

From the Pulpit to the People: How Sermons Shape Beliefs and Behavior

Adil Ahsan

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Where do beliefs come from?

- Individuals' priors are the primitives of many economic models and there is growing evidence that beliefs determine economic behavior and development.
- Previous work has demonstrated how changing beliefs can engender positive social change (Bursztyn, González and Yanagizawa-Drott, 2020).
- But less is known about the process of belief formation itself and the institutions responsible for forming and reshaping beliefs.
- Religious institutions are a credible candidate: 75% of the world's population identifies with a religious group, with most religious traditions making claims towards ultimate truth.

Religious institutions and belief formation

- How religious institutions shape beliefs remains understudied.
- A strong correlation has been documented between moralistic religions and prosociality (Caicedo, Dohmen and Pondorfer, 2021).
- But, religion may also prevent updating of beliefs or radicalize.
- The role of religious leaders seems essential: people interact with religious institutions through leaders who interpret, contextualize, and frame religious teachings in real time.
- The primary formal channel through which religious leaders engage with the public en masse is religious sermons. → **focus of this study**

Why study sermons?

- Sermons are estimated to reach hundreds of millions weekly, making them some of the oldest, most widespread, and regular channels of in-person persuasion in the world (Kramer and Fahmy, 2018).
- In Islam, the Friday sermon, or *khutbah*, is delivered by the imam and precedes the Friday congregational prayer that is obligatory on all Muslim men.



Why study sermons?

- Given their importance, some states centrally mandate Friday sermon content, utilizing religious messaging for various policy goals.

Morocco's Unification of Friday Sermons Sparks Widespread Controversy

The Moroccan Ministry of Endowments and Islamic Affairs announced late last month a new plan to unify Friday sermons across the country, sparking widespread debate and controversy in the past few days.



By Adil Fauzi — Jul, 08, 2024



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- Given their importance, some states centrally mandate Friday sermon content, utilizing religious messaging for various policy goals.
- **The unique institutional features of sermons offer an opportunity to study belief formation in the presence of others, intra-household belief transmission, and the effectiveness of sermons as policy tools for behavioral change.**

This project: RCT where I randomize sermon content

- Utilize a novel partnership with the Government of Punjab, Pakistan, where some mosques are state-run and imams are state employees.
- Working with the Punjab Auqaf Department, I randomize sermon content across 309 mosques to answer the following research questions:
 - What is the **elasticity** of beliefs and behavior in response to prosocial sermon content on women's rights and neighbors' rights?
 - To what extent is the effectiveness of messaging in sermons influenced by **religious vs secular framing**?
 - How does **information sharing** in the household affect the causal impact of sermons?

Literature

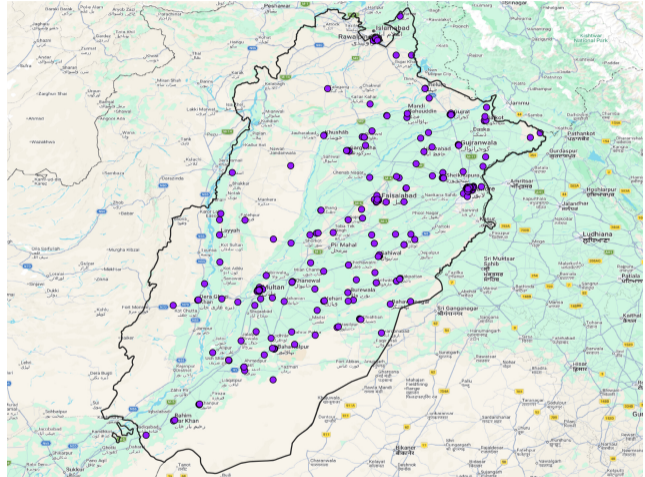
- Economics of religion: Iannaccone (1998); Clingingsmith, Khwaja and Kremer (2009); Iyer (2016); Bryan, Choi and Karlan (2020); Wang (2021); Buccione (2023); Campbell, Sethuraman and Steffen (2024); Avdeenko et al. (2025).
 - **Experimental at-scale estimates of the causal impact of sermon content on beliefs and behavior.**
- Economics of persuasion: DellaVigna and Gentzkow (2010); Haaland, Roth and Wohlfart (2023); Yanagizawa-Drott (2014); La Ferrara, Chong and Duryea (2012).
 - **Sermons as unique persuasion technology and persuasion in the context of cross-domain interactions.**
- Economics of gender and social norms: Jayachandran (2015); Bursztyn, González and Yanagizawa-Drott (2020); Field et al. (2021); Dhar, Jain and Jayachandran (2022); Cullen et al. (2024).
 - **Effectiveness of religious leaders and messaging in changing men's beliefs about gender.**

