Near and Dear? Evaluating the Impact of Neighbor Diversity on Inter-Religious Attitudes

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ABSTRACT

This paper provides experimental evidence on whether religiously diverse neighbors affect attitudes about another religious group and/or preferences for inter-religious living. I exploit a natural experiment in a large Indian city in which Hindus and Muslims were randomly assigned units in a public housing complex with physically distinct "clusters" of four units. The lottery generates exogenous variation in the degree of religious diversity across clusters within the complex. I conduct an original survey of 1363 households focusing on explicit and implicit attitudes about members of the other religion and willingness to live together. My estimates demonstrate location influences interactions in that individuals spend significant time with others in their cluster. Increased proximity and interaction, in turn, affect attitudes. Greater exposure to Muslims (the minority group) improves Hindus' explicit attitudes about Muslims by 0.25 to 0.40 standard deviations, depending on the measure, and increases their willingness to live with Muslims. Paralleling this, I observe significant reductions in implicit bias (0.20 to 0.57 standard deviations) among Hindu children. While I observe no significant effects for Muslims, the overall effect is a convergence of attitudes across religious groups. As India expands public housing for the poor to accommodate rapid urbanization, deliberate mixing of religious groups can be a way of improving attitudes toward the religious minority.

1. Introduction

Religious and ethnic conflict and the management of inter-group tensions are important concerns for nearly all governments. Ethno-linguistic, religious and other divisions have been

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linked to lower cooperation (Alesina, Baqir, and Easterly 1999; Alesina and La Ferrara 2002; 2005; Banerjee, Iyer, and Somanathan 2005; Easterly and Levine 1997; Khwaja 2009; Miguel and Gugerty 2005) and violence. Managing inter-group tensions requires special attention in poor countries where political and economic development can exacerbate existing anxieties, because of either intense competition over scarce resources or the manipulation of group identities for purposes of nation building. Despite their importance, little is known about policies to improve inter-group attitudes.

A common way governments attempt to reduce religious or ethnic tensions is to alter spatial sorting, either through integration or separating groups. On one hand are policies that increase integration. The Fair Housing Act in the United States prevents discrimination in housing based on race, religion, or origin. Ethnic housing quotas in Singapore ensure buyers of publicly-built houses do not belong to a group whose ethnic proportions have been exceeded in the estate or town (Sim, Yu, and Han 2003). Some European cities[2] used similar quotas to disperse enclaves of migrants (Bolt 2009) and Paris and Brussels chose gentrification policies (Penninx 2004) to achieve the same end. On the other hand, partition of groups into separate countries was the chosen solution to Hindu-Muslim divisions resulting in the creation of Pakistan and India and it is a prominent proposal for settling the Israeli-Palestinian conflict. From a theoretical point of view, interaction may positively or negatively alter prejudice, lending support to both approaches. One view is that more "mixing" will exacerbate existing conflict by inflaming tensions, especially when the groups have no common goals or are in competition with each other (Amir 1969; Stephan 1978). The opposite view is that conflict is maintained by negative stereotypes due to ignorance, thus more mixing will improve attitudes (Pettigrew and Tropp 2006).

Suggestive evidence on the issue of how neighbors affect attitudes comes from observing mixed-race neighborhoods or public housing in the United States (Deutsch and Collins 1951; Ford 1973; Kramer 1950; Meer and Freedman 1966; Schuman and Bobo 1988; Wilner, Walkley,

[2] Berlin, Frankfurt, Birmingham, and Rotterdam

and Cook 1955). Such studies generally find positive attitudes among majority groups with exposure to minorities. The main problem with this literature is potential self-selection into more integrated neighborhoods or public housing complexes by individuals with better attitudes toward another group, making it hard to establish a causal link from neighbors to attitudes.

In laboratory settings, this causal direction problem is ruled out by assigning treatment status. Reviews of these experiments find positive effects of interaction under strict conditions[3] (Pettigrew and Tropp 2006). However, the degree to which the experiment rewards cooperation versus competition is pivotal in determining whether attitudes improve or worsen with contact (Aronson 1975; Aronson and Patnoe 1997; DeVries, Edwards, and Slavin 1978; Johnson and Johnson 1983). Only Boisjoly et al. (2006) have experimentally examined if results in the "real world" would resemble laboratory results by studying randomly-assigned college roommates in the United States, and find greater empathy from contact.

In this paper, I investigate the effects of inter-religious interaction on attitudes among neighbors from the majority Hindu and minority Muslim populations living in public housing in urban India. I choose this setting for three reasons. First, it allows me to provide evidence on a dramatically different population from Boisjoly et al. A large slum on the south side of the city of Hyderabad in the state of Andhra Pradesh was the scene of a serious fire in February 2005, destroying nearly half of the shelters. My sample is made up of fire victims re-housed onsite in new four-story buildings, thus my estimates extend our understanding of attitude change to a very low-income, less educated population.

Second, individual units in the new housing complex were assigned using a public lottery, allowing me to provide causal estimates. The ideal design for understanding the causal influence of religious diversity of neighbors on attitudes about another religious group would be random assignment of households to neighborhoods with varying concentrations of religious groups. Housing programs that randomly assign the unit a poor family has the option to buy

[3] The conditions identified by Allport (1954) are that members are from groups that (1) are equal status (2) seek common goals, (3) are cooperatively inter-dependent, and (4) interact with the support of authority or customs.

within a complex approximate such a design if take-up is not based on neighbors' religion. The government responded to the fire in Hyderabad by using a Center-State Government housing program to build 1792 units (enough for most of the victims) and randomly allocated the units within the complex. Consequently, the four units sharing a corridor on a floor (a "cluster") have different numbers of Hindus and Muslims, but the size and architecture are consistent.

The random distribution of religious groups is maintained through strong rules and economic incentives. The fact that program regulations prevent households from selling or renting their unit helps maintain the validity of the experimental assignment for a relatively long period of time. The program in Hyderabad also created home ownership using a very high subsidy for people who had lived in makeshift shelters. Because the complex was built on the same site where the slum stood before, it has not encountered the high turnover of relocation programs that move slum residents to the urban periphery, far away from existing jobs and social networks.

The third reason I chose this setting is its relevance for low-income housing policy in the developing world. As developing countries face rapid, massive urbanization (and the urbanization of poverty it implies) the broad choice for addressing slums is between policies upgrading services and quality onsite versus constructing new buildings offsite and relocating households. Relocation may generate greater interaction between religious groups, especially where individual choice plays a small role in determining location.

While the setting is opportune for providing causal estimates, measuring attitudes using survey answers encounters the challenge of "self-presentation" bias, in which the respondent prefers to give an inaccurate answer than reveal a socially-unacceptable view (Cannell, Miller, and Oksenberg 1981). I address this challenge by complementing survey-based measures with a computer-based Implicit Associations Test (Greenwald, McGhee, and Schwartz 1998) designed to measure the relative strength of the automatic associations between "good" and "Hindu," or "good" and "Muslim."

I exploit the random-assignment design to estimate changes in attitudes caused by inter-religious living by comparing individuals who live in clusters of four units where their religious group is the *majority*, *equal* to the other, or the *minority*. I find an attitude index (consisting of questions about beliefs) is more favorable for Hindus (the majority group) with greater exposure to Muslims (the minority), but attitudes are no different or even slightly less favorable for Muslims with greater contact with Hindus. I interpret this finding as a convergence in attitudes. In this setting, Hindus have lower opinions of Muslims than Muslims have about Hindus. The change in Hindus' attitudes that comes from contact brings their attitudes up closer to Muslims'. I suggest one reason is the majority group is more likely to maintain segregation more broadly, and have less exposure to the minority group. Willingness to live together is overwhelmingly strong for both religions and mostly unresponsive to cluster type, suggesting tastes for interactions is not the channel through which attitudes change.

The rest of this paper is organized as follows. Section 2 discusses mechanisms through which attitude change is expected and related evidence. Section 3 describes my experimental setting in Hyderabad. Section 4 discusses data. Section 5 explains the econometric frameworks I use to test if attitudes depend on neighbor religion in clusters and the detailed results. Section 6 presents possible reasons for the pattern of results and Section 7 concludes.

2. Background

This paper bridges two literatures, attitude changes and interaction in ethnically-mixed living situations, which I discuss in turn below.

2.1. Channels of attitude change

There are broadly two mechanisms through which greater inter-group interaction could change attitudes, 1) learning and 2) changing tastes for interacting with others. Because of limited interaction, members of different groups are misinformed about each other's qualities and behavior. Early experimental work found that small differences in proximity, such as distance to another apartment on the same floor, have large effects on interactions (Festinger, Schachter, and Back 1950). More information about the behavior of neighbors from the other

group, acquired by living in close proximity, would lead to the updating of attitudes. The direction of updating would depend on initial priors about the other group and the information acquired. If initial priors are overly negative, new information should lead people to think more highly of outsiders. But if priors are overly positive, individuals could learn their neighbors' group has some less desirable traits than previously expected.

The second mechanism through which attitudes may change is tastes for interaction. Some individuals simply do not like mixing across religious lines (Alesina and La Ferrara 2000), reflecting taste-based discrimination. Even if one's prior beliefs about another group were perfectly accurate and unchanged through interaction, an individual's prejudice can change by dealing with the other group. Like the learning mechanism, however, the effects can be positive or negative. Being forced to interact with people one does not like could cause a "backlash" (Sunstein 2004) or it could generate greater empathy for the people with whom one spends more time (Mulligan 1997).

A large number of observational, quasi-experimental, and laboratory studies have tried to determine if effects are positive or negative on balance. Different reviews of this literature have come to opposite conclusions on the net effect of contact (Stephan 1978). A more inclusive meta-analysis finds when the conditions of Allport's (1954) "contact theory" are met, greater contact with another group improves beliefs, and effects are still generally positive but much smaller when the conditions are not met (Pettigrew and Tropp 2006),[4] in line with expectations that a competitive environment can turn contact sour.

[4] Out of the 515 studies included in Pettigrew and Tropp's (2006) meta-analysis, however, the authors code only two as both experimental and based on a sample of adults. Neither one uses ethnic groups nor groups that are in actual conflict with each other. Di Tullio (1982) randomly placed mentally challenged young people in summer custodial positions in 20 out of 40 elementary schools and finds a positive impact of contact on co-workers' attitudes. Meshel (1997) used a within-subjects design and finds a large positive shift in attitudes about children for the 17 senior citizens involved in a cross-age experiment with 11-13 year-olds. It is important to note his pre-contact measures showed all senior citizens in the experiment already held positive attitudes toward children.

2.2. Experimental evidence on attitude change

Sacerdote (2001) was one of the first studies to exploit random variation in interaction using randomly-assigned college roommates to study peer effects in educational success. Sacerdote finds evidence of peer effects in grade point average and decisions to join social clubs. Van Laar et al. (2005) extended this methodology to focus specifically on inter-ethnic attitudes. Among college roommates at UCLA, they find generally positive effects on attitudes from living with roommates from other ethnic backgrounds (African American, Asian American, Latino, or White.) Boisjoly et al. (2006) use official housing office records at another large state university to establish the original randomization and an annual survey of the American higher-education system to measure baseline covariates. They find white students with African American roommates are significantly more likely to endorse affirmative action and have personal contact with other ethnic groups.

Two recent papers from South Asia provide estimates on the causal impact of exposure to others on beliefs. Beaman et al. (forthcoming) exploit random variation in exposure to female leasers and find that prejudice against female leaders among adults was very responsive to exposure, falling by 50-100% depending on the measure used. Clingingsmith, Khwaja, and Kremer (2008) exploit Pakistan's lottery for allocating Hajj visas and find the pilgrimage to Mecca generated no antipathy toward non-Muslims and increased beliefs in equality and harmony among ethnic groups.

When we look specifically for evidence on adults in situations of inter-ethnic living, the best suggestion of the impact of contact comes from two early matched-pair studies. Both works (Deutsch and Collins 1951; Wilner, Walkley, and Cook 1955) investigated the impact of occupancy patterns on race relations by comparing two de-segregated complexes in New York City with two segregated complexes in Newark, New Jersey. Both found more favorable feelings toward African Americans among white housewives in the de-segregated complexes, but political attitudes among white voters may have caused the divergence in policies.

Finally, the motivation for using random assignment of entire households to different housing conditions comes from the Moving To Opportunity (MTO) experiment, a large five-city demonstration designed to measure the effect of living in a lower poverty neighborhood on low-income families (Katz, Kling, and Liebman 2001; Kling, Liebman, and Katz 2007). The MTO treatment led to large changes in the ethnic/racial composition of neighbors, though racial attitude change has not been a focus of the research.

3. Setting

3.1 Hindus and Muslims in India

Inter-ethnic attitudes are particularly important in this experimental setting because they have a history of being manipulated to fuel violence. In South Asia, it is argued, Hindus and Muslims were pitted against each other by the British colonial power to make the large population and land mass easier to control (Varshney 2002), and independence meant partitioning the territory into two (now three) separate countries. During partition, an estimated 14.5 million Hindus and Muslims migrated from one side of the border to the other, and as many as 3.7 million were killed (Bharadwaj, Khwaja, and Mian 2008). Since the time Pakistan was formed as an Islamic state, some extremist groups have questioned Indian Muslims' national loyalty and in recent decades Hindu Nationalists have promoted the idea that Muslim loyalties are divided (Varshney) in part by manipulating reports in mainstream newspapers (Sengupta 2008). The ongoing dispute with Pakistan over Kashmir intensifies the divide.

