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CASTE IN STONE

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Abstract

This paper applies the economics of identity to caste. It briefly explains the history of the caste system in India. Then it draws on experimental and empirical work to identify some of the ways that caste identities affect behavior and aggregate outcomes—through coordination failures, stereotype threat, (lack of) solidarity, the marriage market, empathy, and backlash to affirmative action. Caste identities have a large impact in limiting the reach of government services. Identifying the effects of caste on behavior gives policy makers new ways to change behavior by reducing the social distance between castes. Creating opportunities for high- and low-caste individuals to collaborate nearly as equals lowered teacher absenteeism rates in public primary schools and reduced caste discrimination. Interventions to reduce the social distance between groups are outside of the toolbox of standard economics, but may one day be mainstream in the economics of identity.

Table of contents

- 1 Caste as a category of power and mind
- 2 Untouchability
- 3 How cultural mental models influence construal
- 4 Stereotype threat
- 5 Low solidarity of ex-Untouchable castes
- 6 Why caste reproduces itself: A study of a marriage market
- 7 Limitations on empathy, public investment, and teachers' engagement in teaching
- 8 Backlash to affirmative action that 'goes too far'
- 9 Interventions to foster the social inclusion of the low castes
 - A campaign to increase parents' engagement in their children's education
 - A way to promote intergroup collaboration: Mixed-caste sports teams
- Conclusion

CASTE IN STONE

Standard economics abstracts from all social interactions except those mediated through markets. It omits cultural and social influences on cognition and preferences. In science and the social sciences, we can rely on models that are known to be wrong if they do a good enough job in guiding us to achieve our goals. But if the standard models in economics omit variables—such as identity and, more broadly, culture—that have large effects on cognition and behavior, then economists will not reach some of their goals by using the standard models.

This chapter presents evidence that caste identities influence how people see themselves, how they believe they are seen by others, and how they think the world works. These consequences of identity contribute to the distinctive pattern of economic development in India. The fruits of its spectacular dynamism in the three decades after 1990 have not been widely spread: substantial segments of the population of India remain uneducated, undernourished, and in poor health (Lamba and Subramanian, 2020). In 2020, the latest year for which data are available, 40% of low-caste children under 5 were stunted (see Table 1 below).

Akerlof and Kranton (2000) emphasize that identity—defined as one’s sense of self as a member of one or more social categories—entails prescriptions for behavior. The prescriptions have economic consequences that standard economics cannot explain. Identities of caste illustrate this starkly. Caste prescriptions for occupation and for the use of water are illustrative, as we show next.

In the case of most castes, a single occupation was historically viewed as the proper vocation. The links between caste and occupation remain strong today. Cassan, Keniston and Kleineberg (2025, in press) estimate that in 2011, people were three times more likely to work in

their caste-specific traditional occupation than random assignment would predict. 17% of men and 8% of women are engaged in the traditional occupations of their castes, for example, washing clothes or mending leather shoes. This occupational immobility is not explained only by discrimination. In a field experiment in rural India, Oh (2023) finds that in the casual daily labor market, men are less willing to take up job offers if the jobs require spending as little as 10 minutes on tasks associated with castes other than their own, particularly when those castes rank lower in the social hierarchy than the laborers' own caste.

The consequences of caste for occupational mobility are evident in the limited response of working-class boys to India's opening up to the world market in 1991. After 1991, the returns to English-language schooling in Bombay (Mumbai) rose steeply, since education in English increased the likelihood of obtaining a white-collar job. In response, the proportion of working-class girls sent to English-language schools tripled in the 1990s (from 13% to 40%), but the proportion of working-class boys sent to English-language schools grew much more slowly (from 20% to 35%).¹ Individual castes have controlled particular occupational niches for many generations. (Women, who historically did not participate in the labor market in Bombay, were not part of these networks.) There was a tacit restriction on male occupational mobility for the sake of preserving the networks that help men in many castes find jobs.

Consider next the behavioral prescription that high castes should not share water with low castes, since its use by low castes is perceived as 'polluting' to caste groups higher in the caste hierarchy. Based on her study of 120 villages in north India, Anderson (2011) found that in 1997-98, low-caste cultivators had agricultural yields that were 45% higher if they resided in a

¹ Munshi and Rosenzweig, 2006, Figures 3 and 4. These results are for the "medium"-ranked castes, who are in the working class. (The statistics are net of the parental education effects. If both parents have been schooled in English, their children will almost certain be sent to English-language schools.)

village where low-caste individuals rather than high-caste individuals owned the irrigation water.

As Akerlof and Kranton emphasize, identities shape preferences through behavioral prescriptions. We provide evidence that caste identities also influence how a person understands and interprets a stimulus.² These two sets of effects are closely related, since to be stable, prescriptive norms must be embedded in cognitive structures (Bicchieri, 2006, pp. 94-96; Greif and Mokyr, 2017). Many social scientists call these cognitive structures *schemas* or, equivalently, *mental models* or *cognitive rules* (e.g., Bartlett, 1995 [1932]; Douglas, 1966; Mandler, 1984; Ross and Nisbett, 1991; Bem, 1993; D’Andrade, 1995; DiMaggio 1997; Akerlof and Snower, 2016; Hoff and Stiglitz, 2016; Hoff, Demeritt, and Stiglitz, in process).³ An identity is called a *self-schema*. A mental model (like any model) is generic knowledge that holds across many instances, e.g., what is a “real man”; but unlike a model in the sciences, a mental model is not fully available to consciousness.

Mental models serve two main functions. First, they summarize a person’s generic knowledge with respect to a stimulus, which gives meaning to experiences and may provide motivation to take certain actions. Cultural mental models are collective representations.

²For clarity, we should distinguish our argument from 20th century behavioral economics, whose central figures are Daniel Kahneman and Amos Tversky. Tversky and Kahneman (1981) emphasized the endogeneity of preferences but focused on only one causal variable—frames in the external environment in the moment of decision-making. Kahneman (2011, p. 370) makes a strong statement about the power of this variable to shape preferences: “[in many instances] [o]ur preferences are about framed problems, and our moral intuitions are about descriptions, not about substance.” But Kahneman and Tversky omitted culture from consideration because, like most psychologists in the 20th century, they assumed that basic cognitive processes were universal. See Nisbett and Norenzayan (2002) for a summary of the standard assumptions in 20th century psychology. An obstacle that stood in the way until the late 20th century of showing that these standard assumptions of psychology were wrong was the limited use of experiments and quasi-experiments across cultures (Fehr and Hoff, 2011).

³Greif and Mokyr (2017) prefer the term *cognitive rules*—a term that they invented. A mental model, when it is activated, is a rule that governs one’s thinking. This term highlights the power of a mental model to change society, just as the rules of institutions may do.

Second, mental models are tools for information processing. A person uses mental models to construct his perceptions. As the anthropologist Douglas (1966, p. 45) argues, in perceiving we are *building*, taking some cues and rejecting others (see section 3 below).

Many scholars have suggested an analogy between the human mind and the computer:

brain = hardware
cognitive procedures = operating system and software

(see, e.g., Block, 1995; Bruner, 1990, p. 21; and Mandler, 1984, pp. 34-35). The software is a kind of coding system. It enables individuals to cope with vast amounts of information and organize it in ways that make it memorable and accessible. Since the coding system transforms information, people with different mental models who are in the same situation may not perceive the same things. The computer metaphor is, however, imperfect: the distinction between hardware and software is fuzzy, since some experiences shape the brain (Hoff et al., in process).

The remainder of this chapter has nine sections. We first explain the structure of the caste system, the unifying theme of purity and pollution in high castes' ideology of the caste system, and the surprisingly high level of human potential that is unrealized in India (sections 1 and 2).

Next we present experimental results on how caste identities create differences between low and high caste men in construal and behavior. High-caste, but not low-caste, men have difficulty in a repeated coordination game to establish the Pareto-efficient convention. The likely reason is that in the course of learning to coordinate, coordination failures usually occur. High-caste men tend to interpret their losses from a coordination failure as a slight, to which they retaliate to preserve their honor. Retaliation undermines the trust needed to establish a convention of cooperation (section 3).

When caste is primed, low-caste individuals have difficulty learning and improving their skills with practice, since how others perceive them is a source of anxiety that lowers their self-confidence (section 4).

A second effect of caste culture that experiments suggest (and real-world events appear to confirm) is that low-caste individuals have lower solidarity than high-caste individuals. One consequence is a lower ability to enforce norms of cooperation (section 5).

The caste system would not persist if most individuals married outside their caste. But in India today, 95% of marriages are within-caste. A fine-grained analysis of a newspaper-based marriage market in West Bengal shows that even among highly educated individuals, there is a strong preference for within-caste marriages (section 6).

Social distance undermines empathy. The history of conflict between high and low castes in the districts where British colonial rule imposed a landlord-based tax system has amplified the social distance between these castes. Quasi-experiments suggest that this history lowers public investment in irrigation (section 7) and teachers' engagement in teaching in public primary schools, on which the low castes disproportionately rely (section 7).

Identity economics is a useful framework for understanding affirmative action. Affirmative action can sometimes reduce the social distance between groups, but if a policy 'goes too far'—in a way we make precise in terms of Akerlof and Kranton's model—it generates a backlash (section 8). An alternative policy to narrow social distance is to create opportunities for inter-group collaboration on a near-equal basis. We discuss two successful cases—village-level school committees and mixed-caste cricket teams (section 9).

This chapter is a very selective survey of the massive literature on the economic impacts of caste identities (a broader review is Munshi 2019). We highlight our own work on randomized controlled trials and quasi-experiments, primarily in rural north India, that bear on the effect of caste identity on cognition, behavior, and ways to change dysfunctional behaviors. The research finds that differences in the behavior of high and low castes are not reducible to differences in their material and political resources. Experiments and quasi-experiments isolate some of the effects of caste and show that caste identity is an independent determinant of behavior.

1 Caste as a category of power and mind

Castes are discrete, endogamous communities that are ranked based on ‘natural superiority’ (Gupta, 2000, chapter 2). Indians are born into a caste. Neither adoption, education, nor marriage to a person of a different caste changes a person’s officially recognized caste.⁴ The rankings of caste are somewhat different in different villages of India. Most castes are associated with a particular region. On average, a village will have about 12 different castes (Munshi, 2019).

Caste assigns to a group of people an ambiguous set of qualities and capacities through which hierarchy and difference are created to facilitate the group’s incorporation into a system of power. Caste systems in that sense have existed in many parts of the world throughout history. Compelling descriptions of caste systems in colonial Mexico and in the U.S. South under Jim Crow laws are Lewis (2003) and Ritterhouse (2006).

⁴ The Supreme Court of India in *V. Giri v. D. Suri Dora*, 1960 (1) SCR 426. Unofficial departures from this rule are that social sanctions may ‘outcaste’ a person, and a woman who marries a man of a different caste may be accepted as a member of his caste.

B. R. Ambedkar was a major political leader of the low castes in the early 20th century. He was born into a low caste (but one to which the British colonial power gave certain privileges, as we explain in section 2). Exceptionally for leaders in India, he had studied sociology and economics in the U.S. in college and graduate school (he earned a Ph.D. in economics from Columbia University), which gave him the ability to see the caste system from both the inside and the outside. He aspired to make India a casteless society. He described Hindu society as “a multi-storied tower with no staircase and no entrance. Everybody had to die in the storey they were born in”; the hierarchy was an “ascending scale of reverence and a descending scale of contempt” (cited by Roy, 2017, p. 8).