Context: Punjab, Pakistan

- 97% of the population is Muslim. 90% of males reported going to the mosque for prayer the previous Friday.
- Friday prayer preceded by a 20-40 minute sermon by an imam. 91% of those who prayed reported listening to at least 10 minutes of the sermon.
- Sermons usually imams' primary means of mass communication. Median mosque has ~250 congregants for Friday prayer.
- **Study focuses on universe of 309 Auqaf mosques spread across the Punjab attended by ~116,000 people.**
- The state often uses these imams for information delivery but in most normal weeks, imams have considerable discretion over what to say.

Spatial distribution of Auqaf mosques

- Almost all mosques are **Sunni**.
- 13% of mosques are **rural**.
- 37% of mosques are **residential**.
- 25% of mosques have a **Sufi shrine**.



Field Experiment: Treatments

- Worked with religious scholars to draft sermon scripts on women's rights and neighbors' rights.
- Content is covered over two Friday sermons, each with distinct content.
- Each script ends with an actionable item that congregants are asked to perform over the following week.
- Last quarter of each script is framed in either religious or secular language.
- Sermons end with a plea to share sermon content with wives or no plea.
- Compliance measured by recording, transcribing, and quantifying sermon content.

Field Experiment: Treatment Excerpts

- **Women's Rights:** *Dear brothers! In the name of God, the most compassionate, the most merciful... One of the rights of women is that they have been given the right to work... Hazrat Khadijah, the first wife of the Prophet had a business before Islam and after the marriage, the Prophet never prevented her from engaging in it, but on the contrary, appreciated her for helping him out with financial matters.*
- **Neighbors' Rights:** *The Holy Quran and the Noble Prophet have given great importance to the relationship of neighborliness in their teachings and guidance... Islam outlines several rights of neighbors. The Prophet said: "He is not a believer who sleeps full while knowing his neighbor is hungry."*

Field Experiment: Treatment Excerpts

- **Religious:** *The Prophet Muhammad declared women's education just as necessary and important as men's education... Rather, the Prophet emphasized the greatness of knowledge in these words: "Seeking knowledge is obligatory upon every Muslim (male and female)."*
- **Secular:** *If a woman is educated, she will not only be able to give good advice to her husband in everyday affairs, but she will also be able to participate in the education and upbringing of her children.*

Field Experiment: Treatment Excerpts

- **Information Sharing:** *...whatever you have heard today—these teachings of the religion—teach them to the women at home as well. When the Companions would come to the Prophet to seek knowledge and then prepare to return home, the Prophet would say to them: "Return to your families, stay among them, teach them (the religion), and instruct them to act upon it." May Allah grant us the ability to fulfill our responsibilities regarding women. Amen.*

Example Congregation



Example Congregation



Example Congregation



Field Experiment: Design

Table 1: Randomization

	Religious (Share)	Religious (No Share)	Secular (Share)	Secular (No Share)	Total
Control					103
Women's Rights	26	26	25	26	103
Neighbors' Rights	26	26	26	25	103

- Randomization stratified by attendance tercile and residential/commercial status of mosque.
- **~15 men surveyed from each mosque.** Wives and imams surveyed (over-phone and in-person respectively) conditional on consent.

Field Experiment: Recruitment and Baselines

- Imams make announcement during sermons asking individuals to participate in the study. ~50 phone numbers are collected from each mosque.
- Men are randomly called and first 15 to fulfill recruitment criteria via phone survey are administered baseline survey in-person.
- **Recruitment criteria are: 1) attended at least 10 minutes of the previous two Fridays' sermon in the same mosque, 2) aged 18-50, 3) married.**
- Care taken so that no information is provided about the nature of the treatments.