Communal violence in contemporary India is a genuine threat, perhaps most so where extremists actively promote the idea of making India a Hindu state (Rajagopal 2000).[5] Portraying the Muslim population – only 13% of the entire country - as an obstacle to Hindu nationhood is a typical tactic of such groups. Brass writes, "Indeed, it is likely that not a day passes without many instances of quarrels, fights, and fracases between Hindus and Muslims in

[5] Christians are also targets of these politics in the few areas, particularly the northeast, where conversions are recent and the size of the Christian population is large enough to attract attention.

different places in India, many of which carry the potential for conversion into large-scale riots in which arson, looting, and killing may take place" (2003, p.6). Against the backdrop of the threat of violence, a common method to increase physical security is to live among one's own religious group (Field, et al. 2008).

3.2 Experimental setting

Hyderabad is a city in south India with nearly 4 million people with a 40% Muslim population (Census of India, 2001), described by Varshney as one of the most riot prone in India.[6] The last major communal conflict there was in 1993, following the demolition of the Babri Masjid (mosque) in Ayodhya, Uttar Pradesh by a right-wing Hindu group. Three separate bombings in 2007 killed 55 people in the city and the state government was accused of publicly blaming Islamic militants from Pakistan and Bangladesh without proof (Associated Press 2007).

The Saidabad neighborhood of Hyderabad, where this study is based, is home to a large slum with a mixed population of Hindu, Muslim and some Christian families. Housing segregation by religion and caste is the norm in India (Center for Human Rights & Global Justice, NYU School of Law, and Human Rights Watch 2007), and residents of this slum report sorting closer to family members or households of one's own religion when a space frees up close to them. In February 2005, a fire destroyed nearly half of the slum. The state government sent teams to the area the day after the fire to collect identifying information on the affected households, thus everyone whose hut was destroyed automatically became an "applicant" for a new house. Officials recorded the name, age and gender of the applicant (a woman if available), the name of the applicant's husband or wife, and Hindus' reservation category (social groupings used for affirmative action policies). A private company then verified applicants' below-poverty-line status. The government built identical units in 4-story cement buildings on the land cleared by the fire plus some adjacent private land. The list of eligible applicants was just over 2000 households, meaning the lottery for new houses was over-subscribed.

[6] The share of Muslims is higher than the national average for two reasons. First, Hyderabad was the capital of a Muslim "princely state" during the colonial period, during which time there were many conversions. Second, most of the Muslim population in the state lives in urban areas.

3.3 Government low-income housing

In the State of Andhra Pradesh (AP), the Valmiki Ambedkar Malin Basti Awas Yojana (VAMBAY) housing program has been used to upgrade shelter for urban households who have suffered repeated flooding, natural disasters, or who were displaced by infrastructure development projects.[7] Eligible applicants put down a Rs.7,200 ($160) deposit and took a Rs.33,000 ($765) loan from HUDCO to buy their new house.[8] The deposit is less than two months of average household income at the time of the survey. A Government of India subsidy covered the remaining Rs.30,000 ($700) of construction costs.[9] Once the new complex was constructed, the AP State Housing Corporation organized a function in April 2007 for the beneficiaries to publicly draw their unit's location out of a bucket. Each apartment number was printed on a small piece of paper and signed by an officer of the Housing Board to prevent fraudulent copies. The physically handicapped and households with an elderly person who would have trouble climbing stairs were allowed to draw for the ground floor flats first, in full view of everyone else, before the rest chose their chits. People who were still in line after all the chits had been drawn were waiting for more houses to be built, as of February 2009. As observed in government records, the initial assignment of houses was made to a group consisting of 57% Hindus, 33% Muslims, 7% Christians, and the remaining 3% of religions were not recorded.[10]

3.4 Housing quality and interaction

There are two main reasons to believe interaction within clusters is stronger than across clusters. First, because of size and limited facilities, many activities take place in the hallway as well. Each house is approximately 215 square feet, consisting of one large room used as general

[7] In December 2005, VAMBAY was subsumed by the Jawarhalal Nehru National Urban Renewal Mission (Government of India 2005) a very ambitious program that will build 1,459,272 new houses for the urban poor, of which 182,590 are to be built in Andhra Pradesh as of September 30, 2009 (Government of India 2009a; 200b; 2009c).

[8] Housing and Urban Development Corporation of India, a government entity.

[9] Land costs were not calculated or passed on to beneficiaries, increasing the subsidy value.

[10] Thirteen units' original assignment was not on the government records and could not be established through other official records or documentation held by the residents. Similarly, the religion of 29 households was not recorded and residents did not have their original receipts.

living and sleeping space and an adjacent smaller space with a counter for cooking.[11] Second, the congestion in units (2-3 adults and 1-2 children) and hot climate mean households generally keep doors open when someone is at home. More interaction with cluster neighbors thus comes from indirect observation as well as conversations. They can see and hear what is going on within the cluster much better than on other floors.

4. Data

My sources of data include government records, a household survey, and an Implicit Association Test, which I describe below.

4.1 Administrative Records

The AP State Housing Corporation provided electronic records of the lists of households eligible for the lottery as well as its list of the lottery results.[12] Throughout the analysis, the unit's original lottery assignment to a Hindu or Muslim is used to identify the unit's religion. At the time of the survey (October 2008 – January 2009), 98% of respondents in the sample frame were the beneficiaries listed on administrative records and 99% of respondents belonged to the same religion as the beneficiary. The complex contains three broad types of clusters, where the respondent's religious group is either the: (1) *majority* (3 or 4 out of 4 households)[13], (2) *equal* to the other (same number of Hindus and Muslims) or (3) *minority* (1 out of 4). Figure 1 shows

[11] The kitchen has no water source or sink. A small terrace outside contains a bathroom with an in-ground toilet and a water tap. Electricity connections were hooked up several months after families moved in, unless they were able to provide enough documentation to the electricity board to get a connection earlier on their own. There is an overhead light fixture, but residents had to purchase ceiling fans on their own. Walls inside are also whitewashed or painted only if the household invested in doing so. Similarly, external hallways and stairs are raw concrete.

[12] The government list includes unit number, applicant name, sex and age, and name of spouse if one existed. I also obtained two additional, official datasets. The Housing Corporation provided the draft of the Provisional Allotment certificates, created by a firm specializing in biometric identity verification, which is also a source of eligible applicant information and in some cases lists caste/reservation categories where the Corporation's other records were missing them. The AP State Electricity Board provided the names under which the units' electricity connections are billed, which originated with the Housing Corporation as most residents would be unable to provide enough documentation independently to obtain an electricity connection.

[13] In 61 clusters, the majority religion occupies two clusters, but due to the presence of a Christian household is the majority in relation to Hindus or Muslims.

the distribution of configurations that fall into each type.[14] My analysis will consider the "control" group to be the clusters in which one's own religion is the *majority*. The treatment groups in this analysis (*equal* and *minority*) correspond to empirically unusual preferences, wanting to live with less than a majority of one's own group. Recent papers have demonstrated individuals in Singapore and India are willing to pay a premium to be with their own ethnic or religious group (Takeuchi, Cropper, and Bento 2006; Wong 2007).

4.2 Survey

To gather data on attitudes and interactions I conducted a household survey of the beneficiary named on the government list, who was normally female as the government's policy was to establish the property right in a woman's name. If that person was no longer living or not living in the unit, an adult female was substituted. Surveys were conducted by Hindu, female surveyors in the respondent's home.[15] The potential channels through which attitudes may change motivate three focus areas of data collection: attitudes about the other religious group, social networks, and neighbor interactions.

Attitudes about the other religious group[16] were solicited using five questions focused on stereotypes (bravery, peace-loving, cheating) or trust/ trustworthiness. The main explicit attitude outcome is an index of these questions called the *Favorable Attitudes* Index. I create a Z-score for each question using the mean and standard deviation of the group who the question was about and then take an average over the questions. This reduces differences in scoring across different questions. Appendix 1 describes the creation of the index in detail.

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[14] Clusters with one or two Christians are included in the study if they also contain Hindus and Muslims, but only Hindu and Muslim answers about each other are considered.

[15] To minimize concerns that neighbors could overhear, which could have influenced responses, we took two precautions. First, surveyors approached the task cluster by cluster, so if multiple respondents were available at the same time in a cluster, they would be surveyed simultaneously. Surveyors started roughly in one area and worked their way across the complex. Second, respondents were surveyed inside their units with the doors closed unless they objected to closing the door. We gave respondents a travel-sized alarm clock as a token of appreciation for their time.

[16] Questions were asked about the groups: Muslims, Hindu backward castes, Hindu scheduled castes, and Hindu scheduled tribes. The Hindu sub-groups correspond to categories used by the government for quotas in education, government jobs, and political representation.

We asked two questions to assess willingness to live together. The first is the yes/no question: "Would you mind living with someone from [this group]?" which is based on a World Values Survey (1990; 1995) question.[17] The second is "What is the best way for Hindus and Muslims to coexist?" where the options are "Live together and become friends," "Live together but keep their distance," or "Live separately."

Neighbor interactions include how often pairs of neighbors talk, if they eat together, and whether or not they provide routine neighborly help (Are they "there for you" in an emergency? Do they accept mail for you when you are not at home? Have you left your house keys with them, and Have they watched your kids or grandkids when you were not at home?) We also asked for identifying information about the people with whom the respondent spends the most time to further understand the importance of being located in close proximity to people from another religion.

Social networks were measured by asking respondents to list up to ten people in the housing complex with whom they spend the most time, apart from those who live in the same unit. If the respondent was female and married, the same question was repeated regarding her husband's contacts. Additional survey questions were asked at the same time to enable future work on trust across castes and friendship formation.

4.3 Randomization checks

I checked randomization on observable characteristics two ways. First I look for sorting into clusters using administrative data on religion, age, sex, widow, and Hindu reservations categories. Under random assignment to clusters, the characteristics of a given household in each cluster should not be correlated with the mean characteristics of her neighbors, except for those generated due to sampling variation. For example, beneficiary age in household 1 should be uncorrelated with the mean age of households 2, 3 and 4.

[17] Their question was "On this list are various groups of people. Could you please sort out any that you would not like to have as neighbors?"

I test for sorting using the administrative data. To look for evidence of group sorting, I follow Kremer and Levy (2008) and simulate 1000 fair lotteries, redistributing names from the Housing Corporation data into 1792 slots. I assign one unit in each cluster to be the reference household whose value for each characteristic is regressed on the average value for the 3 other cluster neighbors. For example:

$$age_{1c} = \alpha + \beta(\frac{1}{I}\sum_{i=2}^{I} age_{ic}) + \varepsilon_c$$

In this regression, β is a measure of the relationship between the reference household's age and the average age of the other residents of the cluster and it should be approximately zero if there is no sorting on age. These regressions are run on each simulated lottery to generate a distribution of βs against which β from the same regression run on the actual allocation (from the administrative data) can be compared. Table 1 shows coefficients from the administrative data and the simulated data. For each of the nine characteristics tested, the coefficient from simulated data is within ±2 standard deviations from the mean of the coefficients from the simulated data.

The second randomization check is a comparison of means by cluster type and religion using administrative data and pre-move survey data. Table 2 presents these results for the administrative data (Panel A) and for variables from the survey which could not have been changed by the lottery (Panel B): whether the respondent grew up in a village, how many years the respondent has lived in Hyderabad, if the respondent came to Hyderabad to earn a living, years of education, and if the respondent knew any of her allocated neighbors before the lottery. For each religion, the first column reports the mean for majority clusters, and the second and third columns show the difference in means (*equal* – *majority*) and (*minority* – *majority*), respectively. For Hindus, all variables in Panel A are balanced across *majority*, *equal*, and *minority* clusters. For Muslims, a slightly higher percentage (3 percentage points) of respondents are female in Muslim *minority* clusters compared to *majority* or *equal* clusters.

Looking at the survey variables, there are slight differences for Hindus in minority clusters. They have lived in Hyderabad 4 years longer and are less likely to have grown up in a village.

For Muslims, the only significant difference is respondents from minority clusters are less likely to have known any of their neighbors before living in the same cluster. Taken together with the overall higher rate of knowing neighbors among Muslims, this indicates Muslims are more likely to know *other Muslims*. This is possibly because they are a minority group and may be more densely connected as a result, and because Muslim respondents have lived in Hyderabad a bit longer. While some of the differences are significant, a Wald χ^2 test of the joint significance of all variables in both panels in predicting cluster type by religion indicates they are jointly zero. Nonetheless, all of the variables from this table are used later as a robustness check on basic results.

