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Abstract

Little is known about the behavior of Madrassa (Islamic religious seminaries) students, how Madrassas shape their behavior, and how other groups in their communities interact with them. To investigate this, we use experimental data that we collected from students pursuing bachelor's-equivalent degrees in Madrassas and other educational institutions of distinct religious tendencies and socioeconomic background in Pakistan. First, we find that Madrassa students are the most trusting, exhibit the highest level of other-regarding behavior, and expect others to be the most trustworthy. Second, there is a high level of trust among all groups. Third, within each institution group, we fail to find evidence of in-group bias or systematic out-group bias either in trust or tastes. Fourth, we find that students from certain backgrounds underestimate the trustworthiness of Madrassa students.

Keywords: trust, group identity, religious seminaries, unconditional other-regarding behavior, expectations

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I. Introduction

Madrassas –Islamic religious seminaries– have received considerable attention recently, especially since 9/11. Despite scant research, claims made by policy makers and in the popular press suggest that they may be responsible for fostering militancy, Islamic extremism, international and national terrorism and violence. Madrassas have sometimes been labeled as “weapons of mass instruction” or “factories for global *jihād*”, and as such have been perceived as a threat for the West and for individual countries hosting them (Rashid, 2000; Stern, 2000; Malik, 2008; Rahman, 2008; Ali, 2009). In fact, the United States has been encouraging Madrassa reform in the Muslim world, particularly in Pakistan where Madrassas are thought to be linked to the Taliban (The 9/11 Commission, 2004; Fair, 2008). Madrassas are widespread around the world and educate an estimated 6 million Muslims (Haqqani, 2004). In Pakistan alone, some estimates suggest that nearly 2 million students attend Madrassas (Candland, 2008). Many Madrassa graduates go on to play an important religious and political leadership role in their communities (Malik, 2008), and are therefore important social and economic actors. Despite their alleged influence both nationally and internationally, we know very little about the behavior of young men attending Madrassas, the causal impact of Madrassas in shaping their students’ behavior, and how other groups in their communities interact with these students. This is primarily because Madrassas tend to be closed institutions and data on their students is rather rare. In this paper, we use unique experimental data that we collected from Madrassa students and from students in other educational institutions in Pakistan to investigate how Madrassa students and other members of the Pakistani society interact with each other.

Because it is difficult to observe and inquire about propensity for violence or support for terrorism, we take an indirect approach and focus on students’ interactions in several economic decision-making experiments.³ These experiments measure trust (trust game), expected trustworthiness (expectations in the trust game), and unconditional other-regarding behavior such as altruism or inequity aversion (dictator game). Trust has been shown to be important for intergroup reconciliation and negotiations (Lichbach, 2005; Nadler and Liviatan, 2006), and to

³ It should be noted that results from laboratory experiments that measure social capital and pro-social preferences have been found to be informative about behavior in real-world situations (Karlan, 2005; Benz and Meier, 2008; Baran, Sapienza, and Zingales, 2009).

lead to lower levels of militancy (Uslaner, Canetti-Nissim, and Pedazhur, 2004). Exhibiting other-regarding behavior is quite opposite to exhibiting hatred, which has been proposed to be one of the contributing causes of terrorism and violence (Sternberg, 2003). In addition, trust has also been shown to enhance efficiency and to promote economic growth and financial development (Knack and Keefer, 1997; La Porta et al., 1997; Putnam, 2000; Guiso, Sapienza, and Zingales, 2004), especially in a setting like Pakistan where institutions are failing (Ostrom, 1990; Fukuyama, 1995). Our experiments measure aspects that are therefore likely to be important for the decision to engage in violence, and for the well-functioning of a society more generally.

Our study takes place in Pakistan. Pakistani society can be characterized as fragmented and polarized along social, religious, and ethnic lines. It has also been afflicted by violent conflicts in the last several years. Figure 1 shows that, in 2009, Pakistan ranked third world-wide in terms of terrorism-related deaths. Pakistani Madrassas are purported to have ties to domestic and regional violence (Billquist and Colbert, 2006; Ciabattini, 2010). In fact, in a survey we conducted in two Pakistani cities in 2010, we find that religious institutions are perceived by the general population to be playing a role in cultivating extremism and violence (it is the most important cause for 40% of the respondents).

In this setting, we study how Madrassa students, who tend to come from modest origins, exhibit high levels of religiosity, and are thought to be exposed to teachings that reject Western ideas (Rahman, 2008), interact with individuals from diverse religious and socioeconomic backgrounds, and varied exposure to Western ideas. We analyze their interactions with two other disparate groups of Pakistani youth. The first consists of students from Islamic Universities that teach, in gender-segregated campuses, a Liberal Arts curriculum combined with Islamic teachings. The second group comprises of students from Liberal Universities that are similar to American universities—classes are taught in English, campuses are mixed, tuition is expensive, and students are widely exposed to Western ideas. There is substantial sorting on socioeconomic characteristics and very different levels of religiosity and exposure to Western ideas across the institutional settings. We focus on interactions of inter-elite groups, defined as college-level students, because individuals belonging to these groups will eventually become policy makers and dictate future policy, so understanding their behavior is of particular relevance. We chose those three groups (Madrassa, Islamic University, and Liberal University students) since they

clearly represent different social and religious identities within Pakistani society and we would therefore expect *a priori* tensions between them.

We recruited 1,521 male students pursuing bachelors-equivalent degrees from (i) four Madrassas, (ii) one Islamic University, and (iii) two Liberal Universities for our study. We randomly matched students with each other to participate in several economic decision-making experiments to analyze how the various groups interact with each other. Our study design allows us to observe differences in decisions both across groups and within group as the institution type of the participant's partner is varied. This enables us to investigate whether there is any systematic difference in behavior by groups—more precisely, whether Madrassa students interact with their peers differently than with others, in particular those who may be perceived to be widely influenced by the West, and whether other groups of the society treat Madrassa students differently. Through our experiment, we seek to clarify five main questions: (1) Does behavior in the trust game vary by group? (2) Do students exhibit an in-group bias and is there differential treatment (discrimination) in terms of behavior against a particular group? (3) Is there taste-based discrimination against a group? (4) Is there systematic difference in expected trustworthiness (stereotype) against a particular group? (5) Are the stereotypes about each group's perceived trustworthiness correct?