It is believed that conquering groups from Central Asia used the ideology of the Hindu religion to justify their domination of the population of South Asia (Dirks, 2006, p. 301). The high-caste ideology of caste has been traced to Hindu religious texts of the period 1000 B.C.E. to 1000 C.E. that describe a ‘natural order’ of four ranked social classes, known as *varnas*, each with an inborn role to play.⁵ A fifth social class are the outcastes, who are *avarnas*, which means “without varna (a social position)”; they are innately unclean and therefore “untouchable.”

An ancient Hindu text, the *Manusmriti*, contains the following story of the origin of the human race: A cosmic giant, Parusha, sacrificed himself to create humans. The gods divided Parusha up. From his mouth came the Brahmins, who are the priests and teachers; from his arms came the Kshatriyas, who are the warriors, rulers, and seigniorial landlords; from his thighs (or loins in some translations) came the Vaishyas, who are the traders and farmers and other

⁵ Some authors use the term “caste” to mean both *varna* and *jati*. In this chapter, we use the word “caste” only in the sense of *jati*. As explained below, each varna, as well as the Untouchables, are divided into hundreds or thousands of *jatis*.

producers. Together, the *jatis* in these three varnas are the ‘high’ castes (the official government term is *General Castes*). From Parusha’s feet came the artisans and laborers with the duty to serve the other three varnas. They are called Shudras. Social scientists and historians sometimes describe the Shudras as the ‘medium’ caste group in the hierarchy of castes; the official term for them is Other Backward Castes (OBCs). From *under* Parusha’s feet came the Untouchables (the low castes). They were viewed as beyond the pale of acceptance because of crimes committed in their earlier lives, which made them innately unclean and ritually polluting (Ambedkar, p. 209 n.3). They were outside of the caste system. The doors of education were closed to them and to the Shudras. These groups had to remain in the lowest occupations of society.

This, as we noted, is the Brahmin version of the caste system. The ex-Untouchables have their own ideologies and origin stories. They do not regard themselves as impure. For them, caste is not merely or primarily a sense of self; it is also an identification by others, since the ex-Untouchables have to always remember how they will be seen through the eyes of individuals of higher caste so that they follow the appropriate script in inter-caste encounters.⁶ A common element in the origin stories of ex-Untouchable castes is that a terrible historical accident or trick caused their community to fall from an initially high status to the inferior position it is in now. Their origin stories do not question the system of caste, but only justify the upward mobility of their own caste (Deliège, 1999, chapter 4).

In modern-day India, a non-pejorative term for ex-Untouchables is Dalits, which means “the oppressed.” (Dalits is a term widely used by ex-Untouchables and has connotations of class struggle.) The official term for ex-Untouchables, for reasons we explain in footnote 14, is

⁶ This distinction has been made regarding race in the U.S. See Ritterhouse (2006, p. 9) and Fields (2001).

Scheduled Castes (SCs). Today, high castes and Dalits each make up an estimated 21% of the population of India (Pew Research Center 2021). Each *varna* (each traditional *social class*) contains many endogamous groups (called *jatis* or *castes*). This number can exceed 1,000. These endogamous groups are the operational units of the caste system.

For most individuals, the caste into which they were born is a central part of their community. Caste-based networks are important not only to find and secure jobs for their members, as discussed above, but also to support activities in business and credit and to provide mutual insurance (Munshi, 2014). Many Indians who come to the U.S. to study or work are high caste and join caste-based organizations as soon as they arrive in the U.S. to find out where to live, whom to trust, and how to fit into to a new society.

British colonial rule used the caste system to create and maintain a social hierarchy headed by the British and administered by Brahmins: “Because of caste, ... the British could rule *all* of India indirectly . . .” (Dirks, 2001, pp. 79-80; also see Dirks, 2006, pp. 295-296 and Bayly 1999). Britain’s decision to use the caste system in this way emerged in the course of the seven-year trial, beginning in 1787, of Warren Hastings. This is probably the most famous political trial in British history. Hastings had joined the East India Company as a clerk at the age of 18 and rose quickly through the ranks. The directors of the company appointed him Governor of Bengal in 1772. He transformed the company from a trading firm to a military and political power. He conquered large areas of India and extracted great wealth for himself and the company’s shareholders. The company was described as “a rogue state”: waging war and imposing taxes so steep that they contributed to famines (Dirks, 2006, pp. 13, 252). For that

crime, Edmund Burke, a conservative leader in the British Parliament, led Britain to impeach Hastings. At the opening of the trial, Burke declared:

I impeach him in the name of the English Constitution, which he has violated and broken—I impeach him in the name of Indian Millions, whom he has sacrificed to injustice... We think it necessary in justification of ourselves to declare that the laws of morality are the same everywhere (cited by Dirks, 2006, pp. 105, 107).

The trial transfixed the British public. It transformed the public's understanding of the East India Company by creating an image of a vulnerable India that *needed* British assistance. Britain's intrusive and exploitative behavior was recast as a civilizing mission for an Indian population not yet capable of self-government. After the trial ended, the substitution of British imperial authority for East India Company rule helped erase the dirty origins of empire and justify the British presence in India. Hastings was acquitted on all counts.

In antiquity, philosophers recognized an underlying universal human similarity (Chaplin 1997, p. 230) and yet saw no wrong in oppression or murder of conquered peoples. That changed with the emergence in the Enlightenment of the idea of human rights. Henceforth, oppression called for a justification and narrowed the basis on which it might rest to the group's inferiority and incapacity for freedom (Hume, 1751, p. 88; a survey is in Hoff and Stiglitz, 2010, appendix). Britain invented a "race theory that cast Britons and Indians in a relationship of absolute difference" (Dirks, 2001, p. 133; Cohn, 1996).⁷ British colonial rule built many aspects

⁷ Under British colonial rule, individuals in India were pigeon-holed into easy-referenced categories because it made the organization of colonial control easier. The high castes exploited the system, too. Landowners who faced increasing tax demands from the British, and factory owners with unmet demands for cheap labor, turned ever larger groups of tenants and laborers into "unclean" menials defined by the criteria that had earlier applied only to groups in ritually unclean occupations, such as funerary work, leatherwork, and waste removal. Formerly open-ended labor and tenancy relationships were turned into caste-based service bonds (Bayley, 1999).

of caste ideology into the structures of government. Colonial rule put all people in India, regardless of religion, into castes and put all castes under a rigid hierarchical order. The British codified in caste what it understood to be customary law in India. In the process, it got many things wrong and made society more rigidly caste-bound and individuals' identity more closely linked to their caste.

There are an estimated 3,000–4,000 castes in India (Thorat and Joshi, 2020). The exact number is uncertain, since after 1931, the Census of India did not collect information on caste affiliation. Information on caste data will once again be included in the national census that begins in 2026.

2 Untouchability

Before India gained independence from Great Britain, the castes classified as Untouchables had no rights: They could not own land or conduct a business, such as selling in markets (Thorat and Joshi, 2020, p. 37). They were barred from temples, courts, wells in common use, certain fields, and certain public roads. A central tenet of the caste system was the colonization of knowledge (Roy, 2017, pp. 9, 79); thus, Untouchables were barred from most schools. Everything connected to the Untouchables had to show their inferiority (Deliège, 1999, p. 49). Low-caste individuals were not allowed to wear certain kinds of clothes. High-caste men had undisputed rights over the bodies of Untouchable women.

Even today, in most villages of India, the physical space of the village mirrors the high-caste ideology: the low caste live in separate hamlets at the outskirts of the village. Their spatial isolation reflects their ostracism. Traditionally, they were not allowed to hold large weddings or other celebrations: something that denied them opportunities to build caste solidarity.

Untouchability is a system of *cumulative domination* —in ritual status, economic condition, and political power. In interpersonal relations, it was a denial of the right to human dignity. Even though the practice of any form of Untouchability is prohibited by law in India today, each region of India has its own version of cruelty to the ex-Untouchables. A four-year study of practices of Untouchability in 1589 villages in the state of Gujarat found that in more than 97% of the villages, Dalits were forbidden to touch water pots or utensils that belonged to non-Dalits, and a Dalit could not rent a house in a non-Dalit area (Davenport and Armstrong, 2010).

Modern-day social practices towards Dalits in many villages have much in common with social practices towards African Americans in the Jim Crow South. Ritterhouse (2006) describes these social practices as “a script for the creation of race”: a code of servile behavior governed everyday communication between blacks and whites; and there were separate schools, separate water fountains, and separate bathrooms for blacks and whites. In India, the codes of Untouchability differ across villages, but many are extreme. In a national survey of India in 2011-12, 43% of Brahmins reported that someone in their household practiced Untouchability and so avoided all contact with Dalits (India Human Development Survey of 2011/12).

Some Dalits have been upwardly mobile, but most have not been (Deshpande, 2011). According to official Indian government data of 2013, the task of cleaning human feces from the 172,000 open discharge toilets on the Indian Railways was done exclusively by Dalits, generally with their bare hands (Roy, 131, n. 47). India has outlawed manual scavenging, most recently in 2013 as of the time of this writing in 2013,⁸ and the Supreme Court of India has directed the

⁸ Prohibition of Employment of Manual Scavengers and their Rehabilitation Act 2013

Indian Railways to end this practice. However, the practice of manual scavenging is still prevalent in both rural and urban parts of India, including New Delhi (Kahle and Kumbhare, 2023).

Castes are not distinguished by any physical traits. In many parts of rural India, norms still prescribe the haircuts, clothing, and ornaments of different castes. Dalits have been assaulted for wearing “upper-caste” moustaches, shoes, sunglasses, and turbans. For example, in 2018 in the western state of Gujarat, four boys who were members of a high caste (the Rajput caste) brutally beat a Dalit boy for wearing leather shoes, which the high-caste community considered to be inappropriate for Dalits. In a video made by a passerby, the Dalit is sobbing, pleading for mercy, and assuring his assailants that he would never try to be a Rajput.⁹

To achieve independence from Great Britain, the Congress Party led by Mohandas Gandhi needed the support of the Untouchables. As the leader of the low castes, Ambedkar was appointed chairperson of the committee to draft the Indian constitution.¹⁰ He proposed that the low castes be given a separate electorate for 10 years; in that time, he expected that they could develop a political constituency with a leadership that proposed reforms. The delegates from India at a conference in London in 1930, which the Congress Party did not attend, unanimously agreed to the proposal. The British officials also approved it.

⁹ See “Influence of caste in clothing through the ages,” India Today, March 30, 2022. <https://purushu.com/2022/03/influence-of-caste-in-clothing-through-the-ages.html?srsId=AfmBOoqxAYzEsGUXtpAW431UTKgm5HdQuhg0J8uy-KBAfGDYrJZcMuF3>]

¹⁰ Remarkably for a person of low caste, he had obtained funding to go to college in the US. In 1927, he earned a Ph.D. in economics. He was of the Mahar caste, whose traditional occupation is village watchman. The British colonial power recruited Mahars for the army and set up a school for these men and their families, since soldiers were required to know how to read and write. This created an elite among the Mahar caste. Ambedkar was born into a family of this elite: his father and grandfather held senior positions in the British army in India.