4.4 Sample and Characteristics of Beneficiaries

There are two sources of sample attrition. First, I exclude those clusters of four units if the administrative data did not include beneficiary identity or religion and they could not be established with other official documentation. Second I exclude clusters that have only Hindus and Christians or only Muslims and Christians. In all, 377 out of 448 clusters remain. Of the 1431 Hindus and Muslims in these clusters, 1363 were available for the survey, yielding a response rate of 95%. There are no differences in response by religion or by cluster type (*majority, equal, minority*) for Muslims. The response rate for Hindus in Hindu minority clusters, however, is 9 percentage points lower than for Hindus in Hindu majority clusters due to unavailability (Table 2). The concern with a difference like this would have been if Hindus who are very anti-Muslim chose not to stay in the complex once they realized their neighbors would all be Muslim. If living with Muslims would worsen their attitudes, and such people are systematically not included in the analysis, my results for Hindus in Hindu minority clusters could be biased upward. According to survey responses from neighbors, these Hindu families did not move out. Out of 9 Hindus who were not surveyed in the Hindu minority clusters, only one house is vacant according to all three neighbors and one more is vacant according to one out of three neighbors. For the remaining seven households, all neighbors report talking daily to their un-surveyed neighbors. They have not moved out due to neighbor religion, but our surveyors had more trouble finding them during normal working hours. I first deal with this by

putting lower bounds on the minority cluster results (see Appendix 8) and under the very conservative assumption that all 9 households would have had the least interaction with neighbors and worst attitudes in the complex, the positive attitude result for Hindus in Hindu minority clusters would become a zero. However, if I combine the treatment groups to make a "non-majority" cluster type, the effect on Hindus of being in "non-majority" clusters is still positive and significant (not shown).

How are Hindus and Muslims in the sample different from each other? Panel A of Table 3 breaks down differences in pre-lottery characteristics by religious groups. The first column shows the mean for Hindus and the second column reports the difference between means for Muslims less Hindus from a regression with a fixed effect for the ground floor and standard errors adjusted for clustering at the level of four-house clusters. Muslims have been living in Hyderabad for 7.35 years longer than Hindus and are nearly 22 percentage points less likely to have grown up in a village. Likely related to the above differences, Muslim respondents are also slightly more educated with an average of 2 years schooling versus 1.5 for Hindus and the probability of knowing any of one's new neighbors before moving in is nearly 6 percentage points higher for Muslims. This indicates Muslims may be more "urbanized" and have been exposed to Hindus for a longer period of time. Hindus coming from a village would have grown up around very few Muslims due to their low population share in rural areas in the state. Respondents who grew up in a village have more negative views about the other religious group.

Panel B of Table 3 shows important *current* household characteristics broken down by Hindus and the difference between Muslims and Hindus. The average Hindu household contains 4 persons and their total monthly income is just under Rs. 4000 ($93). Muslim households are larger by one-half of a person on average and their total household incomes are lower by Rs.516 ($12) per month. Muslim respondents are much less likely to be working (57.9% of Hindu respondents are currently working, versus 36.6% for Muslims), and the low level overall is attributable to respondents' sex. Thus it appears that Muslim households have lower incomes because they have fewer adult workers.

4.5 Implicit Association Test

Measuring implicit associations is a useful complement to explicit attitudes collected on the survey because they are less subject to concerns about the acceptability of one's true views. I use an Implicit Associations Test, pioneered in Greenwald, McGhee and Schwartz (1998) to measure the relative strength of automatic associations between "good" and "Hindu," versus "good" and "Muslim." These should be considered accurately measured values of a different type of attitude rather than a better measure of explicit attitudes. A recent meta-analysis finds the IAT is better at predicting behaviors than explicit attitudes when the association measured involves a black-white comparison, which they attribute to its social sensitivity (Greenwald, et al. 2009). The IAT has also been found to predict discrimination in the hiring process among hiring managers in Sweden who have to call back job applicants with either Swedish or Arab-Muslim sounding names (Rooth 2007).

The IAT is not without critics, however, and most objections are about what the IAT measures. For example, does it measure "prejudice" or shared cultural norms (Arkes and Tetlock 2004), and can it be faked by deliberately responding too slowly to the strong association pairs? Faking has been found to be harder on the IAT than on explicit measures (Steffens 2004) and successful faking requires a pre-test and giving subjects instructions to follow (Fiedler and Bluemke 2005). There is no reason, however, that the ability to fake should be correlated with cluster type, even if the respondents had the required familiarity, experience, and desire to fake tests. By responding too slowly to questions, my test-takers would have also reduced their small cash "prize" for taking the test.[18]

The test is computer-based and uses sound files to give prompts, which test takers must put into two categories. If the word a test-taker hears is a (male) name, her task is to categorize it as "Hindu" or "Muslim." If the word she hears is a description/feeling she has to categorize it as "good" or "bad." In the test rounds the test-taker must categorize both Hindu/Muslim

[18] Respondents were offered relatively small financial incentives comprised of two components, a speed-based payment and an inaccuracy penalty, to incentivize correct test-taking. The average person earned Rs. 20 ($0.50) taking the test.

names and good/bad words. In two rounds the left input button is pressed for "good" or "Hindu" and the right for "bad" or "Muslim." In two other rounds Hindu and Muslim are switched so that left is for "good" or "Muslim" and right is pressed for "bad" or "Hindu."

The software (*Inquisit*) records the amount of time it takes to respond to each prompt and whether or not the correct[19] category is given. The outcome measure is based on the difference between the average time taken to answer when the task invokes a stereotypical association, (Hindus are "good," in this case) less the average time for the non-stereotypical association (Muslims are good). Because it takes longer to decide how to respond when the association involved is not the one a person holds, the difference:

(average response time for good with Hindu) − (average response time for good with Muslim)

will be negative for someone with a strong good-Hindu association and will be positive for someone with a strong good-Muslim association. The larger the measured difference, the stronger is the underlying association. Following standard practice in the IAT literature, I calculate the "D-measure" which corrects for individual response times that are too fast to be reactions to the prompt or too slow to represent "automatic" associations, and adds a penalty to incorrect responses. Appendix 2 describes this calculation in more detail.

Due to budget constraints, the IAT was conducted on a subsample. I narrowed down the survey sample by age and survey response before randomly selecting households without Christian neighbors for the IAT (see Appendix 2). In addition to testing adults, I test a sub-sample of children. At a young age, beliefs may be more malleable, and therefore more responsive to the new occupancy patterns. If the family selected had a child in the age range of 10-14, the oldest of these children was also given the IAT. This age range was chosen because pre-tests suggested younger children could not reliably recognize names as Hindu or

[19] Before the test begins, the experimenter goes over the lists of names and words, telling the test-taker which are Hindu/Muslim or good/bad to ensure a clear understanding of how the prompts should be categorized.

Muslim, and previous work (Baron and Banaji 2006) indicates at age 10, adolescents' implicit associations have not converged with adults'.

In all, 400 adults[20] were chosen to take the IAT and we were able to test 347 (87%). This is an over-sampling of households with no neighbors of the other religion, to ensure enough Muslim households from the control group are included. I also run sampling probability-weighted regressions to test results are not sensitive to differences in sampling (discussed below). The response rate on the IAT was lower than the survey, as the IAT was conducted three to six months later, and several respondents left the complex or sent their children away to escape the hot summer. Of the households selected, 155 had a child in the specified age range, and we were able to test 129 (83%) of them.

5. Results

I outline the econometric framework briefly at the beginning of each of the following sub-sections: attitudes and networks, pairwise interactions, and neighborly interactions.

5.1 Attitudes and Networks

For outcomes measuring attitudes and social ties, questions are asked at the individual level, and regressions are first run on Hindus and Muslims pooled together, using the basic form:

$$O_{ic}=\alpha+\beta_1(\text{equal}_c) +\beta_2(\text{Respondent's Group is the minority}_c) +\alpha_g +\gamma_{xc} +\varepsilon_{ic} \quad (1)$$

Where O is an outcome of interest (e.g., the Favorable Attitudes Index), i indexes the respondent, c indexes a cluster of apartments, *equal* is an indicator variable equaling 1 if the cluster type is *equal* Hindus and Muslims. Respondent's Group is the *minority* is an indicator equal to one if the respondent is the only one of her religion in the cluster. The omitted category is respondent *majority* clusters. α_g is a ground-floor fixed effect to reflect the lottery stratification and γ_{xc} is a fixed effect for the number of Christians assigned to a cluster. Standard errors are adjusted for clustering at the level of 4-house clusters. The omitted

[20] 200 from all own-religion clusters and 200 from clusters with Hindus, Muslims, and no Christians

category in this specification is respondent's group is the *majority*. In the second specification, I break out the cluster type effect by respondent religion using interactions as follows:

$$O_{ic}=\alpha+\beta_1(\text{equal}_c)+\beta_2(\text{Respondent's Group is minority}_c)+\beta_3(\text{Muslim Respondent}_{ic}) \quad (2)$$
$$+\beta_4(\text{Muslim Respond.}\times\text{equal}_{ic})+\beta_5(\text{Muslim Respond.}\times\text{Respondent's Group minority}_{ic})+\alpha_g+\gamma_{xc}+\varepsilon_{ic}$$

where the omitted category is Hindu in Hindu Majority clusters. To check the robustness of results, characteristics of the beneficiaries from the administrative data and those that were fixed before random assignment are included in another set of results, which appear in Appendix 3a, 4b, 6 and 7.

5.1.1 Explicit Attitudes

Tables 4 and 5 address the central question, "How does living with neighbors from another religion change attitudes toward that group?" For each outcome, the first specification pools Hindus and Muslims and estimates equation (1). The second specification adds an indicator equal to one if the respondent is Muslim and interactions of Muslim respondent with *equal* and *minority* cluster types. For Hindus the effect of cluster type can be read off the table by looking at the coefficients on *Equal* and *Minority* in the second specification. For Muslims the effects must be evaluated jointly using the sum of each cluster type and its interaction term. Wald tests of equality at the bottom of the table show p-values for Muslims.

Coefficients on regressions where the outcome is the *Favorable Attitudes* index[21] can be interpreted as the difference in attitudes about another group versus that group's attitudes about itself (how differently Hindus feel about Muslims than Muslims feel about themselves). Because respondents in my sample are more generous on average when assessing their own group, the mean of the *Favorable Attitudes* index is negative. Column 1 of Table 4 shows the positive impact on attitudes of being with more members of the religion is significant and Column 2 clarifies this increase is driven by Hindus. Muslims' attitudes about Hindus are unchanged by greater exposure, but the gap between attitudes about the other group and

[21] As described above, this index aggregates five questions about trust, bravery, not cheating, peace-loving, and trustworthiness. Appendix 1 describes the aggregation in detail.

themselves is closed by 0.25 standard deviations when Hindus live in equal clusters (versus Hindu majority) and by 0.40 standard deviations when Hindus live in Hindu minority clusters. The improvement is driven by the measures of trust and (not) cheating included in the index (not shown). Responses about bravery and being peace-loving are not affected.

I check that the pattern of results is not driven by the method of creating the index by calculating Average Effect Sizes (O'Brien 1984) as in Kling et al. (2007) and Clingingsmith et al. (2008). This method uses seemingly unrelated regressions to jointly estimate individual effects using un-standardized survey answers, which gives the correct covariance matrix for a group of related outcomes. The jointly estimated coefficients are then aggregated into an average effect size weighted by the same standard deviations used to calculate Z-scores in the index method.[22] Appendix 3b shows the results for Hindus and Muslims separately. Though the coefficients for Hindus are slightly smaller (0.23 for *equal* clusters and 0.35 for *minority* clusters), they are still significant at the .05 level.[23] I again fail to reject the null of no average effect of cluster type on Muslim attitudes. Using this method with equal weights rather than using standard deviations as weights demonstrates the overall effects for Hindus would be smaller, but still significant.[24]

Figure 2 graphically demonstrates the explicit attitudes results using the number of own-religion households in the cluster, rather than *majority*, *equal* and *minority* clusters. For Hindus we can see an incremental improvement in attitudes with each non-Hindu added (moving from right to left). For Muslims, the striking difference on the graph is actually identified off of a very small number of Muslim respondents (16) in all-Muslim clusters. Looking across clusters with one to three Muslims, no difference is visible.

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[22] Un-standardized values are 1 to 5 with 1 being the most negative and 5 the most favorable possible response. Standard deviations come from the respondents about whom the question is asked, and who have no cluster neighbors from the other religious group.

[23] Slight differences may occur because the methods treat missing data differently. Indexing assigns greater weight to other components when one component is missing data. The AES gives equal weight to all components.

[24] Also, for Muslims, we confirm that weighting caste-based answers did not determine the null result. If questions for Hindu sub-groups are weighted equally rather than by population share in the complex, there is still no effect on Muslims' attitudes.

The *Living Together* index, a measure of willingness to live with the other religious group, and coefficients in these regressions can be interpreted as a change in the probability of answering "yes" to both questions in the index. The index has a very high mean (0.965) for respondents from clusters where they are in the majority, again suggesting very little distaste for interacting with the other religion. Due to the high value of the mean, little change is expected from having more neighbors from the other religion. In fact, *equal* clusters have no measureable impact on the index for Hindus or Muslims and the coefficient is small for *minority* clusters. All of these explicit attitude results change little if I limit the analysis to clusters without Christians (not shown).

5.1.2 Implicit Attitudes

I further examine inter-group attitudes by looking at an implicit measure for a subset of Hindus and Muslims living only with Hindus and/or Muslims (excluding clusters with Christians). Before taking the test, we asked the IAT subset another explicit preference question, how much they prefer Hindus versus Muslims, using a discrete scale from 1 (strongly favor Muslims) to 5 (strongly favor Hindus).[25] For both religions in respondent *majority* clusters, the mean answer is approximately 3, or no preference.