Analysis of the experiments reveals several interesting findings. First, while there is a high level of trust among all groups, students enrolled at Madrassas exhibit the most trusting behavior compared to all other groups. Second, for all groups, we find *no* evidence of in-group bias or systematic discrimination in the trust game. While we find no difference in trust game behavior by match type (i.e., by the institution of the student with whom the participant is matched), students could still exhibit different levels of trust and preferences toward certain groups as a range of factors may motivate a student's decision-making in the trust game.⁴ These include unconditional other-regarding preferences, beliefs about trustworthiness of the partner, and risk preferences (Cox, 2004). We examine these factors by studying how participants'

⁴ For example, Liberal University students may invest similarly in the trust game with Madrassa students and students from their own institution. However, the underlying preferences and tastes could be very different. Even if Liberal University students believe Madrassa students are less trustworthy (when compared to students at their own institution), they may invest with them equally because of inequality aversion (since Madrassa students generally hail from poorer socioeconomic backgrounds) or other unconditional social preferences.

decisions carry over to the dictator game. The dictator game allows us to test for differences in unconditional other-regarding preferences (taste-based preferences). Here too, we find no evidence of in-group or systematic (positive or negative) out-group bias. But we find that Madrassa students give the most.

We do, however, find important differences in expected trustworthiness across the groups. Our data on subjective expectations—beliefs of how much students think was sent back to their peers, on average, by other students in the matched institution in the trust game—that measure expected trustworthiness reveal that students from Liberal Universities expect Madrassa students to send back less relative to other groups. Moreover, these beliefs held about Madrassa students are statistically very different and lower than the amount that Madrassa students *actually* send back. These incorrect expectations (or stereotypes) could negatively influence the social and economic interactions of those two groups outside of the lab. We also find that Madrassa students have the highest levels of expectations of the trustworthiness of other groups, and they over-estimate the trustworthiness of Liberal University students.

In summary, our results show that Madrassa students treat all the groups we consider equally, as do students belonging to other groups. Madrassa students, therefore, do not stand out as discriminating against students from institutions with strong Western influence. However, their behavior stands out in another way: Madrassa students are the most trusting, exhibit the strongest other-regarding behavior, and expect others to be most trustworthy. An important question that follows from this analysis centers on whether Madrassa students' pro-social behavior can be attributed to Madrassa attendance or to characteristics that lead students to attend a Madrassa in the first place (i.e., selection). Selection into Madrassas would be an issue only if one believes that students enrolling in Madrassas are even *more* trusting and pro-social prior to entry than levels that we observe. However, given the very high levels of trust and pro-social behavior in the data, this is quite unlikely. Regardless, we investigate the causal role of Madrassas in shaping their students' behavior, by analyzing differences in the experimental choices of those Madrassa students who would choose to enroll in a Madrassa regardless (that is, those who select to enroll in a Madrassa) versus those Madrassa students who would have

attended a non-Madrassa institution, absent any constraints.⁵ We conclude that the distinct behavior of Madrassa students cannot be wholly attributed to selection. In particular, we provide evidence that rules out Madrassas playing a role in promoting distrust and anti-social behavior. This casts doubt on the general perception that Madrassas teach hatred and ideological extremism – at least with regards to groups within the Pakistani society – and is consistent with Madrassas promoting religious teachings and offering an environment that emphasizes selflessness.

Our paper shows how distinct groups *within* the Pakistani society interact with each other – something that is crucial for the functioning of the society. Given the current divide of the society, the omnipresent violence, and the perception of the Pakistani general population that religious institutions are playing a role in cultivating violence, our result of equal treatment is quite striking. The findings that Madrassa students show very high levels of pro-social behavior towards *all* groups (i.e., they do not exhibit hatred toward any group) and are also very trusting cast doubt on the widely-held view that Madrassas (or their students) are primarily responsible for domestic violence. The implications of our results are unclear for the role of Madrassas in international terrorism-related violence, since we do not match students with foreign (particularly, Western) individuals in the current study. Thus, we do not know how our results would extend to interactions with groups outside of Pakistan. In addition, one should be cautious in generalizing our results to interactions of less educated groups in Pakistan.⁶

Because of the very distinct social identity of the three groups that we study, our paper fits within the literature that focuses on group identity and behavior.⁷ This literature can be

⁵ In the survey, respondents were asked which type of institutions they would choose to attend if they were admitted to all institutions types and all expenses were covered.

⁶ Focusing on college-level students allow us to isolate the effect of attending different types of institutions (abstracting from the effect of education level) on behavior. With regards to the affect of education on behavior, Helliwell and Putnam (2007) find that increases in average education levels improve trust, while Milligan, Moretti, and Oreopoulos (2004) find that education leads to increased civic sense. On the other hand, Algan et al. (2011) find that teaching practices (such as lecture versus work group) influence student beliefs about cooperation.

⁷ The influence of group membership on individual behavior has been widely studied in social psychology (Tajfel, Billig, and Flament, 1971), where group identity is induced exogenously by assigning participants to “minimal” groups, which are arbitrary labels such as blue or red group. These studies have found that even ad-hoc and trivial group categorizations typically lead to in-group bias and discrimination against the out-group (Tajfel and Turner, 1986). Since the introduction of identity into economic analysis by Akerlof and Kranton (2000), several economic studies have analyzed the impact of social/group identity and behavior.

divided into two major strands: one that uses induced group membership, and the other that examines the effects of existing groups, such as ethnic groups, clans, and residential groups, on behavior. The first typically finds evidence of a strong impact of group membership on individual behavior (see for, example, Charness, Rigotti, and Rustichini, 2007; Chen and Li, 2009; Heap and Zizzo, 2009; Sutter, 2009; Benjamin, Choi, and Strickland, 2010), while the second shows more mixed results (Fershtman and Gneezy, 2001; Bernhard, Fehr, and Fischbacher, 2006; Falk and Zehnder, 2007).⁸ Our paper uses the latter approach and investigates the behavior of existing groups. Although controlling for selection into groups makes the causal inference of group membership harder to identify (an issue avoided when group membership is randomly induced, and mitigated in our context by using several identification strategies including an instrumental variable approach for Madrassa attendance), using existing groups is a valuable approach to understanding the interactions of relevant social and economic actors from a policy and real-world perspective.