Field Experiment: Treatments and Endlines

- Imams are invited to Auqaf offices, delivered a presentation explaining the project, and given two sermon scripts to deliver over the course of the following two Friday sermons.
- Enumerator records the next three sermons (two treatment, and one non-treatment sermon).
- **Endlines occur 2-4 weeks after treatments conclude.**

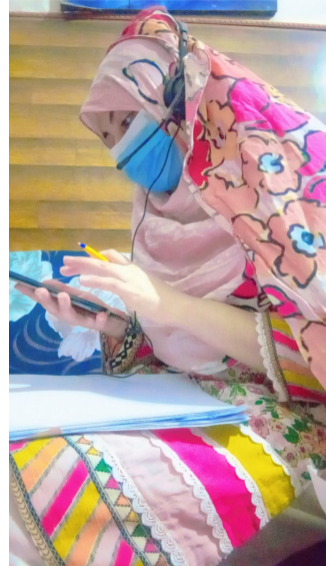
Primary Outcomes

- Women's rights outcomes:
 - Dictator game
 - Spouse survey consent
 - Petition
- Neighbors' rights outcomes:
 - Dictator game
 - Community cleanliness



Secondary Outcomes

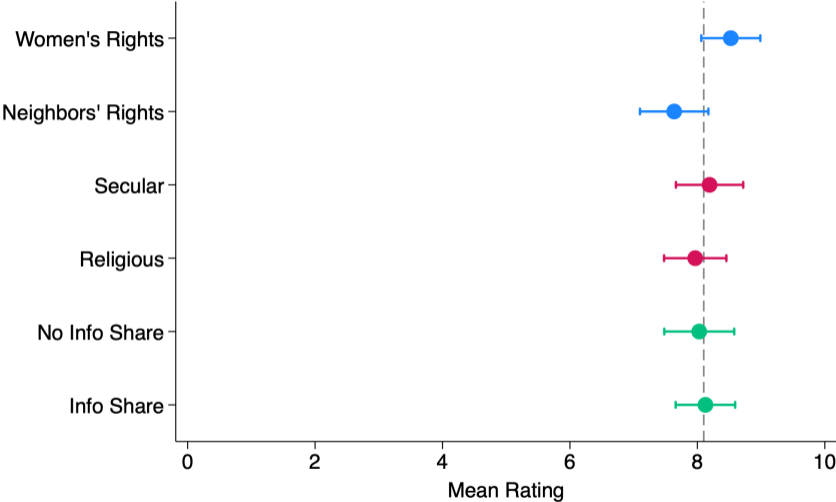
- Effects on wives, imams
- Self-reported beliefs
- Mosque-level attendance counts
- Post-treatment sermon content



Results

Results: Compliance Across Treatment Arms

Content



Results: Primary Outcomes

Table 2: Pooled Treatments

Dependent Variable	Women's Rights	Neighbors' Rights
	(1)	(2)
Women's Rights	0.2308*** (0.0511)	0.0612 (0.0661)
Neighbors' Rights	0.0362 (0.0572)	0.1969*** (0.0670)
N	3916	3916
R-Squared	0.0286	0.0184
Control Mean	0.0001	-0.0012

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are male mosque-goers. Standard errors clustered at mosque-level.

Beliefs

Wives

Imams

Endline Balance

Results: Primary Outcomes

Table 3: Religious vs Secular Framing

Dependent Variable	Women's Rights	Neighbors' Rights
	(1)	(2)
Women Secular	0.1374** (0.0642)	0.0288 (0.0858)
Women Religious	0.3279*** (0.0530)	0.0947 (0.0767)
Neighbors Secular	0.1169 (0.0728)	0.2571*** (0.0778)
Neighbors Religious	-0.0420 (0.0676)	0.1385 (0.0877)
N	3916	3916
R-Squared	0.0410	0.0214
Control Mean	0.0001	-0.0012
Ho: Women Rel = Women Sec	0.0023	0.4899
Ho: Neighbors Rel = Neighbors Sec	0.0556	0.2291

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are male mosque-goers. Standard errors clustered at mosque-level.

Results: Primary Outcomes

Table 4: Information Sharing

Dependent Variable	Women's Rights	Neighbors' Rights
	(1)	(2)
Women No Share	0.1795*** (0.0619)	0.0252 (0.0740)
Women Share	0.2809*** (0.0586)	0.0964 (0.0883)
Neighbors No Share	0.0904 (0.0782)	0.2670*** (0.0832)
Neighbors Share	-0.0179 (0.0617)	0.1268 (0.0820)
N	3916	3916
R-Squared	0.0331	0.0225
Control Mean	0.0001	-0.0012
Ho: Women Share = Women No Share	0.1185	0.4572
Ho: Neighbors Share = Neighbors No Share	0.1922	0.1528

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are male mosque-goers. Standard errors clustered at mosque-level.