But Gandhi objected to a separate constituency for the Untouchables. He wanted to retain the caste system except for the practices of Untouchability. Provided that it was purged of the ‘sinful’ belief in Untouchability, he argued that the principle of the varna was divine and moral:

[Varna] is no man-made institution but the law of life universally governing the human family.¹¹

I believe that if Hindu Society has been able to stand, it is because it is founded on the caste system . . . To destroy the caste system and adopt the Western European social system means that Hindus must give up the principle of hereditary occupation which is the soul of the caste system. Hereditary principle is an eternal principle. To change it is to create disorder. I have no use for a Brahmin if I cannot call him a Brahmin for my life. It will be chaos if every day a Brahmin is changed into a Shudra and a Shudra is to be changed into a Brahmin.¹²

Gandhi was born into a high caste (in the *varna* of Vaishyas, whose meaning was explained in section 1). Gandhi was sensitive to the psychological losses that would accrue to the high castes from a change in their position (as the economics of identity suggests). A separate electorate for Dalits would create legislators responsive *only* to constituents from the ex-Untouchable castes. To Gandhi, that was unacceptable. He was blind to the possibility that technological progress would transform the occupations that Indians needed to fill. He also closed his eyes to the fact that the caste-based occupational specialization was not a system of voluntary cooperation. It could not be maintained without oppression, since individuals who by birth were destined to work in abject occupations—which in South Asia include waste removal and leather tanning— would never voluntarily accept the principle of hereditary occupation.

Gandhi went on a hunger strike in 1932 and threatened to fast to death unless the provision for a (temporary) separate electorate for the Untouchables was revoked. If Gandhi

¹¹ Cited by Bayly (1999, p. 252).

¹² Cited by Roy (2017, pp. 9-10).

fasted to death, the Untouchables believed that they would be viewed as the villains. On the fourth day of Gandhi's fast, Ambedkar relented: he withdrew the demand for a separate electorate for the Untouchables.¹³

In the compromise between Ambedkar and Gandhi, the low castes lost their chance to advance major reform (Roy, 2017, pp. 104-110). The compromise gave SCs a quota of seats in the national assembly and in state assemblies, but they would have little influence, partly because they would represent general constituencies in which SCs are a minority, and partly of the political parties would have the power to choose the SC candidates and influence the politicians' behavior while in office. An analysis of development indicators for several thousand state assembly constituencies in 15 Indian states finds that over the period 1971-2001, quotas for SCs had no effect on development patterns or redistribution to SCs—no increase in literacy rates, employment rates, or village amenities such as schools and medical facilities (Jensenius, 2015).

Drèze and Amartya Sen (2013) characterize the development process of India as biased against the poor. They note that India has a much higher GDP than sub-Saharan Africa but is scarcely better off by several measures of well-being. Table 1 presents statistics for the most recent years available at the time of this writing. In 2023, GDP per capita in India (\$9,160) was twice as great as in sub-Saharan Africa (\$4,309); and in 2002-23, the annual estimated growth

¹³Instead of the separate electorate, the ex-Untouchable castes were given political representation through quotas, called reservations, in the central parliament and provincial assemblies. Since 1990, the Constitution of India recognizes three categories of people who are entitled to reservations: (i) the former Untouchable castes, which are listed on a schedule in the Constitution and so in are officially called *Scheduled Castes* (SCs); (ii) the tribes, also listed on a schedule in the Constitution and called *Scheduled Tribes* (STs), and (iii) "other socially and educationally backward classes" (OBCs), which have come to mean all castes ranked between the high castes (officially the *General Castes*) and the low castes (the former Untouchable castes).

rate of per capita GDP in India (5%) was four times higher than in sub-Saharan Africa (1.3%).¹⁴ The Human Capital Index (HCI) is a measure of how much human capital a country loses through lack of education and health care. The index ranges from 0 (everything is lost) to 1 (human potential is fully realized).¹⁵ For 2020, India had an HCI of 0.49, only slightly higher than the HCI in sub-Saharan Africa (0.40).

Stunting in childhood is a strong predictor of health and economic status in adult life (Case and Paxson, 2010). The rate of stunting in India is greater for children in India than in sub-Saharan Africa and, within India, much greater for low-caste children (40%) than high-caste children (27%). After accounting for many factors besides a child's caste, including mother's height, education, and anemia status and whether there is open defecation in the neighborhood (which spreads diseases that hinder the human body's ability to absorb nutrients), low-caste children are still 5 percentage points more likely to be stunted than high-caste children (Deshpande and Ramachandran, 2024). Causal factors include discrimination in access to water and government-provided food and health care.

¹⁴ There are some anomalies in the estimation of real GDP growth that suggest it is overestimated. But even after recommended adjustments to the measures, India would remain an exceptionally fast-growing economy (Lamba and Subramanian, 2020).

¹⁵ The HCI is based primarily on five outcomes in a country—percentage of children surviving beyond age 5, stunting rate of children under 5, survival rates until 60, and test scores and years of schooling that a child born today can expect to acquire by age 18 (World Bank, 2020).

Table 1 Measures of output and well-being in India and sub-Saharan Africa, 2019-2023

	India	Sub-Saharan Africa
Measures of output		
GDP per capita, 2023	\$9,160	\$4,309
Growth rate, 2002-2023	5.0%	1.3%
Measures of well-being		
Human Capital Index (2020)	0.49	0.40
Proportion of children under 5 who are stunted ^a (2020)	36.2% High caste: 27% Low caste: 40%	32.2%
Proportion of the population that has less than \$2.15 a day (2017 PPP)	13.2% (2019) 12.9% (2021)	36.7% (2019)
Infant mortality rate ^b (2023)	25	44
Probability of survival to age 5 (2020)	0.96	0.93
Adult survival rate until age 60 (2020)	0.83	0.74
Harmonized test score ^c (2020)	399	374

^aStunting is defined as the percentage of children aged 0–59 months who are more than two standard deviations below the median height-for-age of the WHO Child Growth Standards.

^bInfant mortality rate is the number of infants who die before reaching one year of age per 1,000 live births in a year.

^cHarmonized test scores are national average scores from major international and regional student achievement testing programs, harmonized into common units (300 is minimal attainment and 600 is advanced attainment).

Source: <https://data.worldbank.org>.

3 How cultural mental models influence construal

Over the years there have been hundreds of definitions of “culture.” Few are sufficiently specific to serve as a basis for scientific analysis. Drawing on advances in psychology, the social sciences (particularly those outside of economics) have gravitated to a cognitive approach: individuals experience culture as mental structures used to perceive, process, and retrieve information. Culture operates through the interactions of these mental models, learned from society, and supra-individual phenomena (for example, language and artifacts) that activate a mental model (DiMaggio, 1997, pp. 264-266; Swidler, 2001). As noted above, mental models serve as building blocks or templates for constructing perceptions and interpreting a situation.

The next figure illustrates the role of mental models in perception.¹⁶ What do you see in this picture?

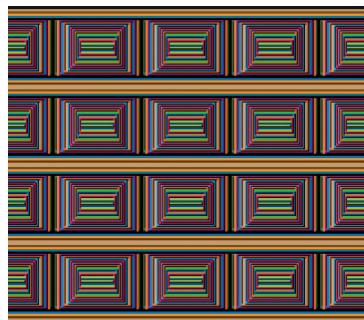


Figure 1 The Coffer optical illusion

Source: Screengrab

It contains a 4x5 grid of rectangles and a 4x4 grid of circles. The two grids cannot be seen at the same time, since each serves as a boundary for the other. The psychologist Ivan Kroupin and collaborators found that 97% of the participants in the U.S. and U.K. saw only

¹⁶ The discussion of the Coffer illusion draws on Hoff et al. (in process), chapter 1.

rectangles or rectangles before they saw circles; but 96% of the participants in Namibia saw only circles or circles before they saw rectangles.¹⁷ A shape that appears with higher frequency in an individual's environment is more easily recognized. Right-angled stimuli are common in the West but infrequent in many Namibian villages: many of the Namibian participants lived in round huts arranged in a circle.

Many societies suffer avoidable losses because they do not coordinate their actions. In north India, Drèze and Gazdar (1997) note that farmers fail to coordinate on planting times to reduce losses to wild animals that eat the seeds, and villagers fail to coordinate on the drainage of household water to keep dirt paths safely passable. Experiments with U.S. university students show that small groups of people who interact in a repeated coordination game of common interest generally coordinate very quickly on the efficient equilibrium (Weber, 2006; Van Huyck, Battalio, and Obeil, 1990). The experiment that we describe next shows that, like the U.S. participants, the low-caste participants generally established the efficient convention very quickly. But the high-caste participants did not. All the evidence suggests that the high-caste participants misconstrued the losses they incurred from coordination failures as an insult, and so they retaliated, which made it very difficult to solve the coordination problem.

The Stag Hunt is the classic laboratory paradigm for studying the problem of forming a social contract. The game is based on a story by Jean-Jacques Rousseau. In the story, a group of hunters wishes to catch a stag. The hunters will succeed and share the stag equally if all hunters remain at their posts, but each hunter is tempted to desert his post if he sees a hare. If any hunter

¹⁷Ivan Kroupin and collaborators, under review in 2025. Here is a hint to the (Western) reader who cannot see the circles: Focus on the vertical lines in one of the columns of the picture. You will see that each cluster of vertical lines constitutes a circle and that there are four circles in a column.

sees a hare and chases after it, the stag escapes and the hare belongs to the defecting hunter alone.

Each hunter strictly prefers a share of the stag to a whole hare. The problem of forming a convention to cooperate is the problem of converging on an understanding that all members of the group will hunt stag.

In our experiment in 10 villages of north India, fixed pairs of men repeatedly played the Stag Hunt (Brooks, Hoff, and Pandey, 2018). The pairs were of three kinds: low caste (LL), high caste (HH), or mixed-caste status (HL). Each member of a pair knew that his partner was a man from his village and whether he was high or low caste. A fixed pair played the game for five rounds. Each player participated, in random order, in two fixed pairs—one with a person of his own caste status and one with a person of a different caste status.

The proportion of LL pairs who reached the cooperative outcome increased over rounds 1-5 from 27% to 67%, and ranged in rounds 6-10 between 67% and 80%. In contrast, there was *no time trend* in the proportion of either HH or HL pairs who reached the cooperative outcome. In the final period of a fixed pairing (periods 5 and 10), the proportion of pairs at the cooperative equilibrium was only 32% for HH, compared to 73% for LL.

What can explain this? It was only after a coordination failure that the behavior of LL and HH pairs differed significantly. In a coordination failure, the person who hunts Stag suffers a loss equal to half his endowment for the round. After experiencing this loss, high-caste men were 40 percentage points *less* likely than low-caste men to continue to hunt Stag in the following round.

The results are robust to controlling for wealth, education, and a measure of initial trust. The results hold for *each* of the two low-status castes and *each* of the two high-status castes in our sample. The results also hold when restricting the sample to the poorest players.

Our interpretation is that the high castes construe the loss from a coordination failure as a slight—an act of disrespect—rather than the innocent outcome of unmatched expectations between the two partners. The high castes of north India have been described as having “an obsession with ‘honor’” (Drèze and Gazdar, 1997, p. 105). To maintain their honor, they retaliate against slights. Since this game was played anonymously, a player in this game would not sully his reputation if he did not retaliate, but it gives him pleasure to retaliate. In the language of Akerlof and Kranton, a *behavioral prescription* of the high castes is to punish a slight and to do that yields the person *identity utility*. The only way to retaliate is to hunt hare, which will impose a loss on the partner if he hunts stag. This response, however, makes it difficult for players to earn the trust needed to establish the efficient convention of hunting stag.

A vignette-based survey conducted post-experiment supports the ethnographic evidence that high-caste, but not low-caste, men have a strong culture of honor. As one high-caste respondent in our survey said in response to our question whether retaliation was an appropriate response to a loss suffered from another person’s action, “I would do tit for tat; otherwise, people will think I am weak.”