With real groups, the impact of group membership on behavior is more varied. For example, Fershtman and Gneezy (2001) match Israeli students with objectively-recognizable ethnic names and find strong evidence of discrimination against Eastern Jews by *both* Ashkenazic and Eastern Jews in the trust game. Similar results are found in the social psychology literature when groups are unequal, in which case the disadvantaged group often favors the out-group (e.g., Jost, Banaji and Nosek, 2004; Brown, 2000).⁹ While our paper takes a similar approach as Fershtman and Gneezy (2001), our context is made unique by having two dimensions of inequality: religiosity and socioeconomic status, both of which are valued by the Pakistani society.¹⁰ Moreover, these two dimensions are negatively correlated: Liberal University students are the highest social status group when judged by socioeconomic characteristics but the lowest status group when judged on the metric of religiosity, and the reverse is true for Madrassa

⁸ A third approach is to use real social groups with random assignment, as in Goette, Huffman, and Meier (2006; 2010). This approach is less common because of the difficulty in finding real groups without selection.

⁹ Even when groups are induced but unequal, the literature finds that the higher status group gives and trusts more, and that the lower status group favors the higher status group (Butler, 2008; Lei and Vesely, 2010).

¹⁰ Another major difference from the design in Fershtman and Gneezy (2001) is that we directly elicit the respondent's expectations about the trustworthiness of the match. Unless one makes the assumption that players play a social preferences equilibrium in the trust game, data on both expectations about trustworthiness and decision in the dictator game are needed to decompose behavior in the trust game.

students. This may explain why these two groups trust more and exhibit more other-regarding behavior than the Islamic University students, who fare in the middle on both scales. The interaction between the two dimensions of social status may also explain why we observe no out-group bias from any of the groups.

The paper is organized as follows. We provide background information on Pakistan, Madrassas, and the other groups we consider in Section II. Section III describes the data, sample and experimental procedures, while Section IV presents the empirical results. In Section V, we investigate the causal effect of Madrassa attendance on the behavior of Madrassa students. We discuss potential confounding factors for our results in Section VI, and provide a discussion of our results and concluding remarks in Section VII.

II. Background

II.A Pakistan: A segmented society mired in conflict

With a population of 184 million and a GDP per capita of \$2,400 (The World Factbook, 2010), Pakistan is a populous and rapidly growing middle income country. Since its inception from the violent partition of India in 1947, Pakistan has been in search of a national identity.¹¹ To this day, it continues to be segmented along various lines and mired in violent conflict.

The first divide is economic. While an estimated 24% of the population live under the official poverty line, estimates based on a multidimensional poverty index such as financial poverty, illiteracy or children out of school, poor housing and physical household assets show that 54% of Pakistanis live in a state of multiple deprivations, with vast differences between rural (69%) and urban (21%) poverty rates (Jamal, 2009). About 35% of the population lives in urban areas.

The second divide is religious. Ninety-five percent of the population is Muslim (Sunni 75%, Shia 20%) while the remaining 5% includes Christian and Hindu (The World Factbook, 2010). In addition to the Sunni-Shia divide, there is also sectarian rivalry within Sunnis between

¹¹ The various identities coming from religious, regional, and national belonging were articulated about a decade ago by nationalist Wali Khan when he declared himself to have been a Pashtun for 4,000 years, a Muslim for 1,400 years, and a Pakistani for 40 years (Talbot, 2009).

Barelvis, who uphold devotional practices such as elevating Muslim saints, and Deobandis, who seek to eliminate such practices (Talbot, 2009).

A third divide is ethnic and linguistic. The largest ethnic minority are Punjabi (45% of the population), followed by Pashtun (15%), Sindhi (14%), Sariaki (8%), Muhajirs (8%), and Balochi (4%) (The World Factbook, 2010). The language divide mirrors the ethnic divide. In fact, only 8% of the population speaks the official language, Urdu (Talbot, 2009).

A fourth divide is regional (see Figure 2). The Punjab province dominates demographically, housing 56% of the population, and economically as a result of its agricultural productivity and historical industrial development dating back to the Zia era in the 70s and 80s, along with large remittances from the Middle East (Talbot, 2009). Fifty-two percent of the Punjab population is classified poor according to Jamal's (2009) index, compared to 74% in the Balochistan province. This disparity has been another cause of increasing resentment among the regions.

In addition to the segmentation highlighted above, another characteristic of today's Pakistan is violence and terrorism. Figure 1 shows that Pakistan had 2,670 terrorism-related deaths in 2009, placing it third in a worldwide rank. Terrorism-related incidents are not confined to certain troubled areas, but are widespread across the country.¹² In a survey we conducted in 2010 on a random sample of people living in Islamabad/Rawalpindi and Lahore, we find that 14% of the respondents report knowing a victim of a violent attack. These attacks are attributed to a number of causes: sectarian violence, secessionist movements, backlash effect of the Afghan war ("Kalashnikov culture" and jihad mentality), conflict with India over Kashmir, Islamist insurgent groups and forces such as the Taliban, and the society's segmentation (Talbot, 2009).

II.B The Madrassas in Pakistan

A unique feature of this paper is to have data from a large pool of Madrassa students in Pakistan. In recent years, and in particular after 9/11, claims made by US policy makers and the popular press suggest that Madrassas—Islamic religious schools—in Pakistan are responsible for nurturing militancy and violence. Despite popular thinking, there is considerable controversy

¹² Of the 500 bomb blasts in 2009 and 473 in 2010, 35 occurred in Punjab or Sindh. As for suicide attacks, of the 76 attacks in 2009, 19 occurred in Punjab or Sindh. Of the 49 in 2010, 7 occurred in Punjab or Sindh (South Asia Terrorism Portal, 2011).

about the link between Madrassas and militancy (Billquist and Colbert, 2006; Fair, 2008). According to Winthrop and Graff (2010), while some Madrassas are linked to sectarian militancy, most are non-extremist. Asal, Fair, and Shellman (2008) conducted surveys of Pakistani families who had lost a son to militancy in Kashmir and Afghanistan, and concluded that there is no evidence that Madrassas are a principle place for militants' recruitment.