Results: Endogenous Demand and Supply-Side Responses

Table 5: Post-Treatment Attendance Counts and Sermon Content

Dependent Variable	Demand-Side	Supply-Side			
	Log(Attendance)	Rights	Social	Religious	Hate
	(1)	(2)	(3)	(4)	(5)
Women's Rights	-0.1454** (0.0727)	0.7579** (0.3099)	0.8358*** (0.3223)	-0.4449* (0.2617)	-0.2103** (0.0941)
Neighbors' Rights	0.0235 (0.0683)	0.9876*** (0.3161)	0.9252*** (0.3263)	-0.1511 (0.2513)	-0.0727 (0.1078)
N	306	300	300	300	300
R-Squared	0.6456	0.0392	0.0368	0.0311	0.0320
Control Mean	5.6159	0.3204	4.1553	8.1359	0.3883

Notes: * 0.10 ** 0.05 *** 0.01. Results are at the mosque-level. Standard errors are robust. Columns (2)-(5) represent ratings of sermon content on a scale from 0-10.

Theoretical Framework: A Model of Cross-Domain Permissibility

- Mosque-goers have preferences over consumption in this life and the next. Actions y^* and z^* maximize consumption in the after-life and during life respectively but are uncertain.
- Individuals have priors over these actions: $s_i \sim N(y^*, \frac{1}{\rho_y})$, $z_i \sim N(z^*, \frac{1}{\rho_z})$.
- Individuals choose an action y_i to jointly minimize weighted distance to y^* and z^* :

$$- E_i(\alpha\psi(z_i)(y_i - y^*)^2 + (1 - \alpha)\phi(s_i)(y_i - z^*)^2) \quad (1)$$

- Both $\phi(s_i)$ and $\psi(z_i)$ are positively-valued and weakly increasing.
- **The function $\phi(s_i)$ captures religious permissibility of secular actions while $\psi(z_i)$ captures secular permissibility of religious actions.**

Theoretical Framework: Updating and Choices

- Taking the FOC gives us optimal y_i :

$$y_i = \tilde{\alpha}E_i(y^*) + (1 - \tilde{\alpha})E_i(z^*), \quad \text{where } \tilde{\alpha} = \frac{\alpha\psi(z_i)}{\alpha\psi(z_i) + (1-\alpha)\phi(s_i)}. \quad (2)$$

- Control group gets no signal so the decision is simple:

$$y_i^C = \tilde{\alpha}s_i + (1 - \tilde{\alpha})z_i \quad (3)$$

- Treatment individuals get either a religious $R_i \sim N(y^*, \frac{1}{\rho_R})$ or non-religious $N_i \sim N(z^*, \frac{1}{\rho_N})$ signal from the imam.
- As bayesians, treatment individuals update their beliefs and the choices are:

$$y_i^{Rel} = \tilde{\alpha} \frac{\rho_y s_i + \rho_R R_i}{\rho_y + \rho_R} + (1 - \tilde{\alpha})z_i \quad (4)$$

$$y_i^{Sec} = \tilde{\alpha}s_i + (1 - \tilde{\alpha}) \frac{\rho_z z_i + \rho_N N_i}{\rho_z + \rho_N} \quad (5)$$

Theoretical Framework: Treatment Effects

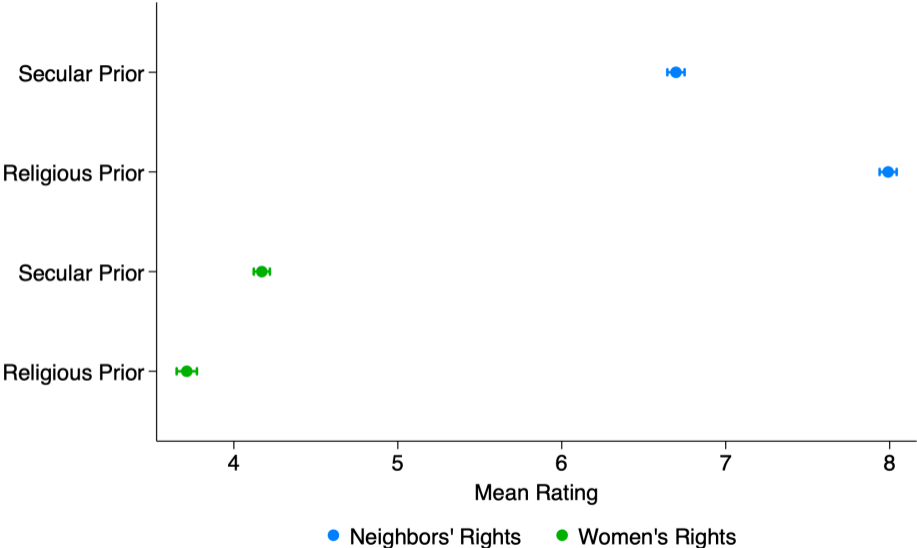
$$y_i^{Rel} - y_i^C = \frac{\alpha\psi(z_i)}{\alpha\psi(z_i) + (1 - \alpha)\phi(s_i)} \frac{p_R}{p_y + p_R} (R_i - s_i) \quad (6)$$