Another difference between the preferences of high- and low-caste men is their greater concern with their *relative* payoffs. In a series of seven dictator games in which the dictator had binary choices, we found that high-caste men typically sacrificed income for the sake of getting a larger share of the payoffs, but low-caste men generally did not (Fehr, Hoff, Kshetramade,

2008).¹⁸ These results also help explain the poor ability of high-caste men to coordinate efficiently in the Stag Hunt, since to try to achieve that exposes a player to the risk of getting a lower payoff than his partner.

4 Stereotype threat

We turn now to the effect of identity on the ability to perform. This effect is well-established. For example, the Buraku are a social group whose historical occupations, such as slaughterhouse work and leather-tanning, are ritually unclean. In Japan, the Buraku ethnic group does *worse* in school than other Japanese groups. But when Buraku students immigrate to the U.S., they are viewed simply as East Asians, and they do *better* in school than Americans (Ogbu, 2003). The difference in the stereotype that each region holds of the Buraku is mirrored in their performance.

The damaging effect on performance of a negative stereotype is called *stereotype threat* (Steele and Aronson, 1995). An important channel through which it operates is to impair executive function: to think of oneself as inferior and with low power makes one less effective in keeping goal-relevant information in working memory. The cognitive effects arising from these feelings make a social hierarchy more stable (Smith et al., 2008). Stereotype threat affects not only performance on the job, but also performance in job interviews.¹⁹

¹⁸ Mani (2020) finds an analogous difference between the behavior of husbands and wives. In experimental games, husbands, but not wives, sacrifice household income (that is, the sum of the payoffs to the husband and the wife) so that the husband's payoff is not less than his wife's. There is intrinsic value for the husbands to dominance, as measured by relative payoffs.

¹⁹Angeli, Matavelli, and Secco (2025) show that a belief among Brazilian job-seekers that a prospective employer knows that the job-seekers live in favelas (slums)—when in fact the prospective employers do not know this—reduces job interview performance.

In Hoff and Pandey (2006, 2014), we found large effects of stereotype threat on the low castes. In our experiment, participants were asked to solve mazes for a monetary reward. Nearly all the low-caste participants (95%) and high-caste participants (82%) had never seen mazes before and so needed to learn how to solve a maze. In the experiment, conducted in a largely empty school in a village in Uttar Pradesh, we varied the salience of caste in three conditions: In the control condition, which we call “anonymous” (A), the experimenter did not reveal any information about the participants in an experimental session. In the “caste revealed” condition (C), the experimenter at the start of the session turned to each participant and stated his name, village, father’s name, paternal grandfather’s name, and caste; then the experimenter asked the participant to nod if the information was correct. The third condition, “caste revealed-single caste” (CS), was the same as condition C except that all the participants in a session had the same caste status—either all were low caste or all were high caste.

The participants were sixth- and seventh-grade boys whom we recruited from villages near the site of our experiment. There were six participants in a session, nearly always drawn from six different villages. Before the experimental session, they never spoke to each other. We created this unusual situation—children in a classroom with peers who were strangers—to isolate the effect of making caste common knowledge and salient in a classroom.

336 subjects participated in one of the three conditions under piece rate incentives. We asked them to solve mazes in two 15-minute rounds. We explained to the participants in advance that our team would pay them in private for the mazes that they solved.

In condition A, the performance of low- and high-caste boys was almost the same: for the Mann-Whitney two-sided U-test (MW-test) of the gap between high and low castes, the p -value was 0.24 in Round 1 and 0.45 in Round 2. (In Round 2, both groups solved on average almost 6

mazes.)

In contrast, in condition C, the performance of the low caste declined steeply, but the performance of the high caste did not significantly change. The drop in the average number of mazes that the low castes solved in the two rounds was 20% in raw numbers (a reduction from 8.61 to 6.90). (For the MW test, $p = 0.04$ in Round 1 and $p = 0.006$ in Round 2 for the difference between the A and C conditions.)

Figure 2 is the frequency distribution in the number of mazes solved by each caste group in Round 2 in conditions A and C. The change between the two conditions in the performance of the low castes (the darkly shaded bars) is stark: the mode fell from 7 to zero. The low-caste participants did not leave most mazes blank. Instead, they tried to solve them but could not. And among the low-caste participants who solved at least one maze, the improvement between rounds was significantly smaller than for the high-caste participants. The results suggest that publicly revealing caste identity impaired the low-caste participants' ability to learn how to solve a maze and, conditional on learning this, on improving their skill with practice. The results for CS are similar to those for C.

Many low-caste individuals associate painful events with the public revelation of their caste, and so calling them by their caste name wounds them (Deliége, pp. 14, 17). It may also make them mistrustful and create anxiety about excelling, since they know that many high-caste individuals want the low castes to remain at the bottom rung of society.

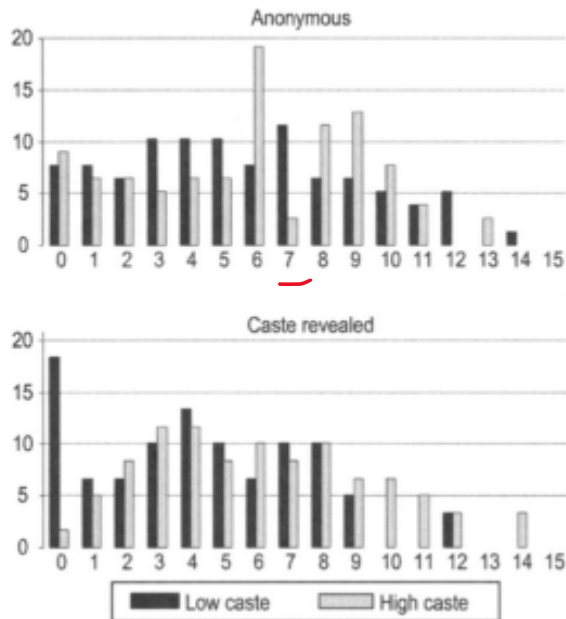


Figure 2 Distribution of the number of mazes solved in Round 2 of the Anonymous and Caste Revealed conditions

Source: Hoff and Pandey 2006

We find direct evidence of mistrust in a follow-up experiment that we implemented a year later (in March 2004) at the same site. This experiment manipulated the scope for discretion in rewarding performance. When offered a binary choice—a sure payment or the chance to win a larger payoff that was conditional on solving a logical puzzle (based on the game Rush Hour Traffic Jam), there was no statistically significant caste difference in the refusal rate in conditions A, C and CS in the case where a player’s success *mechanically* triggered the reward. But when there was *scope for discretion* in assessing a player’s success, then in condition CS (but not A and C), the low castes were twice as likely as the high castes to refuse the risky option (67% of the low caste participants refused it, compared to 30% of the high caste participants; $p = .004$) (Hoff and Pandey, 2005, especially figure 3).

There is also real-world evidence that it is dangerous for the low castes to advance in any way relative to the high castes. Using consumption data and district level crime data for 2001-2010, Smriti Sharma (2015) shows that increases in the standard of living of SCs/STs *relative* to high castes are associated with increases in the incidence of violent crimes against SCs/STs.

A finding in our maze experiment that we did not expect is that caste segregation *lowered* the performance of high-caste participants in the second round. In conditions A and C, they solved 75% more mazes in Round 2 than Round 1 (from about 3.3 mazes on average in Round 1 to about 6 in Round 2). But in condition CS, the average number of mazes the high caste solved increased by only 35% (from 3.20 to 4.33). We interpret this as the effect of a change in the high-caste participants' preference to exert high effort. We call it the *entitlement effect*.

There are two competing mindsets in present-day India: a modern one in which everyone has equal standing as a human being, and a traditional one in which individuals are *rewarded on the basis of their caste* and high castes are barred from mingling with the low castes because their touch would be 'polluting'. The experimental condition in which participants are identified as low and high caste but nonetheless are sitting *in the same classroom* would likely activate the modern mindset. In contrast, the condition in which there is *caste segregation* would likely activate the traditional mindset. As Beteille (2011) notes,

For centuries it was believed that a man's social capacities were known from the caste or the lineage into which he was born, and that no further test was necessary to determine what these capacities were.

Some supporting evidence of the effect of moving from the traditional to the modern mindset is the finding in Anjini Kochar (2004) that an increase in schooling by low-caste children increases the years of schooling that high-caste children's obtain. It seems that when the low castes get ahead, the high castes will try harder.

A belief that different ascriptive groups differ in innate capacity can be self-fulfilling through its effect on self-confidence (Hoff and Stiglitz, 2010). To see this, we assume, as in Akerlof and Kranton's core model, that there are two social categories: reds and greens. Suppose that all individuals perform a similar task over and over again. On each task, a person either succeeds or fails. His probability of success is greater, the greater his self-confidence. His self-confidence depends on the proportion of events that he records as a success.

Figure 3 represents such a production process. The vertical axis is the probability of success, and the horizontal axis is the proportion of events that the person has counted as a success. The greater this proportion, the greater his self-confidence will be and, thus, the more likely he is to succeed at the task. The curve is upward sloping.

Assume that the greens have rational expectations. Then a green agent would accurately assess his probability of success. It is a random variable, but in the long run it would be on the 45-degree line: his self-confidence would reflect his true success probability, which he has observed. The intersection of the 45-degree line with the probability of success function is an equilibrium for a green agent.²⁰ It is shown as the shaded circle.

²⁰ There can be multiple intersections of the two lines and hence multiple equilibria. An equilibrium point is stable if, at that point, the slope of the graph of the probability of success is less than the slope of the 45-degree line.

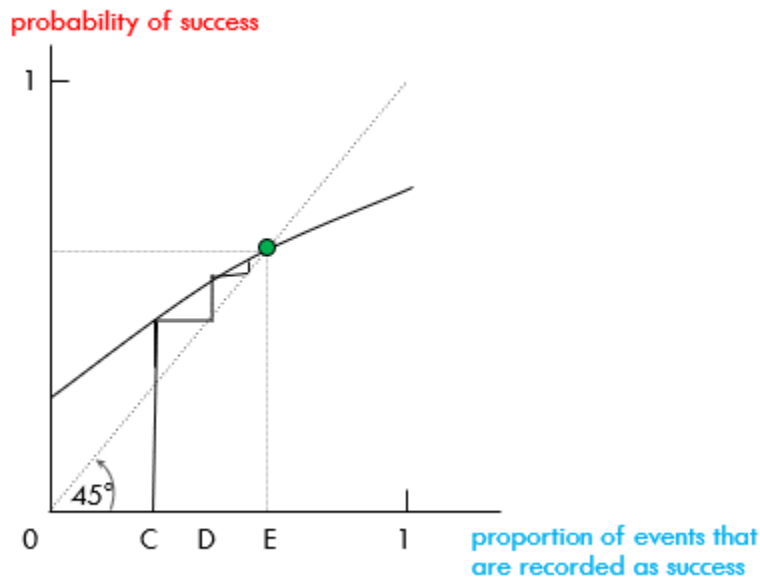


Figure 3 The rational expectations equilibrium probability of success

Note: The horizontal axis is a measure of self-confidence, since beliefs about past successes are a basis for the rate of success that one will achieve in the future.

It's easy to see why this is an equilibrium for a rational actor. Suppose that initially he had a below-equilibrium level of self-confidence, say, at point C. Then his actual success rate (on the concave curve) would exceed his expectation (on the 45-degree line). After many trials his self-confidence would rise to point D. That would raise his probability of success, which would again raise his self-confidence and his probability of success. Adjustments would stop at the intersection of the production curve with the 45-degree line. At this intersection (point E), the proportion of events that are registered as a success is equal to the actual probability of success.