Madrassas admit students of all ages, and generally don't have any admission requirements. At earlier levels, students usually learn to read and memorize the Qu'ran. The Madrassa curriculum, at advanced stages, focuses on the *Dars-e-Nizami*, which is taught for 8 years following the completion of elementary school and covers religious sciences (e.g., jurisprudence, the Qur'an and its commentaries) and rational sciences such as Arabic grammar and literature, logic, and rhetoric (Rahman, 2008).¹³ The materials for these subjects are texts dating to before the 14th century, and classes are typically taught in Urdu (Fair, 2006; Rahman, 2008). The majority of Madrassas do not impart any secular or vocational training, but they have rigid curricula emphasizing rote memorization, and it has been argued, albeit with scant evidence, that they deliberately educate their students in narrow worldviews and rejection of Western ideas, and do not train them sufficiently for the real world (Ali, 2009).

An important factor in understanding the extent of Madrassas' influence in Pakistan is how many students study in them. The number of Madrassas has undeniably increased, especially in the 1980s during the Soviet war in Afghanistan, when Madrassas were established in Afghan refugee camps to train fighters for the resistance movement (Winthrop and Graff, 2010). However, there is considerable disagreement over the extent of the penetration of Madrassas: Estimates of Madrassas' enrollment vary from less than 1% (Andrabi et al., 2006) to 33% (International Crisis Group Report, 2002) of all enrolled students.¹⁴ One reason why an accurate measure of Madrassa enrollment remains challenging is that few are registered—according to Rashid (2000), fewer than a third of Madrassas are registered. Recent studies put the enrollment in registered Madrassas in the 1-7% range (Fair, 2008; Pakistan Ministry of Education). Regardless of the source that one choose to favor with regard to Madrassa

¹³ This certification is recognized to be equivalent to a Bachelors or Masters degree by the Ministry of Education.

¹⁴ The large estimate of 33% may be attributed to a mistake in the total number of students enrolled in Pakistan (Fair, 2006).

enrollment, the overall picture indicates that a non-trivial fraction of Pakistani youth study in Madrassas.

A key feature of Madrassas is that they generally tend to be free. In a country with a dilapidated public educational system (Winthrop and Graff, 2010), Madrassas may offer a viable alternative for families unable to afford more expensive private schools (Singer, 2001). Therefore, it is believed that it is the poorest families that send their children to Madrassas (Rahman, 2004; New York Times).¹⁵ Related to the potential link between Madrassas and militancy, we note that the existing literature does not substantiate a causal link between low educational attainment/poverty and terrorism (Krueger and Maleckova, 2003; Abadie, 2006; Berrebi, 2007; Krueger, 2007).

II.C Group identity

We seek to investigate how Madrassa students and other groups of Pakistani youth interact with each other. We focus on groups that vary in socioeconomic characteristics, religiosity, exposure to Western ideas, and type of education they receive.

In our set-up, the “group” is the undergraduate institution where the students study. Our focus is therefore on a highly educated segment of the Pakistani population. Overall, in 2008/2009, 8.3% of the males aged 21 and above had attained at least a Bachelor degree in Pakistan. The rate increases to 14.8% among those currently working in an urban area.¹⁶ The groups we consider are endogenous because families and individuals self-select into schools. We consider three main groups: Madrassas, Islamic Universities, and Liberal Universities.

Madrassas and their curricula have been discussed above: students typically come from modest origins, have limited exposure to Western ideas in school, study in Urdu and base their studies on religious texts. Advanced study within the Madrassas produces an Alim (Islamic scholar and/or teacher). Most students who graduate from a Madrassa go on to work in the religious sector.

¹⁵ Sabrina Tavernise, “Pakistan’s Islamic Schools Fill Void, but Fuel Militancy”, May 3, 2009. <http://www.nytimes.com/2009/05/04/world/asia/04schools.html> (accessed September 20, 2012). Andrabi et al. (2006), however, argue against the hypothesis that poverty drives individuals to Madrassas. In their sample, they find little difference between poor and rich households in the choice of religious schooling.

¹⁶ Source: Authors’ computation from the 2008/2009 Pakistan Labor Force Survey.

Islamic Universities provide a Liberal Arts curriculum combined with Islamic teachings and courses. For example, Economics is taught with a focus on Islamic principles of finance. These universities have segregated campuses for males and females, and classes are taught in Arabic or English. These institutions tend to be public and, therefore, are accessible to low and middle income groups. While they have certain admission requirements, they are relatively easier to get accepted into (relative to liberal universities). A relatively large proportion of students at such universities have typically studied for some time at Madrassas before enrolling.

Liberal Universities—the third kind of institution—are similar to American colleges. They teach a Liberal Arts curriculum in English, and have gender-mixed campuses. Since tuition at such institutions tends to be very expensive, they are generally accessible only to individuals from high socioeconomic backgrounds. In addition, these institutions are quite selective and their entry requirements are such that they primarily accept students who graduate from private high schools (which tend to have higher academic standards and which, in most cases, cater to the rich).

These three groups clearly represent three different identities within the Pakistani society. At one end of the spectrum we have young males from poorer backgrounds who attend religious schools that are thought by many outside of (and to some extent inside of) Pakistan to be linked to militancy and extremism. At the other end of the spectrum we have wealthy students exposed to Western-type education. Our measure of group identity is a measure of both religious identity as well as social class.

III. Data

We conducted experiments in two male Sunni Madrassas from the Bareilvi school of thought, two male Sunni Madrassas from the Deobandi school of thought, one Islamic University (IU), and two liberal Universities, all located in Islamabad/Rawalpindi and Lahore between May and October 2010. The Islamabad/Rawalpindi metropolitan area is the third largest in the country with a population of about 4.5 million. Islamabad, the country's current capital, was constructed in 1960 adjacent to Rawalpindi, an older city which houses the army's headquarters. Lahore is the capital of the Punjab province and the country's second largest city with about 10 million inhabitants. While both are vibrant urban centers, the Islamabad/Rawalpindi metropolitan area is located closer to Afghanistan and the tribal areas (see Figure 2), and has greater ethnic diversity

compared to Lahore. However, Punjabis are the dominant ethnic group in both metropolitan areas.

The institutions in our sample are among the five largest and best-regarded institutions in the relevant category in each city. Among all the institutions we contacted, one Liberal University and one Madrassa declined participation. We sampled the most senior students in the four Madrassas since they are similar in age to university students, and are pursuing the Madrassa equivalent of a Bachelor degree. Though participation was voluntary, almost everyone in the Madrassas participated in the study. At the other institutions, a random sample of students was selected to participate based on a listing of students provided by the registrar's office. Average response rate at the universities was about 70%. Overall 1,521 male students participated in the experiments.¹⁷ They also answered a questionnaire asking about demographic characteristics, school choice, and attitudes on social issues. Below we describe our sample and the experimental procedure.