$$y_i^{Sec} - y_i^C = \frac{(1 - \alpha)\phi(s_i)}{\alpha\psi(z_i) + (1 - \alpha)\phi(s_i)} \frac{p_N}{p_z + p_N} (N_i - z_i) \quad (7)$$

We have four cases:

1. Pure Bayesian ($\phi = 1$ and $\psi = 1$): **No cross-domain interaction**; TE ranking depends on within-domain prior ranking; $\frac{\partial TE^{Sec}}{\partial s_i} = 0$ and $\frac{\partial TE^{Rel}}{\partial z_i} = 0$.
2. Religious Permissibility ($\phi \neq 1$ and $\psi = 1$): **Religious priors modulate the secular TE**; $\frac{\partial TE^{Sec}}{\partial s_i} > 0$ and $\frac{\partial TE^{Rel}}{\partial z_i} = 0$.
3. Secular Permissibility ($\phi = 1$ and $\psi \neq 1$): **Secular priors modulate the religious TE**; $\frac{\partial TE^{Rel}}{\partial z_i} > 0$ and $\frac{\partial TE^{Sec}}{\partial s_i} = 0$.
4. Religious and Secular Permissibility ($\phi \neq 1$ and $\psi \neq 1$): **Secular (religious) priors modulate the religious (secular) TE**; $\frac{\partial TE^{Sec}}{\partial s_i} > 0$ and $\frac{\partial TE^{Rel}}{\partial z_i} > 0$.

Mechanisms: Are mosque-goers simply Bayesian?



Mechanisms: Religious and Secular Permissibility

Table 6: Pooled Primary Outcomes: Heterogeneity by Baseline Religious and Secular Priors

Dependent Variable	Women's Rights	Neighbors' Rights
	(1)	(2)
Religious	0.2988*** (0.0674)	0.3669*** (0.1029)
Secular	0.0967 (0.0973)	0.2834*** (0.0969)
Religious x 1(Religious Prior > Median)	0.0254 (0.0755)	-0.2343** (0.1021)
Secular x 1(Religious Prior > Median)	0.1866* (0.0981)	0.0961 (0.1106)
Religious x 1(Secular Prior > Median)	-0.0216 (0.0713)	-0.2358** (0.1008)
Secular x 1(Secular Prior > Median)	-0.1239 (0.1024)	-0.2088** (0.1015)
N	3662	3780
R-Squared	0.0397	0.0477
Control Mean	0.0001	-0.0012

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are males. Standard errors clustered at mosque-level.

Conclusion

- I randomize sermon content and explore impacts on people's beliefs and behavior.
- Both women's rights and neighbors' rights sermons make people more prosocial. I find suggestive evidence that effects extend downstream to wives.
- Content framing matters but heterogeneously by topic. I provide evidence that this is consistent with a simple Bayesian framework modified to allow religious priors to gate secular persuasion.
- I document demand-side backlash in response to sermons on women's rights as well as persistence in changes to sermon content.
- Results offer evidence for the importance of religious institutions in shaping beliefs.

Thank You!