Now consider the reds. They internalize a stereotype that their caste is inferior and act on the stereotype when their identity is primed. The stereotype leads them to believe that a fraction

of their successes is pure accidents rather than a measure of their ability, and so they omit this fraction of events in assessing their probability of success. With some successes not counted, the curve of the proportion of events that a red records as successes shifts to the left of the 45-degree line.²¹ This curve is shown in Figure 4. The curve is strictly to the left except at the two endpoints, which correspond to the case where the true success rate is either zero or 1. Except at these endpoints, the equilibrium probability of success of a red, shown by the hollow circle, is below the equilibrium of a green, shown by the filled circle.

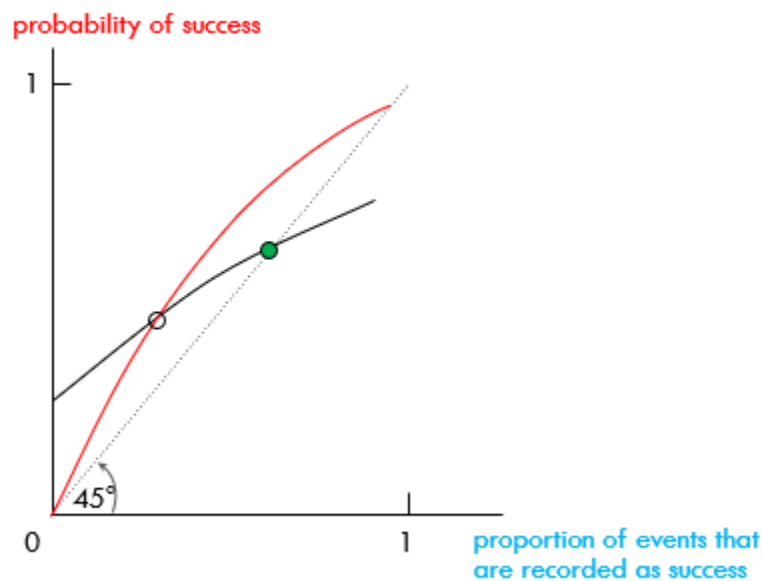


Figure 4 The equilibrium success probability of a red and a green

Hoff and Stiglitz (2010) call this underperformance of the reds an equilibrium fiction.

Their model formalizes the insight of the philosopher Ian Hacking that *social categories can*

²¹ For the “production function,” the independent variable (on the horizontal axis) is a proxy for self-confidence, and the dependent variable (on the vertical axis) is success probability. For the self-confidence curve, the independent variable (on the vertical axis) is the true probability of success, and the dependent variable is the proportion of events that are recorded as success (on the horizontal axis).

produce behavior that would not occur in the absence of the categories: in that sense, the categories “make up people.”

Evidence that stereotypes can shape individuals’ life paths comes from a study by Carlana (2019). With the agreement of the government, Carlana administered the Gender-Science Implicit Association Test (IAT) to math teachers in 91 public junior high schools in Italy. This test reveals whether an individual implicitly believes that occupations in science are more suitable for men than for women. Students have the same math teacher in the 6th, 7th, and 8th grades. Classes are not tracked by student ability, and the composition of a class remains same for the three years of junior high school. Thus, the only thing that differs systematically between classes are the teachers. The assignment of a teacher to a class of students is as good as random. In this natural experiment, Carlana found that the more biased a math teacher was, as indicated by his score on the IAT, the worse his female students did on standardized math tests. There was no effect on the math performance of the male students. She estimates that having a gender-biased teacher for the three years of junior high school causes one-sixth of the gender gap, defined as the score of boys minus the score of girls in standardized tests in grade 8.

The 8th grade students in Italy have to decide whether or not to attend an academic high school. Having a gender-biased math teacher reduced the female students’ self-confidence in math (as measured by their own assessment of ability when controlling for standardized test scores in grade 6) and lowered the probability that they chose to enter an academic high school by 7 percentage points. This was the effect of a *single* math teacher.

5 Low solidarity of ex-Untouchable castes

Solidarity is a characteristic of a group that influences their ability to enforce norms. To find out if high and low castes differ in their solidarity, Hoff, Kshetramade, and Fehr (2011) implemented a mini-trust game with third-party punishment. This game was a stripped-down trust game in which the first mover (called Player A) had a binary choice—to transfer his full endowment or nothing to the second player (called Player B). If A chose to transfer his endowment to B, it was tripled and B had a binary choice—to transfer to A double the amount he'd received from him or, alternatively, to give him nothing at all. The third player, Player C, learned what A and B had done and could sanction B: for each two-rupee coin that C spent to punish, Player B would lose one 10-rupee note. The sequential exchange problem is akin to A having a good that B values more—that is the tripling of the money—and C having the ability to sanction B if he does not pay for the good.

The three players—A, B, and C— start with endowments of 50, 50, and 100, respectively. If A and B cooperate and C does not sanction, then all three players will have 100 rupees—see Table 2, column 2. This is a substantial amount—almost twice the daily wage of an unskilled agricultural worker.

Table 2 Payoffs in the binary trust game in the absence of punishment

	Payoffs if A does not trust B	Payoffs if A trusts B and:	
		B cooperates	B does not cooperate
Player A	50	100	0
Player B	50	100	200
Player C	100	100	100

Hoff et al. implemented the game in Uttar Pradesh with more than 200 triples composed of men drawn from more than 100 villages. To ensure that players did not suspect a concern with caste, and also to ensure they would never learn the identity of those with whom they interacted in the game, we recruited subjects for each role (A, B, and C) from three distant sets of villages and gave participants fictitious last names that conveyed their caste. (This is a minor deception of subjects that meets the guidelines of the American Psychological Association). Each participant played the game in his home village using the strategy method. During the sessions with each participant, which occurred inside a large van, the experimenter conveyed information to the participant about the identities of his partners. For example, in the case of a participant in the role of C, the experimenter would say: “You are playing the game with 2 other people. You are Person C; [NAME], who is from another village, is Person A; and [NAME], who is from another village, is Person B.” The experimenter emphasized that no player would ever know the villages where his partners lived. The experimenter spoke in a neutral language: he did not use the words cooperate, defect, reciprocate, or punish; and he never used the word ‘caste’.

The figure below shows four examples of triples that played the game. In each triple, players A and C are the same caste. In the first and third rows, all three players have the same caste status. In the second and fourth rows, player B has a different caste status than A and C.

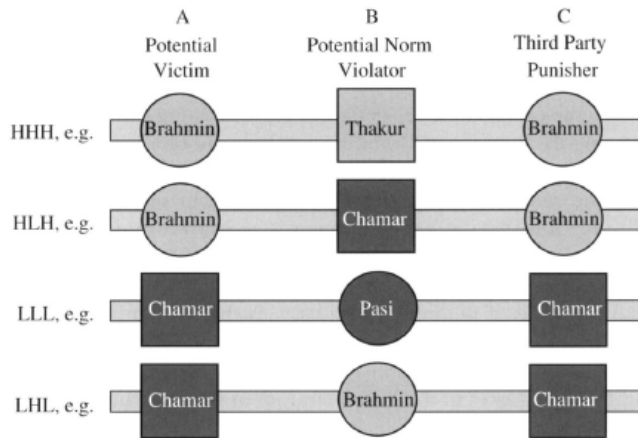


Figure 5. Examples of interacting players

Brahmin and Thakur are high castes (shaded light), and Chamar and Pasi are low castes (shaded dark).

Source: Hoff, Kshetremade, and Fehr (2011).

There are two natural measures of punishment for defection: *absolute punishment* and *relative punishment*. Relative punishment is the difference between the punishment of defectors and cooperators. For simplicity, we will focus on relative punishment, but both measures of punishment give the same qualitative results.

The participants in the game revealed a strong norm of cooperation that did not differ between the high and low castes: more than 80% of both high- and low-caste participants cooperated. Most participants in the role of player B expected that they would *not* be punished for cooperation but would be punished severely for keeping all the money they gained through Player A's trust.

These expectations turned out to be correct *only* for the high castes. The punishment for norm-violations was much higher in rows 1 and 2 than rows 3 and 4. Mean relative punishment imposed by high-caste men (8.8 rupees) was almost double that imposed by low-caste men (4.6

rupees) (MW test: $p < 0.01$). The result is robust to controls for wealth (land owned and type of house) and education.

The result also holds for individual castes. The punishment imposed by members of each of the two high castes in the sample is significantly greater than that imposed by the two low castes in the sample.

Why did low-caste men punish norm violations less—less often and less severely— than high-caste men? To answer this question, it is useful to compare the triples where A and C belong to the same caste (such triples are illustrated in Figure 5) with triples in which only B and C are the same caste (for example, the triples could be Brahmin-Thakur-Thakur and Chamar-Pasi-Pasi). With such triples, we found that the gap in punishment between the high and low castes vanishes. With such triples, the issue of solidarity within one's community (Thakur or Pasi) does not arise, because the victim is not a member of one's community.

In some social identity theories (e.g., Tajfel, 1982), group identification exists in part to provide self-esteem. This theory can explain why humans identify more with a group if it is higher status and, thus, why identification with their community is greater for the high castes than the low castes. But another factor is that the high castes in pre-independence India thwarted activities by which low castes could strengthen their group identities. High castes denied low castes the right to attend temples, to go to most schools and become literate, and to hold large celebrations for weddings or festivals. That limited the ability of low castes to build a world of their own and strengthen their identification with their group. This helps explain why, compared to high-caste individuals, low-caste individuals (in the role of punisher in the trust game) had less empathy for members of their own caste. A history of repression may also reduce the agency of

low-caste individuals and induce fatalism. Sen (2000) and Rao and Walton (2004) characterize such inequality between groups as *inequality of agency*.

The results are robust to controls for wealth, education, and participation in village government: the effect of individual differences in wealth is very small, always insignificant, and not always in the expected direction.

The difference between the low and high castes in the willingness to punish non-cooperation by members of their own caste may have far-reaching implications. In conflicts between high- and low-caste individuals, high-caste individuals may be able to draw on their ingroups much more effectively than low-caste individuals can. High caste individuals may also be better able to enforce contracts, such as those that underpin long-distance trade. When third parties are willing to punish unfairness, the sheer number of *potential* punishers is likely to constrain even powerful individuals.

Another implication is that the high castes have an advantage in disputes with the low castes in sustaining collective action. An example of the solidarity of high castes is their ability to impose “social boycotts” on non-compliant low-caste individuals. A social boycott entails denying a person employment, the right to food and water, and the right to buy provisions; the person is left to starve (Roy, 2017, p. 84).

It is a frequent event in north India that a low-caste woman is raped and mutilated by one or a group of high-caste men. If the family of the victim calls on the police to punish the rapists, high-caste villagers may collectively attack the Dalit community. In many cases, the low castes do not collectively fight back. An example is the gang rape in 2020 in Uttar Pradesh of a low-caste woman who died later in a hospital. The authorities would not let her family see her corpse

before it was buried. When the family and friends called in the police, high-caste men razed the family's hamlet to the ground.²²

State initiatives do not operate in a social vacuum but require social pressures to sustain them. The lesser ability of low castes to collectively punish those who hurt their members diminishes the government's ability to help the low castes (see sections 8 and 9).

6 Why caste reproduces itself: A study of a marriage market²³

The caste system would not persist if most Indians did not choose to marry within their caste. But most Indians do; surveys conducted in rural and urban India find that 95% of marriages are within-caste (Munshi, 2019). Genetic research shows that caste groups have been distinct since ancient times (Reich et al., 2009).