III.A Sample

Table 1 compares the characteristics of the male participants by group (educational affiliation), and compares them to the characteristics of a random sample of male respondents from Islamabad/Rawalpindi and Lahore (*City sample*) obtained from a separate survey we conducted in 2010. On average, student age varies between 20 and 22. Since we find no significant differences among the Madrassas in terms of either their demographic characteristics or their experimental behavior, we combine the four Madrassas into one group to keep the tables and analysis simple (the disaggregated statistics are available from the authors upon request). However, because they differ in their students' characteristics and tuition level (as we show below), we classify the two Liberal Universities (LU) into two separate groups: a Liberal Western-style university (LU-W) and a Liberal modern (LU-M) University. LU-W is more

¹⁷ Female students from the Islamic and Liberal Universities also participated in the experiments. We restrict the analysis in this paper to male students who were matched with other male students in order to focus on group identity, defined by socioeconomic class and religiosity (proxied by institution). The full sample (before excluding female students from IU and LU, and male students from all institutions matched with female students) consists of 2,836 students. The Madrassas we surveyed cater to male students only. Female Madrassas tend to be small. Since large sample sizes are needed for randomization in the experiment, we did not include them in our sample.

selective and liberal than the LU-M, and it caters to a higher socioeconomic segment of the society.

Table 1 shows observed differences among respondents from the four groups, ranked by most-to-least liberal institutional affiliation. Students at more liberal schools have parents with higher income, education, and asset ownership. For example, the average number of years of father's (mother's) schooling is 14 (13) for students from the Liberal Western-style University compared to 7.1 (3.5) years in the Madrassas. Similarly, the monthly parental income in the liberal Western-style University is nearly 10 times the income in the Madrassas. Moreover, the characteristics of students at LU-W and LU-M, the two Liberal Universities, are significantly different from each other in most cases. For example, average parental income for LU-W students is almost twice that of LU-M students.

Self-reported religiosity and the number of prayers per day also vary by group. Students were asked to rate how religious they considered themselves to be on a scale from 0 (not religious at all) to 10 (very religious). The average religiosity is 5.3 in the liberal Western-style University compared to 9.2 in the Madrassas. The former also pray much less frequently every day (1.5 as compared with 4.9 times per day).

Finally, students differ in their exposure to information and media, as well as in peer group characteristics. Just 23% of the Madrassa students report watching BBC and CNN, compared with 60% of the students of the other groups. In addition, while fathers of only 4% of students attending LU-W spent more than two years studying in a Madrassa either on a part-time or full-time basis, the corresponding proportion for Madrassa students is 21%. Similarly, about 6% of the LU-W students have at least a sibling or a friend who spent more than two years in a Madrassa either part- or full-time, compared with nearly a quarter of students at LU-M and IU.¹⁸ This also suggests that the various groups in our setting do interact with and have exposure to each other at some level.

Institutional sorting based on socioeconomic and other characteristics is stark but unsurprising given Pakistan's divided history. As we move from left-most LU-W (column 1) toward Madrassas (column 4) in Table 1, the average socioeconomic characteristics deteriorate

¹⁸ Because of sensitivity concerns, the set of background questions asked in Madrassas was a subset of that asked at other institutions. This information was collected after the experiments had been completed.

(for example, parental income and education decrease). At the same time, extent of religiosity increases. If we compare the students to the City sample (column 5), we see that Madrassa students seem to hail from humbler backgrounds than do those from the general population in the cities, and that all other institutions fare better in terms of most indicators of wealth. This is consistent with the hypothesis mentioned above that poverty may drive families to send their children to Madrassas.

The last row of the table also shows that a non-trivial proportion of respondents (14-34%) in each setting have an acquaintance who died or was injured as a result of the violence in Pakistan. This shows again, as pointed out in Section II.A, that violence is widespread and has affected a large proportion of the general public.

III.B Perception of Madrassas

While the Madrassa-militancy link has been widely discussed in the popular press and remains controversial (see section II.B above), an important question pertains to how the Pakistani public views this linkage. Because this is relevant to the interpretation of our findings, we report the responses of some survey questions administered to the IU and City samples that were designed to shed light on this.

Columns (1) and (3) of Table 2 report the mean responses for respondents at IU and City. The two groups have different exposure to Madrassas, as nearly half of the students at IU report having studied in a religious institution either part-time or full-time in the past, compared to only 9% of the City sample. While these numbers may seem high, they reflect a culture in South Asian countries whereby even affluent families send their children (either full-time or part-time) to religious institutions (which could be Madrassas or schools run in mosques) to learn to properly recite or memorize the Qu'ran (Billquist and Colbert, 2006).

In order to evaluate respondents' perceptions of the influence of Madrassas in the society, we first asked them to guess the percentage of 18-year old males currently enrolled in registered Madrassas. Consistent with inflated estimates in the press about Madrassa enrollment (Andrabi et al., 2006), our respondents tend to over-predict the number of students enrolled in Madrassas

with estimates ranging from 38% for IU to 26% for the city sample.¹⁹ This suggests that they see Madrassas as providing education to, and therefore influencing, a large proportion of the population.

We also asked respondents to rank a list of seven possible causes for extremism and violence in Pakistan (7 denoting the most important).²⁰ The mean rating assigned to religious institutions is 3.1 for IU students, and 5.7 for the City sample. Religious institutions are perceived to be the least important cause of extremism by IU students, but the most important source by City respondents. Since IU students have stronger exposure to Madrassas (see Table 1), their relatively positive view of Madrassas is not surprising. Even so, it should be noted that both groups perceive religious institutions to be playing some role in fostering extremism.

A third question asked respondents to assign a percent chance that each of the four entities (US and Western countries; Radical Islamic organizations; Afghanistani government; Indian government) were responsible for violence against civilians in Pakistan in recent times. Both groups assigned to “radical Islamic organizations” the lowest chance of being responsible for such acts. However, the mean likelihood assigned to religious organizations is still very different from zero: 45% for IU students and 34% for the City respondents.

Exposure to religious institutions could affect how respondents perceive Madrassas. Columns (2) and (4) of the table report the corresponding mean responses for the IU and City respondents who ever attended a Madrassa. We do not find that to be the case—their responses are statistically similar to their counterparts who have never been exposed to religious institutions.