mahsan@g.harvard.edu

Appendix

Appendix: Balance

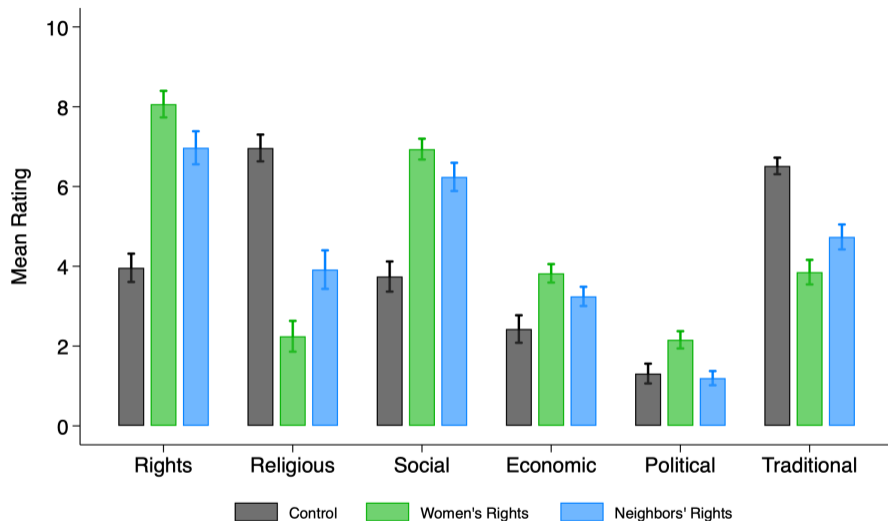
Table A1: Endline Sample Balance

	N	Control		Community Treatment		Women Treatment		Diff1	Diff2
		Mean	SD	Mean	SD	Mean	SD		
Age	3916	37.64	7.52	37.41	7.60	37.79	7.94	-0.229	0.151
Education	3907	10.00	3.73	9.62	3.81	9.87	3.63	-0.385	-0.133
Income	3662	42132.78	25005.29	44337.83	22568.63	42608.70	23537.75	2,205.047	475.916
Children Nr	3913	2.72	1.74	2.75	1.83	2.73	1.77	0.026	0.011
Daily Pray	3905	3.85	1.23	3.95	1.16	3.88	1.23	0.098	0.031
Beliefs Women	3916	-0.00	0.43	0.03	0.44	0.03	0.45	0.030	0.037
Beliefs Neighbors	3916	0.01	0.55	0.02	0.55	0.01	0.54	0.012	0.003
Spouse Survey	3916	0.64	0.48	0.56	0.50	0.60	0.49	-0.078	-0.035
Enum Clean	3916	6.89	2.16	7.08	2.00	7.07	1.97	0.194	0.183

Notes: * 0.10 ** 0.05 *** 0.01. Standard errors clustered at mosque-level.

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Results: Sermon Content During Treatment Weeks



Appendix: Beliefs

Table A2: Beliefs about Women

Dependent Variable	Women's Rights			
	Competence	Education	Employment	Pooled
	(1)	(2)	(3)	(4)
Women's Rights	0.0642 (0.0533)	0.1777*** (0.0635)	0.1125 (0.0753)	0.1145*** (0.0437)
Neighbors' Rights	-0.0201 (0.0486)	0.0765 (0.0613)	0.0369 (0.0725)	0.0515 (0.0397)
N	3915	3903	3898	3915
R-Squared	0.0473	0.0916	0.0454	0.0882
Control Mean	0.0007	-0.0020	0.0002	-0.0010

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are male mosque-goers. Standard errors clustered at mosque-level.

Table A3: Beliefs about Neighbors

Dependent Variable	Neighbors' Rights			
	Importance	Help	Trust	Pooled
	(1)	(2)	(3)	(4)
Women's Rights	-0.1168* (0.0708)	-0.0478 (0.0542)	-0.1322** (0.0600)	-0.0850* (0.0475)
Neighbors' Rights	0.1036 (0.0726)	0.0570 (0.0564)	0.0712 (0.0674)	0.0591 (0.0575)
N	3914	3914	3916	3916
R-Squared	0.0711	0.0575	0.0774	0.0693
Control Mean	0.0014	0.0027	-0.0008	0.0004

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are male mosque-goers. Standard errors clustered at mosque-level.

Appendix: Effects on Wives

Table A4: Beliefs and Well-Being of Wives

Dependent Variable	Women's Rights		Neighbors' Rights
	Beliefs	Well-Being	Beliefs
	(1)	(2)	(3)
Treat Women	0.1897*** (0.0465)	0.1414 (0.0945)	0.0844 (0.0705)
Treat Community	0.1003** (0.0497)	0.1004 (0.1106)	-0.0081 (0.0739)
N	646	646	646
R-Squared	0.0430	0.0153	0.0081
Control Mean	0.0000	0.0000	-0.0000

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are wives. Standard errors clustered at mosque-level.

Appendix: Effects on Imams

Table A5: Beliefs of Imams

Dependent Variable	Women's Rights	Neighbors' Rights
	(1)	(2)
Treat Women	0.1566* (0.0810)	0.0308 (0.0888)
Treat Community	0.1913** (0.0757)	0.0212 (0.0880)
N	241	241
R-Squared	0.0639	0.0078
Control Mean	-0.0000	0.0010

Notes: * 0.10 ** 0.05 *** 0.01. Respondents are imams. Standard errors clustered at mosque-level.

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