In India, dating is not, in general, socially acceptable. Parents play a large role in selecting a marriage partner for family members. A common practice in the more educated sections of the population is for parents or siblings to post matrimonial ads for a family member in the Sunday edition of a newspaper. In a newspaper-based marriage market in West Bengal in 2002-03,²⁴ Banerjee et al. (2013) assessed the strength of preferences for within-caste marriage. In the researchers' sample, the prospective grooms and brides had a much higher level of education and income than the average person in India: almost 50% of both the men and women

²²“Woman Dies in Delhi After Gang Rape, Fueling Outrage Again in India,” *New York Times*, Sept. 30, 2020 <https://www.bbc.com/news/world-asia-india-54418513> [to check for additional sources]

²³ This section draws on Hoff et al. (in process).

²⁴ The newspaper is the highest circulation Bengali paper. It continues at the time of this writing to publish matrimonial ads. See <https://www.abpweddings.com/bengali-matrimony-profiles>.

were college-educated; 18% of the men had a PhD. With much higher education and incomes than most Indians, the individuals in this sample would have more exposure to the outside world and possibly less concern to marry within their caste.

The research team studied a sample of ads placed over a six-month period. Someone from the research team interviewed every family soon after its ad appeared in print, and again one year later. The researchers considered almost 800 ads. They restricted the sample to Hindus who invited responses in the form of written letters only. (This permitted the team to keep track in written documents of the back-and-forth.) Most families placed only a single ad. Here is an example:

Aristocratic Ganguly family, 33+/-5' 10", Fair complexioned, handsome, Nargan, employed as an officer in a Project of a Government concern, own house. Of equivalent family, good natured, fair complexioned, truly beautiful, tall, graduate, homely, 24-26 Brahmin bride wanted. Box M 6664, ABP, Kol-700072.²⁵

Nargan is a likely misspelling of Nabar, a prominent subcaste of Brahmins.

For the ads in the sample, the research team kept track of all the letters that a family received and the ones that it responded to. Most families responded to 50-60 letters. Within a year of placing an ad, 44% of the sample of prospective marriage partners were married or engaged. Of those individuals, 65% had met through an ad.

The researchers observed all the information (except for photos and handwriting) seen by the ad-placers at the time that they decided whether to reply to a particular letter. Based on the decision to respond to a letter, the estimated preference for within-caste marriage was larger than the preference for *all* other variables that the research team coded. The variables for which there

²⁵ Slide presentation for Banerjee et al. 2010. "Marry for what? Caste and mate selection in modern India."

was nearly full information were education, location and origin, age, height, income/occupation (for men), and fairness of skin and attractiveness (for women). The estimated preference for caste appears to reflect the valuation of caste itself, since caste did not seem to proxy for other valued attributes of a marriage partner. The *own-caste effect* on responding to a letter about a prospective bride was *twice* as large as the difference in response rates for a self-described “very beautiful” woman and a self-described “decent-looking” woman. The *own-caste effect* of responding to a letter about a prospective groom was the same for a man from the same caste *without* a high school education as that for a man from a different caste *with* a master’s degree. An estimated 30%-40% of the sample did not have a preference to marry within caste, but the rest of the sample had a strong preference for a within-caste marriage.

The perpetuation of the caste system in this market works spontaneously—there is no direction of any outside organization over the marriages. This is an example of the workings of what we have called “the other invisible hand,” which coordinates through shared ideas and norms the behavior of the members of a society (Hoff et al., in process).

The data in the letters and the families’ decisions over *which* letters to respond to and *which* ones to ignore make it possible to compute the implicit price of obtaining a marriage partner within one’s caste. A within-caste marriage, as we’ve shown, is highly valued, but it does not have a very high price. This is because most individuals seek a within-caste marriage, the populations of men and women are close to being balanced, and there is a large variety of attributes within each caste. The result is that most individuals appear to be able to find matches within their caste that satisfy their preferences for non-caste attributes.

Still, 20% of individuals for whom ads were placed ended up entering a “love marriage”—one based on a personal relationship rather than a match through the newspaper-based market. The researchers conclude that preferences for marriages might be changing.

West Bengal is socially more liberal than many other parts of India, particularly north India. In north India, a marriage outside of one’s caste has a high probability of being socially sanctioned. Many families in north India believe that a daughter who marries down in the caste hierarchy brings dishonor to the family. A daughter who does so without the consent of her family might be disowned. In extreme cases, her father might murder her and the groom. The murders are called “honor killings.” A major Indian newspaper, *India Today*, reported in 2022 that there were hundreds of such killings each year.²⁶

7 Limitations on empathy, public investment, and teachers’ engagement in teaching

Empathy maps delineate boundaries between ingroups and outgroups (Hochschild, 2013, pp. 36-38). We feel loyalty towards members of our ingroup and no loyalty, or even hostility, towards members of our outgroup. We think of ingroup members as “all of us” and outgroup members as “them.” Empathy maps can be traced by the changes in an individual’s ability to simulate in his mind the actions of people from other groups. That’s because, as the next experiment we describe suggests, we understand what other people are experiencing by feeling in ourselves a version of the actions and emotions that they are experiencing. Suppose you are watching another person—we’ll call him Avi. If you simulate in your mind Avi’s actions and his

²⁶ <https://www.indiatoday.in/law/story/hundreds-killed-each-year-for-marrying-outside-caste-chief-justice-of-india-dy-chandrachud-2310427-2022-12-17>.

outer state, you are likely to experience some of the feelings of his inner state. Your neural responses in simulating his actions lay the foundation for empathy (Gutsell and Inzlicht, 2010).

The participants in the experiment were white students at a college in Canada. A few days before the experiment, they filled out a survey on their attitudes towards various social groups. No connection was made between the survey and the experiment. Then in the experiment, the participants were fitted with an electrode cap that recorded their brain activity as they watched a sequence of videos in which an actor of their age, seated at a table, repeatedly reached for a glass of water, took a sip, and put the glass down. In three of the videos, the actor was white (like the participants). In the other three videos, the actor was black, South Asian, or East Asian. After watching the videos, participants were asked to perform this action themselves—to reach for a glass of water, take a sip, and put the glass down.

The electrical activity in the participants' brains was similar when the participants were watching a white person sipping water and when they themselves sipped the water. But watching a member of an outgroup sipping water reduced the neural activity and did so more, the more the participant was prejudiced against the outgroup (as measured by his survey responses a few days earlier).

Humans instinctively feel the least empathy towards members of groups they are prejudiced against. This helps explain the social exclusion of low-caste individuals that is still common in India. In an anonymous online survey of all students in the chemical engineering school at a leading university in India, 13% of SC/ST students and 3% of OBC students, but no high-caste students, reported experiencing hostile attitudes from teachers; 21% of SC/ST students and 15% of OBC students, but no high-caste students, reported feeling hostility from

fellow students.²⁷

The level of hostility between high and low castes differs between regions of India that had different land tax regimes under British colonialism. In what is today the state of Uttar Pradesh, the colonial land tax paid to Britain was collected in one of two ways—the *village-based system* or the *landlord system*. Under the village-based system, village bodies had joint ownership of the land and joint liability for the taxes. Under the landlord system, individuals who owned land were liable to pay taxes to the British government but could extract from the cultivators more than they were required to pay the British government. In districts that used the landlord system (we will call them the *landlord districts*), the British colonial authority handed over to the landlords a large part of its political and judicial power and, thus, there were few checks on their exercise of power. Their rapaciousness bred hostility from the low castes that persists to the present day (Banerjee and Iyer 2005). The antagonism is especially deep in north India, where *caste* inequality was reinforced by *class* inequality: most of the landlords were high caste or in the “medium-caste group” (whose official name, as explained above, is Other Backward Castes); most of the cultivators were low caste.

Which system was used in a particular region of India depended only on ideas in the British government at the time that Britain annexed the region. The decision did not depend on features of the land and population in India. For purposes of analyzing the effect of one or the other system on outcomes in India, the choice can therefore be treated as as good as random,

²⁷ Pandey and Pandey (2018). At the end of the survey, students were asked to indicate their caste category from one of categories used by the government of India: General, Other Backward castes (OBC), or SC/Scheduled tribe (ST). The researchers kept SC/ST as a pooled category, as the government frequently does, to avoid making low-caste status more salient for the respondents.

creating a ‘natural experiment’.

Banerjee and Iyer find that a history of landlord taxation impeded the adoption of Green Revolution technology. Such technology can be used only in irrigated land and high-rainfed areas. The Green Revolution in India required, in most places, large investments in irrigation infrastructure, which only state governments could make. The distrust and hostility created by the landlord system of taxation made it difficult for low- and high-caste individuals in a district to cooperate to obtain their fair share of public investment from the state government. Few village-wide meetings were held in the landlord districts. The memory of exploitation appears to have blinded the low and high castes to their common interests. In the 1980s, the districts with a history of village-based taxation had a 24% higher share of irrigated land area, 20% more area under high-yielding varieties of rice and wheat, and 6% higher agricultural yields.

The consequences do not end here. A history of landlord taxation also affects the behavior of public school teachers. Most low-caste households rely on public schools, whereas most high-caste and better-off households send their children to private schools.²⁸ In a series of studies, Pandey compared the teaching in public primary schools in districts that had different historical tax systems but that border on each other.²⁹ In each study, a research team made a series of unannounced visits to the schools in the sample. The team recorded teachers’ attendance and active engagement in teaching. Teachers were counted as active if they were either working with students or preparing things related to teaching. They were counted as

²⁸ In 2002, low-caste children made up 42% of the children enrolled in the sample schools, but only 24% of the population of the villages where these schools were located.

²⁹ Pandey (2010a, pp. 190-204); Pandey and Pandey (2022); and Pandey, Sahadevan, and Hastings (2025).

inactive if they were absent, doing things not related to teaching, or sleeping. Teacher attendance and activity outcomes, respectively, are the fraction of unannounced visits by the research team in which a teacher was, respectively, present and actively engaged in teaching.

The first study assessed 130 rural public primary schools from 26 districts in Uttar Pradesh. There was substantially lower teacher attendance and teaching activity in landlord districts than in non-landlord districts. Attendance was 17% lower. (This is based on a coefficient of -0.14 on the fraction of visits during which a teacher was present ($p < .01$); the 17% reduction is a decline from average teacher attendance in non-landlord districts of 82%). Teaching activity was 26% lower. (This is based on a coefficient of -0.18 on the fraction of visits during which a teacher was active ($p < .01$); the 26% decline is based on average teacher activity in non-landlord districts of 68%). The results are robust to a wide variety of controls, including the village's distance from the nearest road. Teachers in village schools typically commute to their schools from the towns in which they live.

But it was only the high-caste and OBC-teachers whose attendance and activity declined in the landlord districts. There was an insignificant difference for the low-caste teachers in their attendance and teaching activity in landlord, compared to non-landlord, districts.

The differences between the landlord and non-landlord districts had predictable effects on student learning. To a random sample of 10 students from each 4th grade class, the research team gave a test based on the material in the beginning of their textbooks in math and reading. In the non-landlord districts, the average score was 13 out of a possible score of 31. In the landlord districts, the average score was lower by 0.27 standard deviation (σ) ($p < .05$). The estimated decline was as large as 0.46σ ($.01 < p < .05$) when various village and school characteristics were held constant.