Finally, both IU and City respondents overwhelmingly favor the government’s plan to reform Madrassas, which, among other things, requires them to register and teach secular subjects such as math and science. This sentiment is similar to that found in Fair, Ramsay, and Kull (2008), where two-thirds of their sample reportedly supports Madrassa reform.

¹⁹ Note that our survey question asks about the enrollment proportion of 18-year old male students, which could be different from the proportion of enrolled students of all ages.

²⁰ This question is a variant of question MQ. 28 in the 2005 17-Nation Pew Global Attitudes Survey.

We interpret these statistical findings to imply that the general public views Madrassas as playing a large role in educating the youth, as being somewhat complicit in militancy and extremism, and that reforming them would be positive for society.

III.C Experimental design

We now present the details of the experiments that we run to understand how the groups interact with each other.

Procedure: The experiments were conducted in sessions of 50-100 students in a classroom of the student's institution. The rooms were large enough to ensure respondent anonymity. The instructions were given to each participant, read out aloud by the experimenters and projected on a retro-projector.²¹ Respondents played the games on a paper questionnaire and were matched with an actual partner ex-post, so they did not learn the actual identity or action of their partner while playing the game. The questionnaire was administered in Urdu at all places except the Western-style liberal University where it was conducted in English, since students there are more used to reading and writing in English.²² Moreover, the questionnaires were identical across all the institutions up to the section leading into the experiments.

Games: Students were asked to play the following games:

- *Trust game:* Player A (the sender) is given a fixed amount of money (Rs. 300) and decides whether to keep it or give it to Player B (the receiver), i.e. to invest it. If given to Player B, the experimenter triples that amount and gives it to Player B who is asked to choose whether to transfer any money back to player A (which can be any amount between zero and Rs. 900). This is a binary version of the “trust game” introduced by Berg, Dickhaut, and McCabe (1995)—it is binary in the sense that player A can choose to send either nothing or the entire amount. The efficient outcome is for A to invest the money by transferring it to player B, while the subgame perfect equilibrium is to keep the money. Lack of trust toward the partner may lead to inefficiencies. In our setting, all

²¹ Full instructions are available from the authors upon request.

²² The translation was supervised by Basit Zafar (co-author) who speaks both English and Urdu fluently, to ensure that nothing was lost in translation.

respondents first played the role of Player A and then the role of a Player B, who received the money. When put in the role of Player B, we use the strategy method and ask the respondent to report the amount he would like to send back conditional on Player A deciding to invest.

- *Dictator game*: This is a one-stage game in which Player A (the sender) divides a fixed amount of money (Rs 400) between himself and Player B (the receiver). Player B does not make any decision. Again, respondents play first in the role of Player A and then in the role of Player B (in which case there is no decision to make).
- *Expectations*: For both the trust and dictator games, respondents were asked to guess (i) the average amount that students from their own institution chose to give to their partners, and (ii) vice versa, the average amount that students from the partner's institution chose to give to their match in the respondent's institution.²³ Note that when students are asked to provide their expectations, they are asked about the average payoffs for an identical pair of partners (see the exact instructions in the Appendix). Expectations were elicited after the respondent had played the two games.

Treatment: The treatment in this experiment is the randomization of institution of the pair of players.²⁴ Each student was randomly matched with *one* of the following partners: a male Madrassa student, a male student from a Liberal University, or a male student from an Islamic University. Students from the Liberal Modern (Western-style respectively) university who were selected to be matched with a student from a Liberal University were informed that they were matched with a student from their *own* university. All other students who were selected to be matched with a student from a Liberal University were informed that they were matched with a student from the Liberal Western-style University. The description of the match (with the *exact*

²³ While we want to measure the respondent's expectation of the amount his partner sends back, we ask the respondent to guess the average amount sent back by all students from the partner's institution (who are matched with students in the respondent's institution). This is because, asking the respondent for his expectation of the amount sent back by his partner, may prompt the respondent to report expectations that rationalize his own investment decision in the trust game. We believe our approach mitigates this concern of ex-post rationalization, and is hence superior.

²⁴ We also randomized the gender of the partner. We focus here on pairings of male subjects. We discuss results by gender in Delavande and Zafar (2011).

name of the match’s educational institution) was already printed on the paper questionnaire received by each participant, so students were not aware that other participants in their session were possibly matched with partners of different educational institutions. Each student was informed that they would play all the games with the same partner. Students were given a short description of the institution they were matched with but since the selected institutions are among the most well-known institutions, most students would have some prior knowledge of them. In terms of implementation, the pairing was carried out with replacement (i.e., multiple students could have been matched with the same partner), and the match was one-way, i.e., the partner with whom the student was matched may or may not have been matched with the same student. Table 3 presents the sample sizes for each institution, and for the various matches.²⁵ Because we use a one-way match, the sum in a given row does not match the sum in the corresponding column; for example, while there are a total of 270 IU students in our sample, 425 students were matched with an IU student.

Payoffs: Respondents received financial compensation for their participation in the survey and the games. Each received a show-up fee of Rs. 200 given on the day of the session. Some tasks were then randomly chosen for determining the additional payoffs. One of the four roles (sender or receiver in the trust game, sender or receiver in the dictator game) was randomly selected for compensation, along with one of the four expectations questions (Rs. 50 if the respondent correctly identified the interval where the actual average lies). Before making their decisions, students were (repeatedly) informed that they would receive compensation for only *one* of the four roles, chosen at random.²⁶ This ensures that respondents treat each task independently, and don’t hedge in their choices across tasks. Once the sessions were completed, we randomly matched students with a particular male partner from the institution indicated in their

²⁵ Students at Madrassas who were assigned a “Male Madrassa treatment” were matched either with a student at their own Madrassa or a different Madrassa (but one that belonged to the same school of thought). Because we do not find any systematic differences between the two in our analysis, the two groups are combined. Since it combines two treatments, more Madrassa students are matched with Madrassa students than with LU and IU students in Table 3.

²⁶ Upon completion of the experiments and survey, a 4-sided dice was rolled for each student and they were informed about the task they would receive compensation for.

questionnaire and determined the payoffs. Starting about one week after the completion of the experiment, subjects could pick up their compensation in sealed envelopes. Respondents earned an average of Rs. 600 from the games. The overall average compensation of Rs. 800 corresponds to about USD 10. The 2009 per capita GNI at purchasing power parity in Pakistan was \$2,710, compared to \$46,730 in the US. This means the average compensation of USD 10 corresponds to 0.4% of the GNI per capita. The US equivalent would be approximately USD 170. Therefore, the stakes involved in the experiments were substantial.

