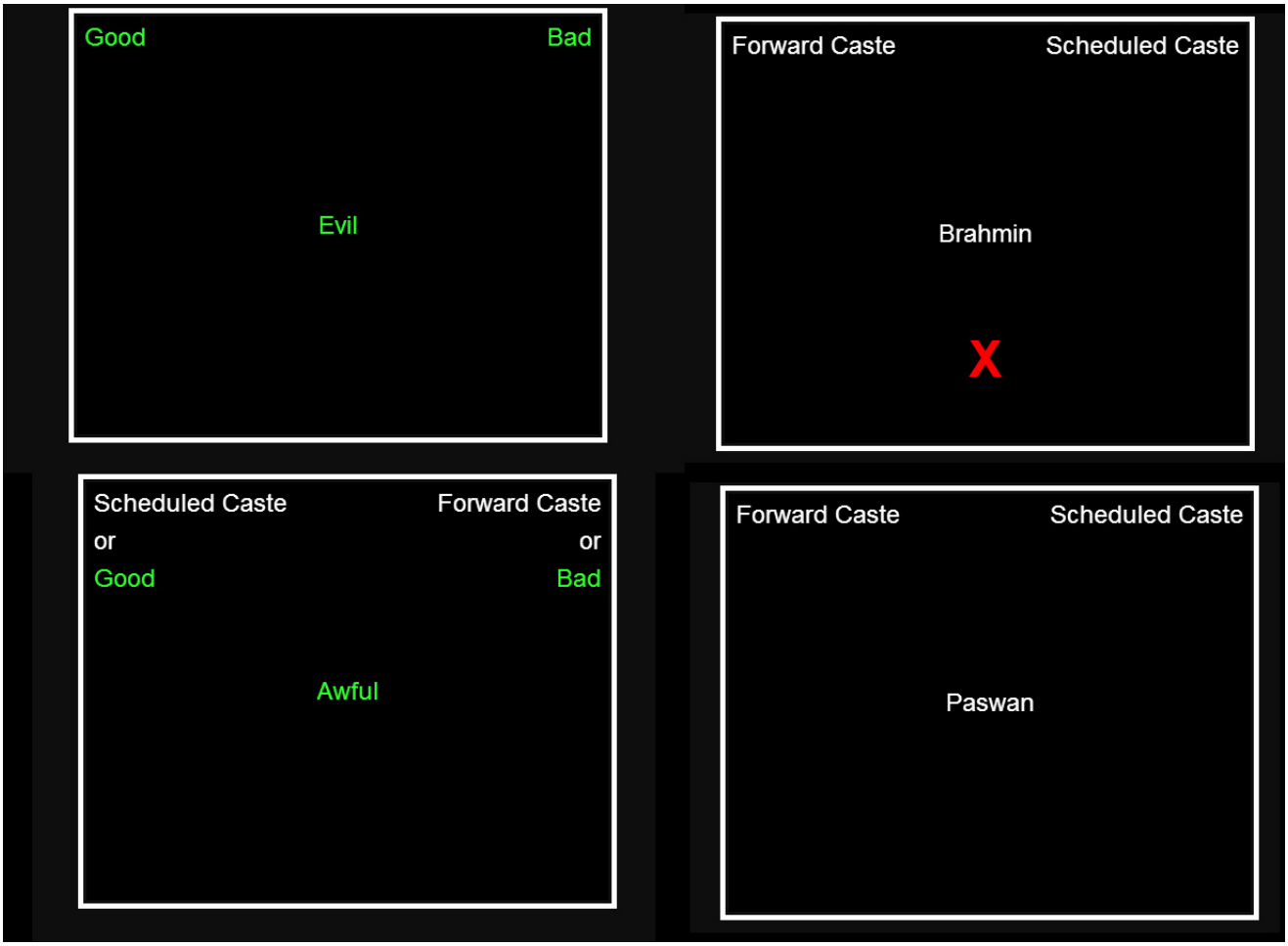
Appendix 1

Figure 3: Screen shots from IAT

(a) Test Screen shots



The above picture shows four different screenshots from the IAT. Subjects were required to associate the words that came up with either the left or the right category.