At the time of the study, every low-caste student in public primary school in India was entitled to a small annual stipend from the national government (300 rupees, which is about US\$6 in 2002). Teachers distributed the stipends to the parents. The average stipend received by students in non-landlord districts was 236 rupees. It was lower in landlord districts by between 99 and 126 rupees ($p < .01$), depending on the factors that are controlled for. The roughly 50% reduction reflects greater embezzlement by teachers in the landlord districts.

8 Backlash to affirmative action that ‘goes too far’

Can affirmative action promote the social inclusion of ex-Untouchable castes? A 1992 amendment to the Constitution of India requires that in some elections for village head, only SC individuals can run for office. The provisions are called “reservations” because they reserve certain elected positions for a particular category of people. Before we discuss the impacts of the amendment, we provide a bit of background on the structure of government in the rural sector of India.

The lowest administrative unit is the “village cluster” (a small group of villages located near each other). The higher administrative units are the block, district, and state. A village cluster’s government is called a *village council*. Its head, called the *pradhan*, is elected. The 1992 amendment to the Constitution of India stipulates that a proportion of village clusters in each block (equal to the share of the low-caste population in the block) must elect an SC as *pradhan*.³⁰ Thus, if 25% of the population of a block (similar to a county in the U.S.), are SC, then in 25% of the village clusters, only SCs can be candidates in elections for *pradhan*.

³⁰ This was how the procedure worked: The proportion of village clusters is chosen block by block within a district based on the block’s proportion of the low-caste population (say x). The village clusters in each block are listed in descending order by the proportion of low castes in the population. Every five years (the length of an

Pandey and Pandey (2022) assessed the impact on public primary schools of having an SC pradhan. The research team made unannounced visits in 2002-2004 to schools in 130 village clusters in 26 districts in Uttar Pradesh.³¹ The sample was restricted to village clusters with a proportion of SC population within a small range of the cut-off of villages to which the reservation applied.³²

The villages in the sample had two very different histories of taxation under British colonial rule—the landlord system and the village-based system. To isolate the effect of that history, the sample included only districts that were situated on either side of a border that separates districts with a history of the landlord system from districts with a history of the village-based system.

As noted in the previous section, in the areas that historically had the landlord system of taxation, public primary education was very poor. Having an SC pradhan did not change this. However, in the non-landlord districts, having an SC pradhan drove teachers' performance down to the low level of the landlord districts. As shown in Table 3, in village clusters with an SC pradhan, students' test scores were 38% lower, teacher presence in the schools was 44% lower, and teacher engagement in teaching was 48% lower. The declines were driven entirely by the

election term), a proportion x of village clusters is chosen from this list, going from top to bottom, to be assigned the reservation for an SC pradhan. The selection rule means that the village clusters on each side of the cut-off proportion of low-caste population (i.e., where selection for reserving village clusters for low caste ended) would be expected to be very similar at baseline.

³¹ In all but two of the sample districts, the set of villages with, and the set of villages without, a low-caste *pradhan* under the reservation rule was unchanged since 1995—hence, there had been an SC pradhan for 7 years at the time that the study began. Results are robust to excluding these two districts from the sample.

³² The reservation variable is, thus, a step function of the proportion of the low-caste population in the village cluster within each block in every district in the state.

high-caste and OBC teachers; there was no reduction in the attendance and engagement of the SC teachers.

Table 3 Impact of affirmative action for SCs as pradhans in public primary schools in non-landlord districts, Uttar Pradesh, India, 2002-2004

Outcomes	Estimated impact of affirmative action for SCs as pradhans (Percentage change)
Average score of students on a literacy and numeracy test	- 38%
Teacher attendance	- 44%
Percentage of time that teachers engage in teaching activities	-48%

Source: Hoff et al. (in process)

Akerlof and Kranton's (2000) model of the economics of identity can explain this. The model includes identity (that is, the sense of self) as a variable in the utility function: $U_j = U(\alpha_j, \alpha_{-j}, I_j)$, where α_j are the actions of individual j , α_{-j} are the actions of all others, and I_j is individual j 's sense of self. Factors that affect the sense of self include the actions of other individuals, the categories to which individual j assigns individuals, and the behavioral prescriptions for the categories that individual j belongs to. An SC person in the position of pradhan violates a simple behavioral prescription: *a person should never dominate members of a caste higher than his own caste*. In villages with an SC pradhan, the high castes and OBC's suffer a loss in identity. The model predicts that to allay these feelings, high-caste teachers will take some action to restore their sense of self. Non-performance of one's job, on which SC and poor students disproportionately rely, may be a means to do that. Drèze and Sen (1997, pp. 61-64) note Uttar

Pradesh has no social consensus on the need to universalize primary education. According to the traditional high-caste ideology of caste, academic learning is not appropriate for low-caste individuals. Akerlof and Kranton's model can thus explain why all except the SC teachers took actions (higher absenteeism, lower engagement in teaching) that hurt the students in public primary schools. The model gives a precise meaning to a new concept — affirmative action that goes too far. *All* affirmative action gives people a position that they would not otherwise occupy. Affirmative action *that goes too far* gives people a position for which there is no plausible cognitive foundation.

Supporting evidence is that affirmative action for the SCs as pradhans did not change the stereotypes of SCs. Chauchard (2014) designed a survey that villagers self-administered orally — using an MP3 player to guarantee anonymity— with questions like these: Do you agree or disagree with the following statement: “*Members of the Scheduled Castes are just as intelligent as other villagers.*” Most people disagreed with this statement. There was no significant difference between the responses of villagers with or without the experience of seven years of a reserved pradhan (1½ election cycles) in their local government.

Additional supporting evidence is from Girard (2017). She measured attitudes towards SCs by one social practice—an informal village rule barring SCs from walking down the roads of a high-caste hamlet. A national survey by the government of India reveals that the prohibition was lifted in some villages *during* the term of an SC pradhan, but the prohibition was reinstated *after* the term ended.

In contrast, affirmative action for women as pradhans did change the stereotype of women as leaders. As telling evidence, after two terms of a female pradhan under the affirmative action policy, women running for pradhan in a free election were more likely to win

(Beaman et al., 2009). In addition, teenage girls had higher aspirations, and fathers were more likely to agree with the statement, “I want my daughter to be a pradhan” (Beaman et al., 2012).

Affirmative action for women, unlike affirmative action for SCs, could draw on exemplars of powerful figures who were admired by men. Such exemplars might be goddesses or mothers who live in the homes of their grown sons and manage the household. Another exemplar might even be former prime minister Indira Gandhi. Existing mental models may provide a plausibility structure, through analogy, for a leadership role for women.

Follow-up study In 2023, Pandey, Sahadevan and Hastings (2025) did a follow-up study in a sample of 120 village clusters in one district in Uttar Pradesh. Half of the sample had a reservation for an SC pradhan beginning in 2021, and the other half did not.³³ This survey replicated some, but not all, of the earlier qualitative results. It found that the teachers were 57% less likely to be engaged in teaching than in the comparison schools (0.43 odds ratio; $p = 0.02$). But student test scores in the reserved and the non-reserved village clusters did not differ significantly. The absence of a significant difference in the test scores in this study, in contrast to the earlier study (Pandey and Pandey, 2022), might be evidence of a slow trajectory of benefits to education from affirmative action for SCs, with SC leaders gaining influence as the affirmative action policy has endured longer. But the scores were very low in both the treatment and the comparison group: on a test on reading and numeracy skills that teachers were expected to teach at the start of the school year, each group had an average score of 55%.

Affirmative action for SCs as pradhans has had opposite effects on village health care workers³⁴ and public-school teachers. The services that prenatal health care workers delivered to

³³ In 2020, there were no significant differences in socio-economic, geographic, and service delivery indicators between the village clusters with, and those without, a reservation for an SC pradhan.

³⁴ Their official name is Accredited social health activists (ASHA).

pregnant women were *higher* in SC-reserved villages than in villages without the reservation, and infant mortality rates in villages with SC-reserved villages were *lower* by more than half.³⁵ Compared to the control group, SC-reserved village clusters had almost 8 times higher odds of delivering two pre-natal visits ($p < 0.001$), almost 5 times higher odds of providing two tetanus vaccinations ($p < 0.001$), and 4 times higher odds of providing prenatal supplements to pregnant women by the second trimester ($p = 0.002$).

Why does having an SC-reserved pradhan have opposite effects on the quality of public school teaching and public healthcare? A key factor appears to be social distance. Compared to teachers in public schools, health care workers are more likely to be low caste. They have less education and lower compensation than the teachers. They are not unionized, and their appointments are recommended to the government health department by the pradhan.

Our interviews with the pradhans support the hypothesis that the smaller social distance between SC pradhans and healthcare workers accounts for the pradhans' greater success in working with healthcare workers than with teachers. SC pradhans reported experiencing greater cooperation from healthcare workers, and healthcare workers listening more to their directives, in comparison to the teachers.

But this is not to suggest that the teachers were solely to blame for poor outcomes in student learning. There are systemic and structural barriers to teachers' engagement in teaching. While healthcare workers have a narrow mandate on health, with a strong focus on maternal and

³⁵ The incidence rate ratio for infant mortality, holding other factors constant, was 0.46 ($p < 0.001$). Studies in the U.S. also find that after various forms of affirmative action, mortality rates of the population as a whole and of infants decline in disadvantaged and minority groups, such as African Americans (Krieger et al, 2008 and Almond, Chay and Greenstone, 2006).

infant healthcare delivery, teachers in India and many other low- and middle- income countries are routinely burdened with non-teaching tasks that they struggle to complete during school hours. Government reliance on teachers to work on the national census, elections, village surveys, and non-education-related services in the school (uniforms, lunches) causes many teachers to withdraw their effort from teaching. This is at no personal financial cost, since teaching outcomes are not incentivized. Pandey et al. (2025b) find that teachers spent only about 50% of school hours teaching, with most of the remaining time taken up by non-teaching tasks that the government assigned to them.

A provocative finding is that a teacher's greater engagement in teaching predicted students' better performance on the language and math test *only in the case of teachers who reported that they felt under stress*. For teachers who reported low stress, greater teaching engagement was not associated with improved student learning. This suggests that given the many demands on teachers, it is impossible to be successful as a teacher without bearing high stress. More than three-quarters of the teachers reported at least one symptom of burnout and attributed it to the mental and physical exhaustion of doing the required non-teaching tasks.

Most research and policy reforms to improve education in low- and middle-income countries focus on improving teachers' accountability and engagement in the classrooms and raising the quality of the teachers (World Bank, 2018). The findings discussed here suggest that teachers' stress and burnout from non-teaching work may be a crucial missing variable. Policies that respect and reward teachers for their teaching and that drastically reduce the demands to perform non-teaching tasks may be critical to promote student learning.

A caveat that applies to this and some other sections of this chapter is that most of the studies we discussed were conducted in the state of Uttar Pradesh. The findings may not be

generalizable to other geographic regions in India. But Uttar Pradesh is an important context for studying obstacles that prevent all groups and regions from sharing in the rapid growth of India as a whole (NITI Aayog, Government of India, 2023). Uttar Pradesh is the most populous Indian state: its population size (similar to Brazil's) is over 240 million (Statistics Times, 2025). Although not nationally representative, the population in Uttar Pradesh is like that in many other parts of north India that lag in human development.

9 Interventions to foster the social inclusion of the low castes

Researchers are seeking ways to promote the social inclusion of SCs in ways that will not induce a backlash. This section discusses two such interventions.