IV. Experiment results

We now discuss the results of our experiments. We postpone the discussion on the mechanisms behind the results to later sections. To better understand interactions between the different groups, we address five main questions.

Question 1: Does investment behavior in the trust game vary by group (i.e., institution type)?

We begin by investigating whether investment behavior varies systematically by group. The first column of Table 4 shows the overall proportion of senders who chose to send the Rs. 300 in the trust game. A few notable patterns stand out. First, respondents are quite trusting on average, with 74.6% of students sending the Rs. 300. This is in the higher range of what respondents have been found to send in the few studies that use a version of the binary trust game, where the investment rate varies from 32% (Bohnet and Huck, 2004) to 91% (Engle-Wornick and Slonim, 2004).²⁷ Second, there is heterogeneity of investment behavior by group, with Madrassa students being most likely to invest. For example, 80% of the Madrassa students chose to send the money compared to 61% of IU students. When comparing the four groups, we can reject equality of the means using an F-test, and the hypothesis that all samples are drawn from the same distribution

²⁷ One needs to be cautious in making any comparisons with the few studies that employ a binary trust game, since small modifications in the design (such as stake size, stake increase in the investment game—in our case three times, specifics of the match that the respondent is informed about, sample characteristics) can result in large differences. The continuous trust game has been employed by more studies. Players A (trustors) send about 50% of their endowment in such games in developed as well as developing countries (Camerer, 2003; Cardenas and Carpenter, 2008).

using a Kruskal-Wallis test (tests presented in the last two rows of Table 4).²⁸ When conducting pairwise t-tests, we find that the mean investment rate of the Madrassa students is statistically significantly different from that of the other groups, except for LU-M.

It is also of interest to evaluate whether group membership solely leads to the distinctive behavior, or whether observable characteristics partly explain this difference. We investigate this in columns (1)-(3) of Appendix Table A1, which reports the marginal effects of a probit regression of the decision to send money in the trust game on observables as well as institution dummies. We find that observable characteristics, such as measures of socioeconomic background (parental wealth, parents' income, parents' education), age, risk preference and self-reported religiosity have little power in explaining the decision to invest in the trust game (column 1), while column 2 shows that attending a Madrassa (and attending LU-M) is associated with a higher probability of sending money in the trust game (coefficient statistically significant at 1%). Moreover, the coefficient on the Madrassa and LU-M dummies stays statistically significant even after controlling for observables (column 3), suggesting that sorting on observables into these institutions cannot explain the differential behavior across groups.

We summarize these results below:

RESULT 1: Investment behavior in the trust game varies by group, with Madrassa students being more likely to invest. Differences in observable characteristics do not explain the differential behavior across groups.

Question 2: Do students exhibit in-group bias and is there differential treatment (discrimination) in terms of investment against a particular group?

As pointed out earlier, a large body of literature suggests that individuals tend to favor members of their own group, though other work finds that there is out-group favoritism from lower status groups when groups are unequal. We now investigate whether there is in-group or out-group bias, or systematic discrimination in favor of or against a particular group in our data. For each

²⁸ Note that this result is not driven by the larger sample size of pairs of Madrassa students matched with other Madrassa students (see footnote 19) as we obtain similar results if we look at the investment behavior for a given partner. For example, among subjects matched with students from the IU, we see that 63% (80%) of the IU (Madrassa) students decided to invest. We discuss these results below.

group, Columns (2)-(4) of Table 4 show the proportion of respondents who sent the Rs. 300 in the trust game conditional on the group they are matched with. Within each group (i.e., each row institution), we do not reject the hypothesis that the proportion of respondents who invest does not vary by the matched group (as indicated by the F-test for equality of proportions within group, and Kruskal-Wallis that tests whether the data come from the same distribution in columns 5 and 6, respectively). This suggests that there is no systematic discrimination against a particular group in any group's investment decision. In addition, we conduct two sets of pairwise hypothesis tests between having a match from one's own institution type versus another institution type (Wilcoxon rank-sum, and t-test). The table does not report the p-values for these tests, but simply denotes their significance either with an asterisk or a plus symbol. We see that none of the pairwise tests are statistically significant at levels of significance of 10% or lower (with the exception of the amount sent by LU-M students to IU students versus students at their own institution). This indicates that students do not invest more extensively when interacting with a partner from their own group.²⁹

Table 1 shows that at all institutions, a non-negligible proportion of students' parents or siblings attended a Madrassa. These students may have a systematically different perception of Madrassa students. To investigate this, we replicated Table 4 excluding respondents who had no relatives who had attended a Madrassa and found similar patterns (table not shown).

We summarize this result below:

RESULT 2: There is no evidence of in-group bias or of differential treatment to any particular group.

When playing the trust game, there are several dimensions of preferences and beliefs that may motivate a subject to "invest", i.e., to send money to the matched partner:

- (i) unconditional other-regarding preferences such as altruism (Andreoni and Miller, 2002), warm glow (Andreoni, 1990), inequity-aversion (Fehr and Schmidt, 1999; Bolton and Ockenfeld, 2000) or maximin preferences (Charness and Rabin, 2002),

²⁹ These results also hold if we control for respondents' observables in within-institution regressions with match dummies.

- (ii) beliefs about trustworthiness of the partner (Dufwenberg and Gneezy, 2000; Cox, 2004; Ashraf, Bohnet, and Piankov, 2006), and
- (iii) risk preferences (Karlan, 2005; Schecter, 2007).

Results from the trust game do not allow identification of the relative roles of those dimensions (Cox, 2004). While Result 2 emphasizes a homogenous investment behavior toward the various groups, such a result could still be consistent with different levels of trust and of unconditional other-regarding behavior toward certain groups.³⁰ For example, Madrassa students may invest similarly in IU students and Liberal University students because they do not trust IU students but are altruistic toward them while they trust Liberal University students but do not exhibit altruism toward them.

Our multiple-game experimental design allows us to separately measure unconditional other-regarding behavior and expected trustworthiness. In the dictator game, the only motive for sending money to the partner is unconditional other-regarding behavior. We can thus learn more about other-regarding behavior by analyzing how students played that game. In addition, the elicitation of expected average amount sent back by each group to students from their own institution gives us a measure of expected trustworthiness or stereotype toward each group. This is developed in the two following questions.