I recode the question to look specifically at having a preference for one's own group (1=preference for own religious group over the other, 0=otherwise). Overall, the direction of coefficients for adults are consistent with survey-based explicit attitudes, but patterns are inconclusive and only three out of eight coefficients in the preference regressions are significant. Three times more Hindu adults express a preference for Hindus over Muslims when they live in *equal* clusters compared to Hindu majority, and *fewer* Hindu children express preferences for Hindus when they live in Hindu minority clusters. Muslim adult preferences are not affected by cluster type, and more Muslim children in *equal* clusters, report a stronger preference for their

[25] The original possible answers were rescaled from 1=strong preference for Hindus, 2= some preference for Hindus, 3=no preference for either, 4=some preference for Muslims, 5= strong preference for Muslims. This question is framed differently than the components of the *Favorable Attitudes* index as there is a direct comparison between Hindus and Muslims and we ask directly about attitudes rather than inferring attitudes from beliefs.

own group than Muslim children in majority clusters. The patterns and significance of results are largely unchanged if instead of the dummy variable, I run the regression on the original 1 to 5 measure transformed to a Z-score using the same procedure as the Favorable Attitudes Index (not shown).

Our computer-based Implicit-Association Test is designed to measure the speed at which an individual associates the idea of "good" with Hindus versus Muslims. A negative D-measure (described above and in Appendix 2) indicates an association between good and Hindu. The mean D-measures in respondent *majority* clusters are: Hindu adults −0.298, Muslim adults 0.301, Hindu children −0.278, Muslim children 0.371, which both consistently indicates an own-group bias and confirms the test's ability to pick up differences in attitudes.

The results for Hindu children are very large and significant. Living in equal clusters removes almost all of the implicit bias for their own group their estimated D-measures are -0.024 compared to -0.279 for Hindu majority clusters. Panel A of Appendix 4 presents the results with weighted regressions, in which all of the bias is erased for Hindu children in equal clusters. The effect from living in Hindu minority clusters is smaller – it removes about half of the gap between the bias in Hindu majority clusters and a perfectly unbiased zero. This effect survives weighted regressions (Appendix 4a) but is not robust to covariates (Appendix 4b). For Hindu adults, cluster type has no impact on implicit associations. Similar to the survey results, both Muslim children and adults are unaffected by living with Hindus in terms of their implicit bias. An important limitation of the IAT results is the small sample size for Muslims, especially children, which may be too weak to detect true differences. Further, we had a harder time completing the IAT with adult Hindus in Hindu minority clusters (see Appendix 5), but no such differences in completion occurred for Hindu children, where we detect an effect of cluster type.

The picture that emerges by focusing on explicit and implicit attitudes is one with heterogeneous effects for Hindus and Muslims. Hindus' attitudes generally become more positive, if they change. The one exception is a single explicit attitude measure that directly

compares Hindus and Muslims for a sub-sample, in which adult Hindus become more Hindu-biased with greater exposure to Muslims.

5.1.3 Networks

The experiment reveals a positive effect of exposure to Muslims on Hindus' attitudes about the minority group. Can this improvement be explained by changes in tastes or by new information? Though a direct test is not possible, investigating interactions with neighbors suggests Hindus' tastes for interacting with Muslims are not changed by exposure and information transmission is more likely. To investigate the channels of tastes versus information, I first look at the entrance of people from the other religion into social networks.

Respondents were asked to name up to 10 people in the complex with whom they spend the most time. Along with names, they reported their friend's location in the complex and religion. Overall, 85% of the people named live in the same cluster as the respondent, indicating the importance of households in close proximity and validating the possibility of information flows. Table 6 presents the results of OLS regressions in which the outcome of interest is a measure of the social network, first the number of people reported and then the fraction of the other religion in the network (overall, in the cluster, and outside the cluster).

The average respondent named 2.4 people and this was not affected by cluster type (Columns 1 & 2, Table 6), suggesting increases in the fraction of contacts from the other religion are substituting for own-group contacts. Cluster composition has a large impact on the religion of the people with whom respondents spend time. For both Hindus and Muslims, the fraction of the network from the other religion is considerably higher if one is living in an *equal* cluster or own group *minority* cluster (Columns 3 and 4) increasing the number of other-religion contacts from two in 10 to five-seven in 10. Most of this comes from including cluster neighbors of the other religion in one's network (Columns 5 and 6), meaning cluster neighbors do spend time together. Having a higher fraction of the other religion in extra-cluster networks would indicate cluster type is also responsible for increases in time spent with people from the other religion

who are *not* cluster neighbors, perhaps neighbors friends. This happens for Muslims (see *Equal* + Muslim×*Equal* and *Minority* + Muslim×*Minority* in Column 8*)*, but not for Hindus.

Husbands' networks largely follow the same patterns as respondents' (Table 7) with two exceptions.[26] Hindu husbands in *equal* clusters report larger networks than in clusters where they are the *majority,* indicating neighbors add to men's networks rather than substitute for other friends. Muslim husbands, however, do not have more Hindu friends beyond those in the cluster when they live among more Hindus. This may be due to differences in mobility with Muslim women having the lowest rated of working outside the home.

5.2 Interactions between neighbors

To measure other interactions with neighbors, and how they depend on religion, each respondent was asked a short series of questions about *each* of her three neighbors in the cluster, and the regressions estimate the importance of each neighbor's religion on interactions with that neighbor. Regressions are run on pairs of neighbors with one of two specifications. The first specification is for pairs of neighbors, and I look for the effect of cluster type:

$$O_{pc}=\alpha+\beta_1(\text{equal}_c) +\beta_2(\text{Muslim majority}_c) +\alpha_g +\varepsilon_{pc} \quad (3)$$

Where O is an outcome of interest (e.g., the pair talks to each other every day), p indexes the pair, c indexes a cluster of apartments, *equal* is an indicator variable equaling 1 if the cluster type is *equal* Hindus and Muslims. Muslim *majority* is an indicator equal to one if the cluster was allocated 3 or 4 Muslim households. The omitted category is Muslim *minority* clusters. α_g is a ground-floor fixed effect to reflect the lottery stratification. Standard errors are adjusted for clustering at the level of 4-house clusters.

In order to know if Hindus and Muslims interact differently because of cluster type, in a second specification I look for potentially different effects of cluster structure on "mixed pairs" of neighbors, a Hindu and a Muslim compared to a homogenous pair of two Muslims or two Hindus:

[26] See Appendix 7 for all network regressions with covariates.

$$O_{pc}=\alpha+\beta_1(\text{equal}_c)+\beta_2(\text{Muslim majority}_c)+\beta_3(\text{Mixed Pair}_{pc}) \quad (4)$$
$$+\beta_4(\text{Mixed Pair}\times\text{equal}_{nc})+\beta_5(\text{Mixed Pair}\times\text{Muslim majority}_{nc})+\alpha_g+\varepsilon_{pc}$$

where *Mixed Pair* is and indicator equal to one if the pair is mixed religion, and *Mixed Pair*× *equal* and *Mixed Pair* × *Muslim majority* are interactions to separate out the effects of cluster type for mixed and homogenous pairs.

5.1.1 Talking to Neighbors

Tables 8 and 9 present the results of OLS regressions addressing the basic question of whether the religious identity of neighbors has an impact on their day-to-day interactions. Talking is certainly an important way information can flow between neighbors. The emerging answer is religious identity does not have a large effect on interaction between neighbors, with a few exceptions. Which pairs of neighbors talk daily is the focus of Table 8. The mean for *Talk Daily*[27] is very high, and it is not affected by cluster type in the pooled sample (Column 1).

When I separate out mixed pairs (a Hindu and a Muslim) from homogenous pairs (two Hindus or two Muslims), I find a minimum of 85% of mixed pairs in Hindu majority clusters talk daily, and conversations between mixed pairs are greater outside of Hindu majority clusters (Column 2). This could be the result of social exclusion of Muslims in a dominant Hindu cluster, but the overall high level of interactions suggests this is rare. The high occurrence of daily conversations across mixed pairs suggests little distaste for interaction, and mixed pairs are most likely to talk every day when they live in *equal* clusters. This means changes in tastes for talking across mixed pairs are likely too small to account for changes in Hindus' attitudes.

5.1.2 Neighborly Interactions

[27] We ask respondents how often they talk to each of their neighbors and create a pairwise measure two ways. The average outcome (Columns 1-2) equals one if both people in the pair agree they talk daily, equals 0.5 if either one says they talk daily, and equals zero if neither says they talk daily. Columns 3 and 4 repeat the same analysis on a more conservative coding of the question, in which the variable equals one if both members of the pair say they talk daily and equals zero otherwise. The pattern of results is the same.

A final set of questions on neighbor interactions is asked of each respondent regarding all three cluster neighbors, and responses are analyzed at the individual level. Here we separate a Hindu respondent answering about a Muslim neighbor from a Muslim respondent answering about a Hindu neighbor. To make the results table easier to read, I run the regressions and present the results for Hindus and Muslims separately. In this case the basic specification for each is the same as specification (3) above but the sample is limited to Hindus or Muslims, and the next specification looks for differential effects of cluster type by pair type. It takes into account the fact that, if the respondent is in a minority cluster, she must be answering about a mixed pair. I estimate:

$$O_{pc}=\alpha+\beta_1(\text{equal}_c)+\beta_2(\text{Respondent minority}_c)+\beta_3(\text{MixedPair}_{pc})+\beta_4(\text{MixedPair}\times\text{equal}_{nc})+\alpha_g+\gamma_c+\varepsilon_{pc} \quad (5)$$

There is no interaction of *Mixed Pair* and *respondent minority* since her household is the only one of her religion in the cluster. For example, a Muslim respondent in a Muslim minority cluster must be responding about a Hindu neighbor, thus all her pairs are mixed.

Table 9 looks at more specific interactions between pairs of neighbors from the perspective of Muslim and Hindu respondents separately. The first interaction is a measure of when the respondent last ate in each neighbor's house, coded one if the respondent ate there in the past month and zero otherwise. This OLS regression is a linear probability model and the coefficients can be interpreted as changes in the probability of eating in a neighbors' house within the past month.

Living in *equal* or *Muslim minority* clusters reduces eating with neighbors for Muslims compared to being in *Muslim majority* clusters (Column 1). In the next column, I add *Mixed Pair* and the interaction *Mixed Pair* × *Equal Cluster* to determine if the difference by cluster type is the result of differential interactions between Muslim respondents and their neighbors by religion. The pooled difference in cluster type is driven by statistically insignificant reductions in eating together for both homogenous and mixed pairs (Column 2). For Hindus, the cluster type has no effect on eating in a neighbor's house in the past month when mixed and homogenous pairs are pooled (Column 5). The only difference when mixed pairs are considered is that

within *equal* clusters, Hindus are more likely to eat in Muslim neighbors' houses, compared to Hindu neighbor houses in equal clusters (Column 6). These results contradict the pattern one would expect from higher rates of vegetarianism among Hindus, that is, less eating by Hindus in Muslim households.

The *Neighbor Help Index* is a simple average of 4 yes/no questions about forms of assistance neighbors provide to each other.[28] The mean value of *neighbor help* is high for Muslims in Muslim majority clusters (0.77) and it does not fall if the cluster type changes (Column 3). The coefficient on *mixed pair* in Column 4 indicates Muslims say they receive slightly less help from Hindus in Muslim majority clusters. This difference is small (-3 percentage points) and could reflect a slight preference for asking for help from a Muslim neighbor over a Hindu neighbor when both are possible. For mixed pairs, there is no impact of cluster type on the amount of help Muslims receive. For Hindus, help from neighbors is also high (mean 0.83) and unchanged by cluster type or by neighbor's religion (Column 7).

The lack of change for Hindus in talking, eating together, and neighborly interactions by cluster type means their change in attitudes cannot be through these day-to-day activities, which, if they had increased, would have suggested greater taste for interactions.

6. Discussion

Why is the impact of neighbor composition different for Hindus and Muslims? The most likely answer is that prior beliefs differed systematically between the groups, and the information gathered by living together brought expectations closer together by changing Hindu attitudes. It is not uncommon for an individual to hold stereotypical beliefs even about his/her own group.[29] For example, in the multi-dimensional study of the impact of female leaders on

[28] 1) They are "there for me" in an emergency, 2) They accept mail for me when I am not at home, 3) I have left my house keys with them, and 4) They have watched our kids or grandkids.

[29] A vivid example of this is a statement by Jesse Jackson quoted in the introduction to Arkes & Tetlock (2004): "There is nothing more painful to me at this stage in my life than to walk down the street and hear footsteps and start thinking about robbery. Then look around and see somebody white and feel relieved."

prejudice against female leaders in West Bengal, India (mentioned above), Beaman et al. used several IATs and found women strongly associated "female" with domestic activities and "male" with leadership activities, though female respondents also had stronger associations for "female" with "good" (and male with bad) and "female leaders" with "good" (and male leaders with bad). Surrounded by positive stereotypes of Hindus as "belonging" and negative stereotypes of Muslims as disloyal, one could reasonably expect attitudes about each other to be *relatively* more favorable for Muslims than Hindus, and they are here.