A campaign to increase parents' engagement in their children's education

Teacher absenteeism rates are high in many low- and middle income-countries. Across several such countries, the World Bank (2018) reports that at any time during the school day, 23% to 57% of teachers are absent from school or away from their classrooms while they are at school. The teacher absenteeism rate in public schools is more than 25% in several states of India (Mauralidharan et al., 2017; Pandey, Goyal and Sundararaman, 2010). Can a policy intervention change increase teachers' engagement in education?

Pandey (2023) designed a pilot program to take advantage of a little-used formal structure—the *school committee* of each village cluster. The members of a school committee are the *pradhan* and parents appointed by the school and the villagers. The villagers who would gain the most from a well-functioning school committee would be the SCs and the very poor, since they disproportionately send their children to public rather than private school, but the pilot program did not single out these groups not directly challenge the hierarchy of caste. Instead, the

program was directed to all the parents of children in public schools.

Before the intervention, few parents were aware of the oversight roles that the school committee was authorized to play. In public village meetings in a village that were widely publicized in the village, the program gave information on the school committee's oversight role and equipped parents to monitor their children's learning. The tools used in the campaign, approved by each state government, included a six-minute film and a booklet with which parents could assess whether their children had the skills they were expected to learn in their grade.³⁶ All the materials carried the logo "Education for all," which was the name at that time of the government of India's education program. The logo gave the information credibility. Figure 6 is an excerpt from the learning assessment booklet.

4 कक्षा चार का बच्चा आसान गुना और भाग कर ले
जैसे

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$
$$\begin{array}{r} 32 \\ \times 6 \\ \hline \end{array}$$
$$7 \overline{)42}$$
$$5 \overline{)45}$$

Figure 6 Grade 4 math problems in the learning assessment booklet. In translation, the Hindi text states, “Class 4 students should be able to do easy multiplication and division, such as ___”

The meetings of the school committee let parents know where they could complain about problems at the school and what benefits students in public primary schools were entitled to—cash stipend, textbooks, midday meal, and school uniforms. The typical meeting lasted 30-40

³⁶ The information was acquired from the states' education offices.

minutes. To ensure uniformity of the campaign, research assistants followed a script to conduct the meeting and make the introductions. The research assistants answered only questions to which answers were written on the calendars that were later distributed to the parents. In the meetings, parents learned how to use the assessment booklets by getting help from village youths who had enough knowledge that they could tell parents whether the child was doing an item in the booklet correctly. The research assistants assured parents that if they were not literate, they could use any literate person in their neighborhood to get a sense of how much their child knew. The audience was invited to ask questions and hold discussions.

After every meeting, there was a door-to-door distribution of calendars containing all the information presented at the meeting and the learning assessment booklet. Over the 2½ years of this intervention, 11-14 meetings were held in various locations in each village cluster. On average, 4-5 meetings were held in each village.

The randomized controlled trial. To assess the impact of the campaign, 610 village clusters in three states of India—Uttar Pradesh, Madhya Pradesh, and Karnataka—were randomly assigned to receive the treatment or serve as control. No intervention took place in the control villages. A baseline survey before the treatment and a survey 2.5 years later were conducted. The study involved more than 1,900 teachers, 21,000 randomly selected students and their parents, and all of the more than 5,000 members of the school committees.

Two and a half years after the campaign ended, teacher effort and learning outcomes were higher in the treated village clusters than in the control villages. Bigger gains occurred in the two states (Uttar Pradesh and Madhya Pradesh) where the baseline levels of outcomes were lower. In Uttar Pradesh, civil service teachers' attendance rate increased to 75% from a baseline of 61%, but teaching engagement did not change significantly. In Madhya Pradesh, civil-service teachers'

attendance increased to 78% from a baseline of 67%, and teaching engagement increased to 43% from a baseline of 30%. The increase in teaching engagement was greater for high-caste, male, and more educated staff. (Higher absenteeism and lower effort by male teachers and more educated teachers are robust findings across many low and middle-income countries and are attributed to the power of their social status.) The campaign thus had a greater impact precisely where the accountability problem was greater.

Reductions in teacher absenteeism increased the proportion of children who acquired math skills. As illustration, we report the results for grades 3 and 4 for Uttar Pradesh. The baseline proportions of children with the four basic arithmetic skills was low: for addition, it was 15%; for subtraction, 8%; for multiplication, 5%; and for division, 4%. The information program increased each of these rates by 2 or 3 percentage points. Increases also occurred in the share of children who could read (a 5 percentage point increase above a baseline of 10%) and write (a 3 percentage point increase above a baseline of 5%). These are large changes in percentage terms. But the absolute level of achievement remained very low: only 10% of third- and fourth graders could subtract; only 15% could read a simple sentence.

Focus group discussions indicated that many parents used the assessment tool to learn whether their children had achieved grade-appropriate learning, and discussed with teachers their concerns about their children's learning. As early as the end of a public meeting, parents started using the booklets and approached the teachers to ask whether their children knew enough for their grade in school.

Pandey's team asked parents why bigger changes didn't occur in student learning and teacher effort. Prominent themes in the parents' responses were that "The teacher is dominating," "It is difficult to talk to the teacher," "The teacher does not listen," and "The

teacher does not care.” Low-caste parents sometimes said, “People are afraid to talk to the teacher.”

In future work, it would be useful to see whether parents praised the teachers who had helped their children learn. Recognition can be a powerful tool to induce good behavior (Rand et al., 2009).

After the 2½-year campaign ended, many of the school committees in the treated villages remained more active than those in the control group. They met more frequently; the members participated more often in school committee meetings and school visits were more aware of school accounts and the committee’s responsibilities, particularly vis-à-vis teachers. Expectations and norms about acceptable levels of teacher absenteeism changed. But the gains in participation and awareness were larger for school committees with a greater proportion of high-caste members. No such gains were experienced by school committees with a below-median proportion of high-caste members. Recalling the comments of low-caste parents that the teachers were “difficult to talk to,” we speculate that the social distance between the teachers and the below-median school committees was just too great to permit the committees to function effectively.

Information campaigns require resources, but this intervention was an extremely cost-effective way to increase teacher performance. High teacher absenteeism and low teacher effort in classrooms result in a huge waste of public resources. The cost of running the campaign was about \$150 per year per village cluster. Pandey did rough calculations of how much the increased attendance from the campaign was worth when valued at teacher salaries by using a conservative estimate of the monthly salary of a public-school teacher in a permanent position.

The annual value of reclaimed public resources through lower teacher absenteeism was *between 22 and 37 times* the annual cost of the campaign.

This information campaign through the village school committees built on an earlier randomized controlled trial by Pandey and collaborators on the impact of informing village residents of the preventive health services to which expectant mothers and infants were entitled (Pandey et al., 2007). The campaign involved 4 to 6 public meetings in each village cluster. The sample was 105 village clusters in Uttar Pradesh. One year after the intervention, households in treated villages reported better delivery of several healthcare services than residents in control villages: at least 24% more prenatal examinations ($p < .001$) and prenatal supplements ($p = .003$), 27% more tetanus vaccinations ($p < .001$), and 25% more infant vaccinations ($p = .004$). Both low- and higher caste households experienced these improvements.

The stark contrast between the ability of the information campaigns in schooling and healthcare to help low-caste households suggests the large role of caste identities in limiting the reach of government services. School teachers are much higher in status than health care providers. The primary school teachers' beliefs about their proper place in the social hierarchy, particularly when it is threatened by affirmative action for the low castes, are a constraint on their provision of education. The final intervention that we discuss targets the mental models that underlie discrimination by the upper castes against the low castes.

[A way to promote intergroup collaboration: Mixed-caste sports teams](#)

The psychologist Allport (1954, pp. 276-278) hypothesized that collaborative contact between socially distant groups would reduce the prejudice that they hold of each other. Lowe (2021) designed a large-scale field experiment to test this hypothesis. He implemented the

experiment in villages in Uttar Pradesh where 39% of high-caste and OBC households practiced Untouchability.

He recruited over 1,000 volunteers from the villages to play in cricket tournaments with monetary prizes. He randomly assigned the volunteers to play on one of two kinds of teams: “mixed-caste” teams included low-caste and high-caste men; “homogeneous teams” included only high-caste men or only SCs. The participants played eight games over the course of one month.

The contact between players on the mixed-caste teams reduced the players’ prejudice and discrimination. Players had to vote on which person from their team would receive professional cricket coaching. The experience of playing on a mixed-caste team reduced favoritism towards one’s own caste-status group by up to 33%. A part of the shift might be explained by belief updating; by interacting with members of other castes on one’s team, one would learn who is talented at cricket. But the reduction in favoritism cannot be explained only by belief updating; it also reflects a shift in preferences.

The experience of playing on a team with high- and low-caste men also made team members more willing to interact with men of a different caste status through trade and social relationships. Lowe estimates that moving from a homogeneous team to an evenly mixed team (4 SCs, 4 non-SCs) *increases* individuals’ desired cross-caste interactions by 31%, and their friendships with men of a different caste status by one person. Intergroup contact reduces prejudice through *striving together towards a shared goal, not winning together*: the effects are not larger when the individuals from the other caste status are high-ability cricketers.

On the other hand, having all other-caste-status *opponents* instead of none is estimated to *decrease* the number of other-caste-status friendships that a participant makes by 3.5 people. It also reduces the willingness to trade with members of the other caste status.

Our interpretation is that when high- and low-caste men play with, or against, each other, they generalize their feelings *in the game* to interactions with people *in daily life*. It is as if active engagement in cooperation or competition leads people to form pictures in their heads of the members of an entire social group based on the highly structured collaboration and competition in the cricket games. As of the time of this writing, the evidence base is not strong enough to know if these results will hold in general (Lowe, 2025).

Conclusion

This essay has examined caste through the prism of the economics of identity. Caste identities entail mental models that mediate individuals' understanding of themselves and experience of the world. Embedded in the mental models are behavioral prescriptions, including prescriptions for occupation, dominance and submission, and marriage within caste. The mental models affect trust, self-confidence, trust, and empathy with others. The mental models influence the economic development of India. Experiments and natural experiments demonstrate that the caste system reduces occupational mobility, the solidarity of disadvantaged groups, public investments in irrigation in regions with a history of deep caste conflict, and the willingness of government teachers to expend effort in teaching.

The caste system would end in a few generations if a large enough proportion of people married outside their caste. But the majority of Hindus, even of highly educated people, are

strongly averse to marrying into a caste lower than their own. A prospective bride's beauty and a prospective groom's income matter less in the matching process than the person's caste.

The caste system would weaken if caste was less strongly aligned with class. The alignment is narrowing with globalization, but still the behavioral prescriptions of the caste system pose major obstacles to reducing the gaps between the high and low castes in education, health, and participation in high-status occupations.

Affirmative action that reserves for members of low castes the position of *pradhan* (head of village government) is associated in the villages with better prenatal services that saves lives, but with much greater absenteeism in public primary schools, on which the low castes disproportionately depends. The affirmative action perhaps 'went too far' since there was no cognitive basis in high-caste ideology for a low-caste person to be the head of village government. Many high-caste individuals have a strong sense of their rightful place at the top of the political and social hierarchy and defend it against all things that they perceive as threats. The title of this chapter, "Caste in Stone," reflects the difficulties of overcoming the forces of caste identities.

But recent work suggests that it *is* possible to design policies to change these attitudes. Expanding the role of village school committees reduced teachers' absenteeism. Mixed-caste cricket teams reduced caste-based prejudice and discrimination. These interventions are outside of the toolbox of standard economics. To narrow the social distance between groups and increase the empathy that individuals feel for people unlike them, interventions that create opportunities for joint striving for common goals may one day be mainstream in the economics of identity.

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