(b) Result Screen Shot

Below is the interpretation of your IAT performance, followed by questions about what you think it means. The next page explains the task and has more information such as a summary of what most people show on this IAT.

Your data suggests:
Your data suggest a slight automatic preference for Forward Caste compared to Scheduled Caste.

The interpretation is described as 'automatic preference for Forward Caste if you responded faster when *Forward Caste* faces and *Good* words were classified with the same key than when *Scheduled Caste* faces and *Good* words were classified with the same key. Depending on the magnitude of your result, your automatic preference may be described as 'slight', 'moderate', 'strong', or 'little to no preference'. Alternatively, you may have received the following feedback: There were too many errors to determine a result.

Appendix 2 (Instructions and Procedural Details)

Procedural Details

The recruitment process was done by word of mouth and subjects were told that they would be participating in an experimental study on psychology/economics. The experiment was conducted in a large lecture hall and subjects watched the shows on their individual computers. They also had access to the website where the instructions were laid out and links to the videos, tests and surveys were provided. Subjects were sufficiently spaced out from one another and other standard protocols of experiments were followed. This is an entirely between subject study i.e. subjects who took part in one treatment did not take part in another.

Instructions for Satya Meva Jayate (Website link given below)

Welcome!

You are now taking part in an economic experiment. If you read the following instructions carefully, you can, depending on your decisions and the decisions of other participants, earn a considerable amount of money. It is prohibited to communicate with the other participants during the experiment. Should you have any questions please raise your hand and we will come to you. Please note down your identity number which you will require for payment and filling out your responses.

Overview

The study consists of an experiment and a survey.

Earnings

You will earn Rs. 200 for participating in this experiment.

Details

You will watch a video from youtube for the next half an hour. The video is part of the episode "Dignity for all" taken from Satya Meva Jayate (SMJ). Following that you will be asked to take a computer based simple test. You will receive a feedback from the test which you must write down on the sheet of paper which is provided to you. After that you will fill out a survey questionnaire. In the survey questionnaire you will be asked to state your result from the test. You must report the result and fill out the rest of the questions.

Please follow the following simple steps.

Step 1: Please click here to go to the following video links. We will watch video "Amir Speaks", parts of 1 (2:30 to 12:00), 4 (1:00 to 11:00) and 5 (0:00 to 3:00).

Step 2: Please click here and take the test.

Click on Caste and then proceed. Please skip the survey by clicking OK at the bottom of the page.

Please write down the result of the test on the response sheet provided to you.

Step 3: Now please fill out one short survey. Survey for IAT click here.

Instructions for Tom and Jerry (Website link given below)

Welcome!

You are now taking part in an economic experiment. If you read the following instructions carefully, you can, depending on your decisions and the decisions of other participants, earn a considerable amount of money. It is prohibited to communicate with the other participants during the experiment. Should you have any questions please raise your hand and we will come to you. Please note down your identity number which you will require for payment and filling out your responses.

Overview

The study consists of an experiment and a survey.

Earnings

You will earn Rs. 200 for participating in this experiment.

Details

You will watch a video from youtube for the next half an hour. The video is an episode of the classic Tom and Jerry. Following that you will be asked to take a computer based simple test. You will receive a feedback from the test which you must write down on the sheet of paper which is provided to you. After that you will fill out a survey questionnaire. In the survey questionnaire you will be asked to state your result from the test. You must report the result and fill out the rest of the questions.

Please follow the following simple steps.

Step 1: Please click here to go to the youtube video. You will now watch the Tom and Jerry video for the next 24 minutes.

Step 2: Please click here and take the test.

Click on Caste and then proceed. Please skip the survey by clicking OK at the bottom of the page.

Please write down the result of the test on the response sheet provided to you.

Step 3: Please fill out one short survey. Survey for IAT click here.

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