As mentioned in section 2, differences in (mis)information could result in no impact of contact on Muslims if their information was more accurate and thus unchanged by the experience. A reasonable explanation of differences in exposure would need to establish Muslims had more information about Hindus than Hindus had about Muslims. Residential segregation is an unlikely explanation. The little that is known about heterogeneity in residential segregation in India empirically suggests Muslims are *more* segregated than other groups (Ramakumar 1976) and this corresponds with our informal interviews in the slum. Such segregation suggests Muslims would have *less* information about Hindus. A potential explanation that is difficult to explore with this dataset, due to the high percentage of informal sector work, is labor market segregation. Potentially Muslim women, who are domestic workers if they work outside the home, gain information about Hindus by working in Hindu homes due to the higher percentage of Hindus in the general and employer population. Further data on employers would be required to test this hypothesis. While it is clear that Muslims' attitudes have not improved, the evidence that Muslims with the least Hindu contact have better inter-religious attitudes than Hindus is inconclusive. I cannot rule out surveyor effects as the cause of differences in attitude levels as all surveyors were Hindus.[30] Muslims may have reported more favorable attitudes to please Hindu surveyors.

An alternative explanation to differential effects being the result of different starting beliefs is that inter-group contact produces different effects based on social status. As mentioned above,

[30] Entering respondent's homes required female surveyors and no female Muslim surveyors could be recruited.

Hindu Nationalists actively challenge the status of Muslims in India. A review of research on contact between groups of different social status found positive impacts are much smaller for the lower status group (Tropp and Pettigrew 2005). The authors suggest members of a lower social status group are more aware of their group membership and concerned about being the target of prejudice, while the higher status group is concerned about being seen as prejudiced. This would influence what is done or said when groups interact and result in differential effects.

7. Conclusion

This paper presents the first experimental evidence from a real-world setting on the effect of contact with neighbors from another religion on attitudes about the other religious group. When a Hindu woman lives with as many or more Muslim neighbors than Hindus, her explicit attitudes about Muslims improve by 0.25 to 0.40 standard deviations, and Hindu children's implicit associations improve by 0.29 to 0.57 standard deviations. Lack of change in who talks and how "neighborly" respondents are by cluster type indicates changes in tastes for interacting are not responsible for the change in attitudes. My results suggest Hindus learn about Muslims by living together, but Muslims do not acquire new information about Hindus this way and their attitudes remain largely unaffected. It would not be surprising to find Muslims are better informed about Hindus through general activities and the media, since Hindus are the overwhelming majority population in India.

Two related caveats are required when thinking about the generalization of these results. First, this housing complex could only be built on the same site where beneficiaries had been living because a fire made the land available, meaning life was "business as usual" other than having a better place to live with new neighbors. Experimentally this is valuable, as I do not confound location changes with inter-religious contact. But perhaps in other programs where beneficiaries face the strain of relocating and simultaneously having to find new jobs, schools, etc., effects of inter-religious contact would be less positive. Following criticism that projects fail when they require relocation to undesirable locations, building on sites closer to slum dwellers' chosen locations is a bigger priority, but still very difficult for governments to

accomplish. Second, due to rules against selling and renting, and because location was unchanged, I found evidence of very high rates of remaining in the unit one and a half to two years after families received their houses. If turnover is higher where rules are not enforced or remote locations create a large incentive to put houses up for rent, greater sorting could reduce exposure and attitude improvements.

The results suggest that in similar settings, deliberately mixing beneficiaries in public housing could be a way to reduce negative stereotypes about the minority. Further experimental research should investigate the effects of residential integration in more hostile environments, to which the findings of this paper do not clearly apply. Understanding the durability of these results is also worthy of future research. Finally, increasing trust and reducing beliefs that others cheat drive my findings, suggesting the potential usefulness of more precisely measuring changes in trust across religions due to integrated living.

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Figure 1. Number of clusters by allocation of 4 units to religious groups

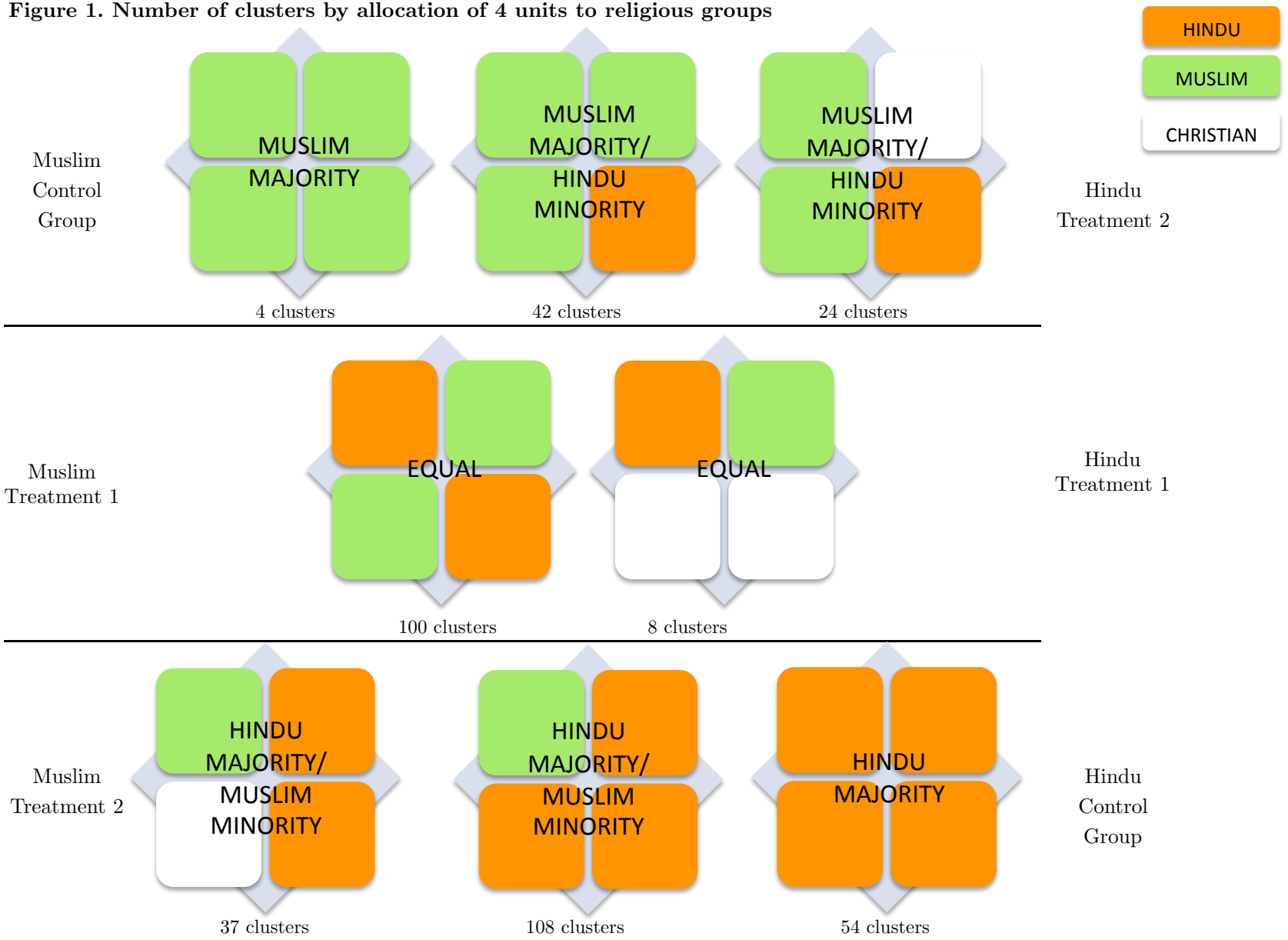


Table 1. Sorting into Clusters

	N	Allocated Coefficients	Mean coefficient from simulations
Age	442	0.034	0.000
			0.080
Muslim	448	-0.030	0.000
			0.028
Hindu	448	-0.016	-0.001
			0.028
Christian	448	0.034	0.000
			0.028
Unknown religion	448	-0.005	-0.001
			0.027
Backward Class/Caste	448	-0.007	0.001
			0.028
Scheduled Caste or Tribe	448	0.026	-0.001
			0.027
Female	448	0.018	0.000
			0.027
Widow	443	0.007	0.000
			0.030

1. Each row presents the results of a separate OLS regression in which a reference household's characteristic is regressed on the variable's average for cluster neighbors to test for sorting into clusters.
2. "Allocated" coefficients are from a regression using administrative data. "Simulated" coefficients and *standard deviations* are from similar regressions run on a dataset generated by simulating a lottery (1000 times) in which beneficiaries from administrative data are allocated to 1792 slots.
3. N is less than 448 in cases where a reference household's characteristic(s) were missing from administrative data.

Table 2. Balance Check: Differences in Means by Cluster Type

	Hindus			Muslims		
	Mean: Hindus in Hindu Majority Cluster	Difference (Equal–Majority)	Difference (Minority–Majority)	Mean: Muslims in Muslim Majority Cluster	Difference (Equal–Majority)	Difference (Minority–Majority)
Panel A: Administrative Records	(1)	(2)	(3)	(4)	(5)	(6)
Age of beneficiary	32.144	0.094	0.580	35.297	-0.525	-0.859
	(0.359)	(0.733)	(1.083)	(0.863)	(1.118)	(1.243)
Female	0.947	0.021	0.020	0.962	0.020	0.031**
	(0.009)	(0.015)	(0.025)	(0.014)	(0.017)	(0.015)
Widow	0.027	0.014	0.042	0.055	-0.013	-0.011
	(0.007)	(0.015)	(0.034)	(0.016)	(0.022)	(0.024)
Backward Class/ Caste	0.398	-0.005	0.036			
	(0.021)	(0.044)	(0.070)			
Scheduled Caste	0.421	0.016	0.018			
	(0.023)	(0.044)	(0.070)			
Scheduled Tribe	0.158	-0.005	-0.032			
	(0.016)	(0.030)	(0.046)			
Panel B: Survey Data	(7)	(8)	(9)	(10)	(11)	(12)
Not surveyed - vacant	0.007	-0.007**	0.009	0.000	0.009	0.000
	(0.081)	(0.003)	(0.016)	0.0	(0.009)	(0.000)
Not surveyed - unavailable	0.042	0.004	0.081**	0.026	0.007	0.015
	(0.202)	(0.0165)	(0.0410)	(0.160)	(0.017)	(0.020)
Years lived in Hyderabad	19.261	0.678	3.957*	27.798	-0.950	-1.412
	(0.522)	(1.114)	(2.011)	(1.140)	(1.656)	(1.640)
Moved to Hyderabad to earn a living	0.443	-0.308	-0.032	0.389	-0.004	-0.026
	(0.166)	(0.507)	(0.167)	(0.039)	(0.052)	(0.055)
Years Education	1.433	-0.008	-0.181	1.816	0.018	0.225
	(0.123)	(0.251)	(0.370)	(0.222)	(0.345)	(0.372)
Grew up in a village	0.719	-0.022	-0.123*	0.497	0.007	-0.022
	(0.019)	(0.039)	(0.068)	(0.041)	(0.054)	(0.059)
Knew any cluster neighbor before	0.089	0.027	0.017	0.222	-0.083	-0.113**
	(0.014)	(0.033)	(0.043)	(0.046)	(0.054)	(0.053)

1. All differences are from OLS regressions containing a fixed effect for the ground floor and standard errors adjusted for clustering at the level of 4-house clusters.

2. All variables are indicators with 1=yes and 0=no, except for Age in Panel A and "years" variables in Panel B.

3. P-value on a Wald chi-square-test of the joint significance of survey data in predicting group are as follows: $\chi^2(18,\ N = 834) = 22.43$, p=.2133 for Hindus, and $\chi^2(18,\ N = 509) = 14.96$, p =0.665 for Muslims.

Table 3. Differences between Muslim and Hindu households in sample

	Mean: Hindus	**Difference (Muslims − Hindus)**
Panel A: Pre-lottery characteristics	(1)	(2)
Age of beneficiary	32.200	2.550***
	9.044	(0.551)
Female	0.954	0.023***
	0.211	(0.009)
Widow	0.033	0.014
	0.180	(0.011)
Grew up in a village	0.706	-0.216***
	0.456	(0.028)
Years lived in Hyderabad	19.665	7.350***
	13.393	(0.770)
If not from Hyderabad, moved to earn a living	0.811	-0.050
	0.392	(0.031)
Years Education	1.409	0.462***
	3.050	(0.175)
Knew any cluster neighbor before	0.096	0.057***
	0.295	(0.021)
Panel B: Current characteristics	(3)	(4)
Respondent currently working	0.579	-0.213***
	0.494	(0.029)
Current household size	4.123	0.560***
	1.365	(0.090)
Household income per month (Rs.)	3984.881	-516.447***
	2089.303	(108.905)

1. All differences are from OLS regressions containing a fixed effect for the ground floor and standard errors adjusted for clustering at the level of 4-house clusters.

2. All variables are indicators with 1=yes and 0=no, except for "Age" and "Years" in Panel A and "household" variables in Panel B.

3. P-value on an F-test of the joint significance of survey data in predicting group are as follows:

4. Sample sizes in Panel A are 838 Hindus and 513 Muslims, and in Panel B 840 Hindus and 523 Muslims.

Table 4. Explicit Attitudes from Survey (OLS regression results)

	Favorable Attitudes Index		Living Together Index	
	(1)	(2)	(3)	(4)
Equal Cluster	0.621***	0.242**	0.007	0.007
	(0.078)	(0.094)	(0.009)	(0.013)
Respondent Group Minority Cluster	0.995***	0.377***	0.031***	0.041***
	(0.111)	(0.141)	(0.006)	(0.007)
Muslim × Equal Cluster		-0.253**		-0.014
		(0.103)		(0.014)
Muslim×Respondent Group Minority Cluster		-0.361**		-0.032***
		(0.147)		(0.010)
Muslim Respondent		1.905***		0.027***
		(0.057)		(0.009)
Mean	-2.202	-2.662	0.965	0.958
	1.181	0.954	*0.136*	*0.151*
Observations	1363	1363	1363	1363
Clusters	377	377	377	377
R-squared	0.110	0.557	0.008	0.014
Test: (Muslim×Equal Cluster) + Equal Cluster=0		0.811		0.414
Test: (Muslim×Minority Cluster) + Minority Cluster=0		0.724		0.188

1. The Favorable Attitudes Index is an average of Z-scores for five questions about attitudes: How trustworthy are the other religion? How brave are people from the other religion? How much do people from the other religion cheat? How peace-loving are people from the other religion? and How much do you trust people from the other religion? Questions about Hindus were asked about caste groups. See Appendix Table 1 for a detailed explanation.

2.. The Living Together Index is the simple average of two questions where 1=yes: I do not mind living next to people from the other religion, and The best way for Hindus and Muslims to coexist is to live together and become friends.

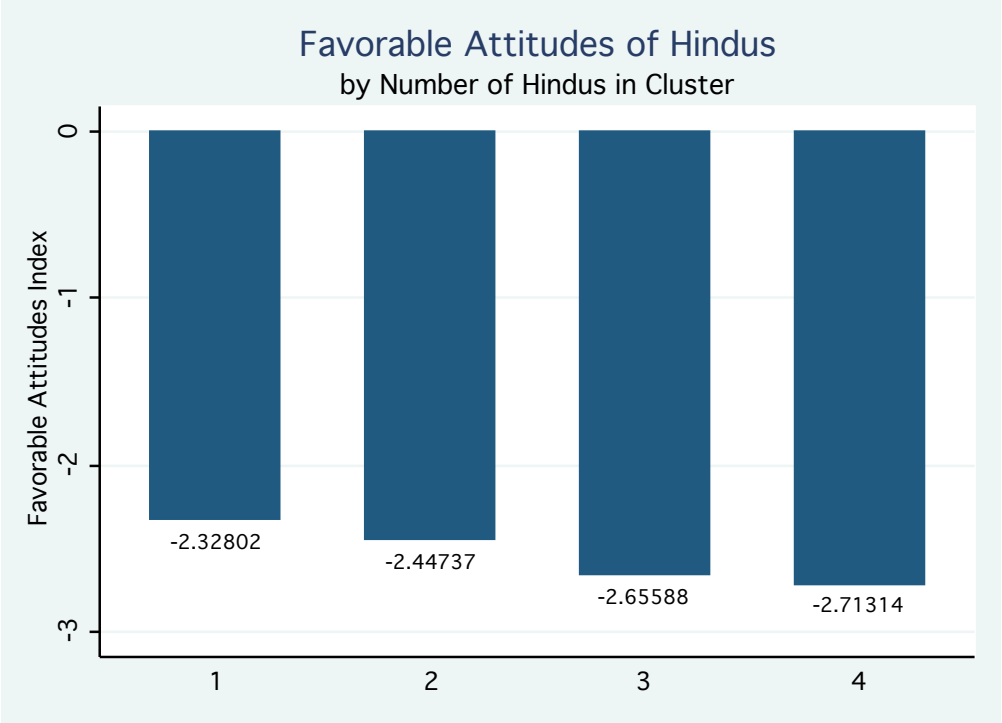
3. Omitted cluster category and mean shown are: "Respondent's Religion is Majority in Cluster" for odd-numbered columns and "Hindu in Hindu Majority Cluster" in even columns. *Standard deviations* are below means.

4. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

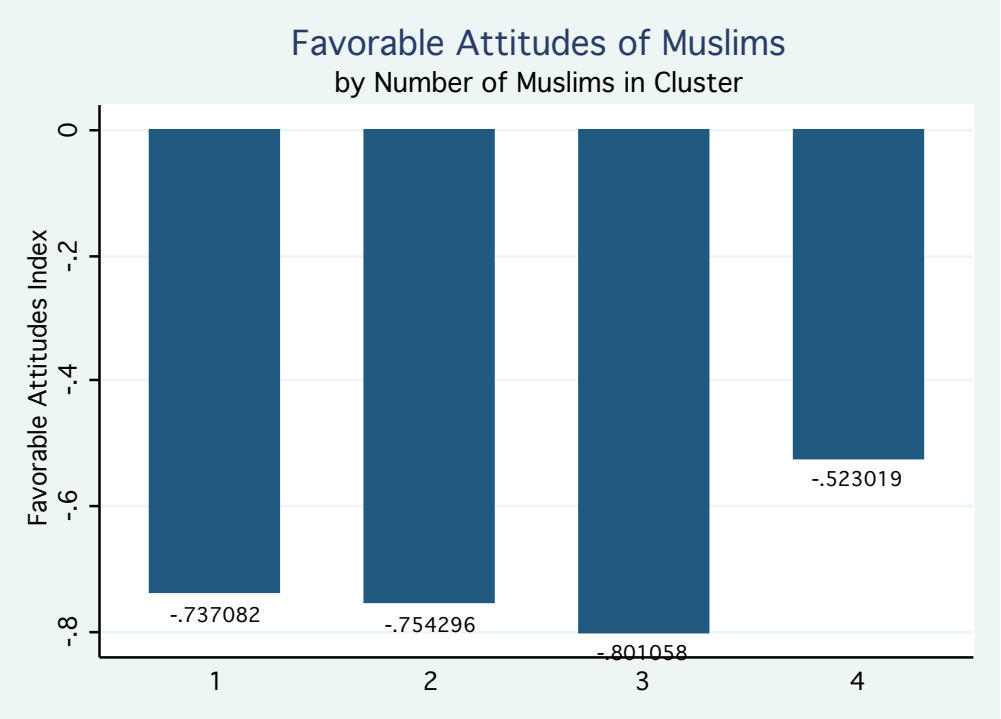
5. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

6. Test presents the p-value of a Wald test of equality.

Figure 2 Means of Favorable Attitudes Index by number of Own-Religion Neighbors



n=840 Hindus. In a regression framework, the dfference between 4 and 3 Hindus is not significant. Differences between 4 and 2 and 4 and 1 are significant.



n=523 Muslims NB: there are only 16 Muslims in four-Muslim clusters. In a regression framework, the differences between 3 and 2 Muslims and 3 and 1 Muslims are not significant.

Table 5. Implicit Association Test (OLS regression results)

	Hindus				**Muslims**			
	Explicit Self-Bias		IAT		Explicit Self-Bias		IAT	
	1= own group preference, 0= otherwise		Negative D measure: Hindus "good"		1= own group preference, 0= otherwise		Positive D Measure: Muslims "good"	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	*Adult*	*Child*	*Adult*	*Child*	*Adult*	*Child*	*Adult*	*Child*
Equal Cluster	0.139**	0.122	-0.013	0.254**	0.055	0.254*	0.131	-0.013
	(0.068)	(0.135)	(0.070)	(0.106)	(0.079)	(0.131)	(0.099)	(0.116)
Respondent Group Minority Cluster	0.450	-0.078**	0.113	0.138**	0.008	0.061	0.237*	-0.232
	(0.357)	(0.037)	(0.103)	(0.061)	(0.078)	(0.175)	(0.128)	(0.201)
Constant: Own Majority Cluster	0.064	0.113	-0.298	-0.278	0.0625	0.130	0.301	0.371
	0.246	*0.318*	*0.419*	*0.408*	*0.246*	*0.344*	*0.371*	*0.349*
Observations	256	83	256	83	91	46	91	46
Clusters	135	66	135	66	76	38	76	38
R-squared	0.050	0.035	0.008	0.084	0.036	0.083	0.063	0.047

1. Explicit Bias is asked using one question with a scale from 1 to 5: Do you have a preference for Hindus or Muslims? Recoded so that dummy=1 when express preference for own group.

2. Implicit Associations are measured using the IAT D-measure described in Appendix Table 4. A negative D-measure here indicates an automatic association between good and Hindu, and a positive D-measure indicates an association between good and Muslim.

3. *Standard deviations* are below means.

4. All columns contain fixed effects for the ground floor.

5. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Respondent's Network (OLS regression results)

	Total Network Size		Full Network: Fraction from Other Religion		In-Cluster Network: Fraction from Other Religion		Non-Cluster Network: Fraction Other Religion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equal Cluster	0.036	0.074	0.360***	0.366***	0.368***	0.369***	0.019***	0.010
	(0.068)	(0.076)	(0.021)	(0.027)	(0.023)	(0.030)	(0.007)	(0.010)
Respondent Group Minority Cluster	0.038	-0.079	0.590***	0.552***	0.638***	0.582***	0.018	0.001
	(0.059)	(0.118)	(0.025)	(0.049)	(0.027)	(0.051)	(0.011)	(0.014)
Muslim × Equal Cluster		-0.050		-0.048		-0.043		0.023
		(0.119)		(0.046)		(0.050)		(0.016)
Muslim×Respondent Group Minority Cluster		0.194		0.008		0.030		0.029
		(0.185)		(0.060)		(0.060)		(0.021)
Muslim Respondent		-0.045		0.071**		0.076**		-0.008
		(0.096)		(0.031)		(0.034)		(0.008)
Mean	2.423	2.432	0.194	0.177	0.190	0.173	0.020	0.021
	0.818	*0.830*	*0.248*	*0.231*	*0.259*	*0.241*	*0.106*	*0.114*
Observations	1363	1363	1363	1363	1363	1363	1363	1363
Clusters	377	377	377	377	377	377	377	377
R-squared	0.001	0.004	0.413	0.419	0.411	0.418	0.008	0.011
Test: (Muslim×Equal Cluster) + Equal Cluster =0		0.832		0		0		0.007
Test: (Muslim×Minority Cluster) + Minority Cluster =0		0.284		0		0		0.047

1. Each respondent was asked to name up to 10 people in the complex with whom s/he spends the most time, and give their location and religion.

2. Omitted cluster category and mean shown are: "Respondent's Religion is Majority in Cluster" for odd-numbered columns and "Hindu in Hindu Majority Cluster" in even columns. *Standard deviations* are below means.

3. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Test presents the p-value of a Wald test of equality.

Table 7. Husband's Network (OLS regression results)

	Total Network Size		Full Network: Fraction from Other Religion		In-Cluster Network: Fraction from Other Religion		Non-Cluster Network: Fraction Other Religion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equal Cluster	0.184**	0.219**	0.310***	0.344***	0.305***	0.346***	0.025*	0.015
	(0.084)	(0.093)	(0.029)	(0.039)	(0.029)	(0.039)	(0.013)	(0.015)
Respondent Group Minority Cluster	0.117	0.134	0.551***	0.553***	0.536***	0.548***	0.059***	0.052
	(0.071)	(0.159)	(0.033)	(0.064)	(0.037)	(0.069)	(0.022)	(0.038)
Muslim × Equal Cluster		-0.155		-0.128**		-0.136**		0.013
		(0.141)		(0.061)		(0.061)		(0.028)
Muslim×Respondent Group Minority Cluster		-0.126		-0.074		-0.081		0.001
		(0.241)		(0.085)		(0.090)		(0.049)
Muslim Respondent		0.157		0.110***		0.099***		0.014
		(0.113)		(0.039)		(0.038)		(0.016)
Mean	1.761	1.720	0.195	0.169	0.145	0.128	0.031	0.0275
	0.872	*0.869*	*0.311*	*0.300*	*0.287*	*0.275*	*0.153*	*0.144*
Observations	1101	1101	1101	1101	1101	1101	1101	1101
Clusters	372	372	372	372	372	372	372	372
R-squared	0.012	0.016	0.262	0.270	0.241	0.247	0.013	0.015
Test: (Muslim×Equal Cluster) + Equal Cluster =0		0.632		0		0		0.246
Test: (Muslim×Minority Cluster) + Minority Cluster =0		0.953		0		0		0.078

1. Each maried female respondent was asked to name up to 10 people in the complex with whom her husband spends the most time, and give their location and religion.

2. Omitted cluster category and mean shown are: "Respondent's Religion is Majority in Cluster" for odd-numbered columns and "Hindu in Hindu Majority Cluster" in even columns. *Standard deviations* are below means.

3. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Test presents the p-value of a Wald test of equality.

Table 8. Talking with neighbors, pairwise regressions (OLS regression results)

	Average We Talk Daily		Agree We Talk Daily	
	(1)	(2)	(3)	(4)
Equal Cluster	0.014	0.012	0.026	0.021
	(0.014)	(0.016)	(0.028)	(0.031)
Muslim Majority Cluster	-0.013	0.012	-0.019	0.033
	(0.018)	(0.020)	(0.033)	(0.034)
Mixed Pair (Hindu and Muslim)		-0.054**		-0.112**
		(0.024)		(0.048)
Mixed Pair × Equal Cluster		0.056**		0.116**
		(0.025)		(0.049)
Mixed Pair × Muslim Majority		0.050*		0.105*
		(0.028)		(0.055)
Mean: Hindu Majority Cluster	0.933	0.932	0.869	0.868
	0.175	*0.175*	*0.338*	*0.339*
Observations	2012	2012	2012	2012
Clusters	377	377	377	377
R-squared	0.010	0.014	0.010	0.014
Test: Equal Cluster + (Mixed Pair×Equal Cluster)=0		0.019		0.015
Test: Muslim Majority Cluster + (Mixed Pair × Muslim Majority Cluster)=0		0.138		0.072

1. For "Average We Talk Daily" each pair of neighbors within the cluster is asked this question and one average response is used for the pair (0.5 means one said yes and one said no). For "Agree We Talk Daily" the variable =1 if both agreed they talk daily and 0 otherwise.

2. Omitted cluster category and mean shown are Hindu Majority Cluster in odd-numbered columns and Hindu-Hindu pair in Hindu Majority Cluster in even columns. *Standard deviations* are below means.

3. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Test presents the p-value of a Wald test of equality.

6. Observations equal number of pairs of Hindus and/or Muslims in sample clusters.

Table 9. Eating with and Helping Neighbors (OLS regression results)

	Muslims				Hindus			
	Ate in that house within past month		**Neighbor Help Index**		**Ate in that house within past month**		**Neighbor Help Index**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equal Cluster	-0.056*	-0.044	0.053	0.047	0.020	-0.020	0.025	0.020
	(0.033)	(0.043)	(0.060)	(0.061)	(0.022)	(0.026)	(0.033)	(0.035)
Respondent Group Minority Cluster	-0.077**	-0.043	0.061	0.082	0.056	0.056	-0.026	-0.031
	(0.032)	(0.035)	(0.054)	(0.056)	(0.035)	(0.038)	(0.055)	(0.056)
Mixed Pair		-0.050		-0.031*		0.000		0.006
		(0.037)		(0.018)		(0.022)		(0.019)
Mixed Pair × Equal Cluster		0.009		0.025		0.059*		0.004
		(0.046)		(0.019)		(0.033)		(0.021)
Mean	0.227	0.244	0.771	0.778	0.183	0.184	0.831	0.828
	0.324	*0.338*	*0.396*	*0.392*	*0.287*	*0.284*	*0.334*	*0.333*
Covariates	no	no	no	no	no	no	no	no
Observations	1460	1460	1453	1453	2397	2397	2390	2390
Clusters	316	316	316	316	363	363	363	363
R-squared	0.012	0.016	0.010	0.011	0.005	0.007	0.003	0.004
Test: Equal Cluster + (Mixed Pair×Equal Cluster)=0		0.351		0.245		0.193		0.514

1. "Ate in that house" equals 0 if neither the respondent nor the neighbor say that the respondent ate in the neighbors house in the past month, equals 0.5 when one of them says the respondent ate their, and equals 1 when they both say the respondent ate in the neighbors' house.

2. Neighbor Help Index is a simple average of four yes/no questions: Are people in that house "there" for you in an emergency? Do they accept mail for you when you are not at home? Have you ever left your house keys with them? Have they ever watched your children or grandchildren?

3. Omitted cluster category and mean shown are: "Respondent's Religion is Majority in Cluster" for Columns 1, 3, 5, and 7 and "Homogeneous Pair in Cluster where Respondent's Religion is Majority" in all others. *Standard deviations* are below means.

4. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

5. Covariates include: female beneficiary, beneficiary age, widow, grew up in a village, length of time in Hyderabad, and knew any neighbors before moving in.

6. Test presents the p-value of a Wald test of equality.

7. Appendix 6 repeats these regressions with covariates.

Appendix 1. Description of outcome indices

Favorable Attitudes Index

The five "Favorable Attitudes" questions (described below) are combined to create the Favorable Attitudes Index, the main measure of explicit attitudes. For all five questions, respondents answered using scales of 1 (the most negative possible answer) to 5 (the most positive answer). The questions are asked in relation to Muslims and to the Hindu social "class" categories used by the government to target reservation policies, backward castes/classes, scheduled castes, and scheduled tribes. The questions were also asked for Brahmins, other forward castes, and Christians but are ignored as the percentage of Brahmins and Forward castes combined is less than 1% of the complex and this paper intentionally excludes attitudes about Christians, again due to their population share (6%) and the ambiguity Muslims show in distinguishing Christians from Hindus.

Components:

How trustworthy are people from the group (backward castes, scheduled castes, scheduled tribes, Muslims [individually])? *Asked in the beginning of the survey.*

Scoring 1 to 5, 1= Not at all trustworthy, 5= Very trustworthy

How much do people form this group cheat?

Scoring 1 to 5, 1=Cheat a lot, 5=Don't cheat at all

How brave are people from this group?

Scoring 1 to 5, 1=Not at all brave, 5=Very brave

How peace-loving are people from this group?

Scoring 1 to 5, 1=Very pugnacious, 5=Very peace-loving

How much do you trust Hindus? *Asked at the end of the survey with a module on lending.*

Scoring 1 to 5, 1= Don't trust at all, 5= Trust a lot

Procedure:

Create a Z-score for each component by subtracting the mean and dividing by the standard deviation for the responses of people from the group (SC, Muslims, etc) who the question is about and who live in a cluster with no exposure to the other religion.

For Hindu respondents, the index is a simple average of the Z-scores for questions about Muslims.

For Muslim respondents, the Z-scores are first averaged for the Hindus sub-groups (backward castes, scheduled castes, scheduled tribes) using groups' population shares in the complex to weight the average. This creates one Z-score for "Hindus" for each questions, over which I then take a simple average to create the index.

Appendix 1 continued

Living Together Index

Components:

I wouldn't mind living next to Scheduled Caste Hindus (1=yes, 0=no)

I wouldn't mind living next to Scheduled Tribe Hindus (1=yes, 0=no)

I wouldn't mind living next to Backward Class Hindus (1=yes, 0=no)

I wouldn't mind living next to Muslims (1=yes, 0=no)

Of the following options, what is the best way for Hindus and Muslims to coexist?

1= Live together and become friends

0= Live together but keep their distance

0= Live separately

Procedure:

For Hindus, the Living Together Index is a simple average of "I wouldn't mind living next to Muslims" and the "coexist" question. As is done in the Favorable Attitudes Index, I take a weighted average over the BC, SC, and ST questions to create one measure for "I wouldn't mind living next to Hindus". This measure is then averaged with the "coexist" question to create the index.

Neighbor Help Index (simple mean of the components)

They accept mail for me if the post man comes and I am not at home.

They watch my kids or grandkids.

I have left my house keys with them.

They are "there" for me in an emergency.

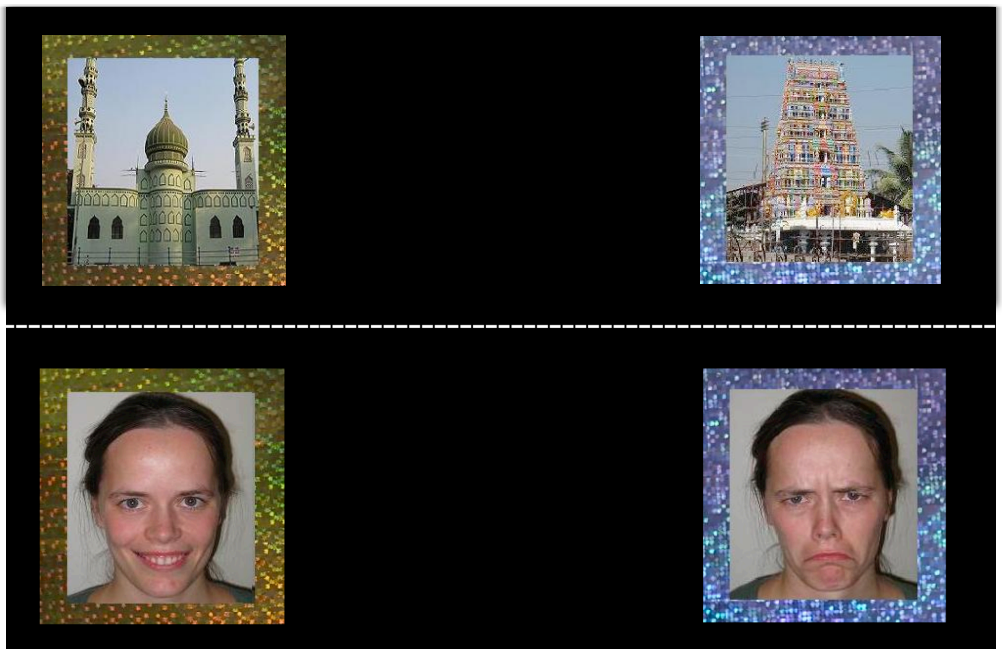
1=yes 0= no

Appendix 2. Implicit Association Test

In the test depicted below, round 1 requires the test-taker to push the left button on an input box if she hears a "good" word and the right button if she hears a "bad" word. To help remember this instruction, the computer screen shows a picture of a happy face on the left and an unhappy face on the right. Round 2 requires the same task, but with the Muslim and Hindu names. The left button is pressed for Muslim and the right button for Hindu The computer screen represents these categories with a Muslim mosque on the left side of the screen and a Hindu temple on the right side. These rounds are essentially for practice; they are not part of the outcome measure. Round 3 requires the respondent to do these tasks together. The verbal prompt can now be a name of either religion and a word of either type. The left button is pressed for either good or Muslim and the right button is pressed for bad or Hindu. Round 4 repeats this task. Round 5 is a practice round in which the same names (only) are categorized, but the buttons are reversed. Test-takers are to push the left button for Hindu names and the right button for Muslim names. Rounds 6 and 7 are double categorization tasks again: the left button is pressed for either good or Hindu and the right button is pressed for bad or Muslim. A random half of respondents are given a version of the test where blocks 5, 6, and 7 came before blocks 2, 3, and 4 in order to eliminate concerns the second task would be faster because of learning, and therefore reduce the accuracy of the measurement of the associations.

Round	Function	Left Button	Right Button
1	Practice	Pleasant Words	Unpleasant Words
2	Practice	Muslim Names	Hindu Names
3	Short Test	Pleasant Words + Muslim Names	Unpleasant Words + Hindu Names
4	Test	Pleasant Words + Muslim Names	Unpleasant Words + Hindu Names
5	Practice	Hindu Names	Muslim Names
6	Short Test	Pleasant Words + Hindu Names	Unpleasant Words + Muslim Names
7	Test	Pleasant Words + Hindu Names	Unpleasant Words + Muslim Names

Screenshot of the IAT for rounds 3 and 4 above



Appendix 2 continued

Words and names used in the Implicit Association Test

Pleasant words	Unpleasant words	Hindu Names	Muslim names
Brave	Scary	Ashok	Abdul
Likeable	Hardhip	Arvind	Asif
Gain	Dirty	Harsha	Hussein
Goodness	Loss	Ramesh	Rafi
Love	Pain	Sudhir	Saleem
Happiness	Cowardly	Suresh	Sayyed
Comfortable	Death	Shekar	Sultan

The IAT D-Measure

The D measure based on the Improved Algorithm (Greenwald, Nosek and Banaji, 2003) is computed as follows: latencies from all four combined test blocks are used, trials with latencies >10000 milliseonds are eliminated and subjects with more than 10% of trials with a latency less than 30ms are deleted. Then a mean of correct latencies for each block is computed and a pooled standard deviation over the two "test" blocks and over the two "short test" double cateogization blocks. Each error latency is replaced with the block mean + a 600ms penalty. An average value for each of the four blocks (3,4,6,7) and then two differences (6-3) and (7-4) are calculated and then divided by the associated pooled standard deviation. The final D measure is an average of these two quotients.

Sample

I removed households that were not available for the survey and respondents over age 50 based on prior work that older respondents in India found taking a computer-based IAT awkward and could not complete it some cases (Beaman, Chattopadhyay et al., Forthcoming). All remaining respondents in clusters with 4 households of the same religion plus an equal number of randomly selected respondents from the Hindu-Muslim clusters were asked to take the IAT.

Appendix 3. Robustness Checks for Attitudes

3a. OLS Regressions with pre-move covariates

	Favorable Attitudes Index	**Living Together Index**
	(1)	(2)
Equal Cluster	0.230**	0.009
	(0.093)	(0.013)
Respondent Group Minority Cluster	0.360**	0.039***
	(0.141)	(0.007)
Muslim × Equal Cluster	-0.229**	-0.019
	(0.104)	(0.015)
Muslim×Respondent Group Minority Cluster	-0.333**	-0.032***
	(0.148)	(0.011)
Muslim Respondent	1.855***	0.023**
	(0.061)	(0.009)
Mean	-2.662	0.958
	0.954	0.151
Observations	1343	1343
Clusters	377	377
R-squared	0.560	0.033
Test: Equal + (Muslim×Equal) = 0	0.978	0.268
Test: Minority + (Muslim×Minority) = 0	0.576	0.398

1. Omitted cluster category and means shown are for a Hindu in a Hindu Majority Cluster. *Standard deviations* are below means.

2. All coumns contain fixed effects for the ground floor and for the number of Christians in the cluster.

knew any neighbors before moving in. Chidren's regressions also include the child's age and sex as covariates.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Test presents the p-value of a Wald test of equality.

3b. Average Effect Sizes for Favorable Attitudes

	Ave. Effect Size	SE	t	P>t
Hindus				
Equal versus majority	0.225	*0.099*	2.27	0.024
Minority versus majority	0.346	*0.158*	2.19	0.029
Equal no weighting	0.125	*0.054*	2.31	0.021
Minority no weighting	0.199	*0.090*	2.21	0.028
Muslims				
Equal versus majority	-0.028	0.034	-0.83	0.408
Minority versus majority	-0.041	*0.035*	-1.18	0.238
Equal no weighting	-0.056	*0.103*	-0.54	0.587
Minority no weighting	-0.093	*0.104*	-0.9	0.369
Equal no weighting by caste proportions	-0.057	*0.100*	-0.57	0.569
Minority no weighting by caste proportions	-0.097	*0.102*	-0.96	0.340

n=840 Hindus and 523 Muslims. See text section 5.1.1 for a description of average effect sizes.

Appendix 4. Robustness Checks for Implicit Attitudes Subsample (OLS regression results)

	Hindus				**Muslims**			
	Explicit Self-Bias		IAT		Explicit Self-Bias		IAT	
	1= own group preference, 0= otherwise		Negative D measure: Hindus "good"		1= own group preference, 0= otherwise		Positive D measure: Muslims "good"	
Panel A: Weighted	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	*Adult*	*Child*	*Adult*	*Child*	*Adult*	*Child*	*Adult*	*Child*
Equal Cluster	0.137**	0.157	-0.0228	0.246**	0.0190	0.207	0.0827	-0.0205
	(0.068)	(0.129)	(0.073)	(0.112)	(0.085)	(0.136)	(0.099)	(0.123)
Respondent Group Minority Cluster	0.450	-0.043**	0.101	0.130*	-0.029	0.015	0.187	-0.238
	(0.355)	(0.021)	(0.106)	(0.074)	(0.085)	(0.173)	(0.125)	(0.196)
Mean: Own Majority Cluster	0.067	0.116	-0.292	-0.235	0.087	0.185	0.327	0.371
	(0.067)	(0.116)	0.292	0.235	(0.087)	(0.185)	(0.327)	(0.371)
Observations	256	83	256	83	91	46	91	46
R-squared	0.064	0.080	0.012	0.099	0.037	0.052	0.065	0.050
Panel B: Covariates	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Equal Cluster	0.147**	0.121	-0.003	0.282**	0.116	0.187	0.109	0.016
	(0.071)	(0.138)	(0.067)	(0.120)	(0.076)	(0.144)	(0.109)	(0.139)
Respondent Group Minority Cluster	0.443	-0.193*	0.073	0.065	0.011	0.007	0.206	-0.246
	(0.382)	(0.108)	(0.095)	(0.131)	(0.073)	(0.182)	(0.126)	(0.185)
Mean: Own Majority Cluster	0.064	0.113	-0.298	-0.278	0.063	0.130	0.301	0.371
	0.246	*0.318*	*0.419*	*0.408*	*0.246*	*0.344*	*0.371*	*0.349*
Observations	254	83	254	83	90	46	90	46
Clusters	134	66	134	66	75	38	75	38
R-squared	0.074	0.100	0.118	0.137	0.171	0.193	0.145	0.227

1. Explicit Self Bias is asked using one question with a scale from 1 to 5: Do you have a preference for Hindus or Muslims? Recoded so that dummy=1 when express preference for own group.

2. Implicit Associations are measured using the IAT D-measure described in Appendix Table 4. A negative D-measure here indicates an automatic association between good and Hindu, and a positive D-measure indicates an association between good and Muslim.

3.All columns contain fixed effects for the ground floor. Standard errors below weighted means (panel A). *Standard deviations* below means.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Covariates include: female beneficiary, beneficiary age, widow, grew up in a village, length of time in Hyderabad, and knew any neighbors before moving in. Chidren's regressions also include the child's age and sex as covariates. Panel B is not weighted.

Appendix 5. IAT Completion Rates

	Hindus			Muslims		
	Mean: Hindus in Hindu Majority Cluster	Difference (Equal–Majority)	Difference (Minority–Majority)	Mean: Muslims in Muslim Majority Cluster	Difference (Equal–Majority)	Difference (Minority–Majority)
Panel A: Administrative Records	(1)	(2)	(3)	(4)	(5)	(6)
Selected adult completed IAT	0.856	0.033	-0.622***	0.880	0.055	0.011
	(0.029)	(0.054)	(0.158)	(0.067)	(0.071)	(0.090)
Selected child completed IAT	0.761	0.139	-0.309	0.938	-0.090	-0.069
	(0.062)	(0.108)	(0.280)	(0.066)	(0.101)	(0.145)

1. All differences are from OLS regressions containing a fixed effect for the ground floor and standard errors adjusted for clustering at the level of 4-house clusters.

Appendix 6. Robustness checks for Eating with and Helping neighbors (OLS regression results)

	Muslims		**Hindus**	
	Ate in that house within past month	Neighbor Help Index	Ate in that house within past month	Neighbor Help Index
	(1)	(2)	(3)	(4)
Equal Cluster	-0.054	0.010	-0.021	0.028
	(0.044)	(0.057)	(0.026)	(0.033)
Respondent Group Minority Cluster	-0.047	0.049	0.056	-0.022
	(0.035)	(0.052)	(0.039)	(0.054)
Mixed Pair	-0.055	-0.032*	0.001	0.004
	(0.037)	(0.018)	(0.022)	(0.018)
Mixed Pair × Equal Cluster	0.013	0.031*	0.058*	0.005
	(0.047)	(0.018)	(0.033)	(0.020)
Mean	0.244	0.778	0.184	0.828
	0.338	*0.392*	*0.284*	*0.333*
Covariates	yes	yes	yes	yes
Observations	1421	1414	2384	2377
Clusters	312	312	363	363
R-squared	0.032	0.086	0.008	0.063
Test: Equal Cluster + (Mixed Pair×Equal Cluster)=0	0.269	0.479	0.222	0.337

1. "Ate in that house" equals 0 if neither the respondent nor the neighbor say that the respondent ate in the neighbors house in the past month, equals 0.5 when one of them says the respondent ate their, and equals 1 when they both say the respondent ate in the neighbors' house.

2. Neighbor Help Index is a simple average of four yes/no questions: Are people in that house "there" for you in an emergency? Do they accept mail for you when you are not at home? Have you ever left your house keys with them? Have they ever watched your children or grandchildren?

3. Omitted cluster category and mean shown are: "Respondent's Religion is Majority in Cluster" for Columns 1, 4, 7 and 10 and "Homogeneous Pair in Cluster where Respondent's Religion is Majority" in all others. *Standard deviations* are below means.

4. All columns contain fixed effects for the ground floor and for the number of Christians in the cluster.

5. Covariates include: female beneficiary, beneficiary age, widow, grew up in a village, length of time in Hyderabad, and knew any neighbors before moving in.

6. Test presents the p-value of a Wald test of equality.

Appendix 7. Robustness Checks for Networks (OLS regression results)

	Total Network Size	Full Network: % from Other Religion	In-Cluster Network: % from Other Religion	Non-Cluster Network: % from Other Religion	HUSBAND: Total Network Size	HUSBAND: Full Network: % from Other Religion	HUSBAND: In-Cluster Network: % from Other Religion	HUSBAND: Non-Cluster Network: % from Other Religion
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equal Cluster	0.071	0.366***	0.370***	0.010	0.219**	0.338***	0.340***	0.015
	(0.076)	(0.027)	(0.030)	(0.010)	(0.092)	(0.039)	(0.038)	(0.015)
Respondent Group Minority Cluster	-0.063	0.557***	0.587***	0.000	0.147	0.554***	0.551***	0.050
	(0.118)	(0.049)	(0.051)	(0.014)	(0.159)	(0.064)	(0.070)	(0.038)
Muslim × Equal Cluster	-0.048	-0.063	-0.059	0.021	-0.143	-0.125**	-0.135**	0.012
	(0.123)	(0.045)	(0.050)	(0.016)	(0.142)	(0.060)	(0.060)	(0.029)
Muslim×Respondent Group Minority Cluster	0.167	-0.005	0.013	0.032	-0.153	-0.065	-0.077	0.007
	(0.188)	(0.062)	(0.062)	(0.021)	(0.240)	(0.084)	(0.090)	(0.049)
Muslim Respondent	-0.031	0.077**	0.081**	-0.009	0.170	0.102**	0.093**	0.012
	(0.100)	(0.032)	(0.035)	(0.008)	(0.117)	(0.040)	(0.038)	(0.017)
Mean	2.432	0.177	0.173	0.0210	1.720	0.169	0.128	0.0275
	0.830	*0.231*	*0.241*	*0.114*	*0.869*	*0.300*	*0.275*	*0.144*
Covariates	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1344	1344	1344	1344	1088	1088	1088	1088
Clusters	377	377	377	377	372	372	372	372
R-squared	0.010	0.421	0.420	0.013	0.026	0.280	0.260	0.020
Test: Equal + Muslim X Equal = 0	0.842	0.000	0.000	0.012	0.570	0.000	0.000	0.278
Test: Minority + Muslim X Minority = 0	0.349	0	0	0.0384	0.963	0	0	0.0653

1. Omitted cluster category and means shown are for a Hindu in a Hindu Majority Cluster. Standard deviations are below means.

2. All coumns contain fixed effects for the ground floor and for the number of Christians in the cluster.

3. Covariates include: female beneficiary, beneficiary age, widow, grew up in a village, length of time in Hyderabad, and knew any neighbors before moving in.

4. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

5. Test presents the p-value of a Wald test of equality.

Appendix 8. Lower bound on Hindus in Hindu Minority Clusters (OLS regression results)

	Full Network: % from Other Religion	In-Cluster Network: % from Other Religion	Non-Cluster Network: % from Other Religion	HUSBAND: Full Network: % from Other Religion	HUSBAND: In-Cluster Network: % from Other Religion	HUSBAND: Non-Cluster Network: % from Other Religion	Favorable Attitudes Index	Living Together Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equal Cluster	0.366***	0.370***	0.010	0.345***	0.347***	0.015	0.244***	0.008
	(0.027)	(0.030)	(0.010)	(0.039)	(0.039)	(0.015)	(0.094)	(0.013)
Respondent Group Minority Cluster	0.453***	0.480***	-0.002	0.425***	0.423***	0.038	-0.013	-0.096**
	(0.053)	(0.055)	(0.012)	(0.066)	(0.069)	(0.032)	(0.173)	(0.043)
Muslim Respondent × Equal Cluster	-0.048	-0.043	0.023	-0.127**	-0.136**	0.013	-0.252**	-0.014
	(0.046)	(0.049)	(0.016)	(0.061)	(0.061)	(0.028)	(0.103)	(0.015)
Muslim Respondent × Respondent Group Minority Cluster	0.107	0.132*	0.032*	0.053	0.043	0.015	0.030	0.105**
	(0.068)	(0.069)	(0.019)	(0.091)	(0.095)	(0.044)	(0.178)	(0.044)
Muslim Respondent	0.070**	0.076**	-0.008	0.109***	0.099***	0.014	1.904***	0.027***
	(0.031)	(0.034)	(0.008)	(0.039)	(0.038)	(0.016)	(0.057)	(0.009)
ground_floor	0.031	0.020	0.004	-0.005	-0.019	0.012	0.043	0.008
	(0.021)	(0.023)	(0.008)	(0.030)	(0.030)	(0.014)	(0.061)	(0.009)
chris_all_nbr_clus	-0.005	-0.027	0.016	-0.011	-0.012	0.002	0.062	0.005
	(0.027)	(0.029)	(0.010)	(0.036)	(0.034)	(0.015)	(0.060)	(0.010)
Mean	0.177	0.173	0.0210	0.169	0.128	0.0275	-2.662	0.958
	0.231	*0.241*	*0.114*	*0.300*	*0.275*	*0.144*	*0.954*	*0.151*
Observations	1372	1372	1372	1110	1110	1110	1372	1372
Clusters	377	377	377	373	373	373	377	377
R-squared	0.399	0.400	0.011	0.253	0.232	0.014	0.547	0.033

1. Omitted cluster category and means shown are for a Hindu in a Hindu Majority Cluster. Standard deviations are below means.

2. All coumns contain fixed effects for the ground floor and for the number of Christians in the cluster.

3. Standard errors are adjusted for clustering at the level of 4-house clusters. *** p<0.01, ** p<0.05, * p<0.1

4. Test presents the p-value of a Wald test of equality.

5. For each of the unsurveyed Hindus in Hindu minority clusters I replace the outcome with the worst value found in the survey for Hindus. This raises the "response rate" of Hindus in Hindu Minority clusters to 100%. Under this scenario, the attitudes result would be zero instead of positive and the living together index would be negative instead of positive.