Question 3: Is there taste-based discrimination against a group?

Table 5 shows the average amount sent in the dictator game for all pairs of partners. As shown in the first column, on average, students sent Rs. 171 (42.7% of the total amount) to their partner and only 6.7% did not send anything at all. This is a very high level of unconditional other-regarding behavior when compared to the standard of dictators typically sending between 20% and 30% of their endowment in both developed as well as developing countries (Camerer, 2003; Cardenas and Carpenter, 2008). The last three columns of the table show that the amount sent by LU-W and Madrassa students varies by the matched group. Within Liberal Universities and

³⁰ Since students were randomly assigned a treatment (i.e., match type), differences in risk preferences cannot explain any of the results since there is no reason to believe that risk preferences would change by match type. Therefore, we do not focus on this explanation when decomposing behavior in the trust game. However, we do have qualitative measures of risk preferences from the respondents, and they in fact are similar within each treatment conditional on the student's institution.

Madrassas, there is some evidence that students tend to give slightly less to their own group compared to IU students (as indicated by the pairwise t-test and the Wilcoxon rank-sum test, denoted by stars on the mean and median, respectively; the table does not report those p-values).³¹ One difference in behavior is noticeable: Madrassa students give on average more than any other group and are less likely to give nothing. We also investigate the predictive power of observable characteristics at explaining the amount sent in the dictator game in columns (4)-(6) of Appendix Table A1. Again, we find that the higher unconditional other-regarding behavior of Madrassa students (and lower other-regarding behavior of IU students) is not explained by differences in observable characteristics.³²

We summarize this in the following result:

RESULT 3: Within each group (institution type), there is no taste-based discrimination against any out-group. Madrassa students exhibit stronger unconditional other-regarding behavior than any other group.

Question 4: Is there systematic difference in expected trustworthiness (stereotype) for a particular group?

Table 6 and Figure 3 show the expectations reported by individuals regarding the average amount expected back from the matched group, i.e., it reveals expected trustworthiness (or stereotype). Note that respondents choose an interval for the average and do not report a point estimate for the exact average. The mean and median amounts presented in Table 6 are those obtained by allocating the middle of the chosen interval as expected average. To conduct hypothesis testing on various quantiles of the distribution of expectations, we also present in

³¹However, for all groups, we do not reject equality of distribution based on the pairwise Kolmogorov-Smirnov test when comparing own group versus other groups (as indicated by the absence of any stars that denote significance on the sample sizes).

³² Note that we cannot disentangle the exact mechanisms leading to each group's unconditional other-regarding behavior. As mentioned above, unconditional other-regarding behavior may be prompted by altruism, warm glow, inequity-aversion, or maximin preferences. For example, it could be that an average LU student has distaste (low altruism) toward Madrassa students (relative to tastes toward students at other institutions), but is very averse to income inequality. This could lead to similar average behavior in the dictator game toward different groups since Madrassa students tend to be from less affluent backgrounds.

Table 6 the proportion of respondents who expect to receive more than Rs. 200, more than Rs. 300, and more than Rs. 400 from the match. Three points from this table and Figure 3 are of note. First, Madrassa students most expect other groups to be trustworthy. Column (1) of Table 6 shows that Madrassa students expect back Rs 405 on average while all other institutions expect less than Rs 370, with the differences being statistically significant (see test for equality of means, medians, and distributions of the four groups presented at the bottom of Table 6). Combined with the fact that Madrassa students exhibit the strongest other-regarding behavior, this helps explain why they are more likely to invest in the trust game. Second, students from LU-M and Madrassas expect all groups to be equally trustworthy (none of the P-values of the tests for equality of means, medians and distributions of the three matches presented in the last three columns of Table 6 are less than 5%). Finally, students from LU-W and IU expect different levels of trustworthiness across the various groups, as is also apparent in Figure 3. LU-W students believe IU students to be the most trustworthy and Madrassa students to be the least trustworthy. For example, more than half of the LU-W students expect IU students to send back more than Rs. 400 compared to less than a quarter who expect Madrassa students to send more than Rs. 400. This difference is statistically significant as shown on the test based on the imputed expectations and on the proportion of respondents who expect to receive more than Rs 400 (P-value less than 5% in the last three columns of Table 6). In contrast, IU students expect Liberal University students to be the least trustworthy. We summarize the results from Table 6 and Figure 3 as follows:

RESULT 4: There is no systematic difference about perceived trustworthiness of other groups for LU-M and Madrassa students. Compared to other groups, Madrassa students most expect others to be trustworthy. LU-W students expect Madrassa students to be the least trustworthy.

Madrassa students are the most trusting, they also exhibit the strongest unconditional other-regarding behavior and they expect to receive back the most from the match in the trust game. Similarly, LU-M students, who are second-most likely to invest, have the second highest levels of other-regarding behavior and expectations of return. This would imply that trusting behavior is related to *both* unconditional other-regarding behavior as well as expectations of return. We return to this point in section VI.

Question 5: Are the stereotypes correct?

We now compare the expected amount sent to the actual amount sent in Table 7. We show the proportion of students who expected more than Rs. 300 from a given group and the proportion of students from that group who actually sent more than Rs. 300. In addition, we also show the proportion of students who had “accurate” expectations, i.e. chose the interval that contained the actual average, and the proportion of students who under-estimated the amount sent, i.e., chose an interval whose upper-bound was below the actual average.

Several interesting findings stand out. First, Liberal University (LU-W and LU-M) students have inaccurate expectations about Madrassa students. While 81% of the Madrassa students sent more than Rs. 300 to Liberal University students, only 52% of LU-W and 69% of LU-M students expected to receive more than this amount of money. The differences between actual proportions that sent and expected proportions are statistically significant at 5% (as indicated by the P-value in the third row of each panel in Table 7). Moreover, a large proportion of respondents from Liberal Universities under-estimated what Madrassa students would send back (76% of the LU-W and 54% of the LU-M students). Note that this result is not driven solely by the fact that Madrassa students actually send back the most amount relative to other groups (last row in each panel in Table 7), but also by the fact that Liberal Universities’ students expect Madrassa students to be the least trustworthy (Table 6). Second, Madrassa students expected more from Liberal University students than what they actually received from them: only 13% of the Madrassa students had accurate expectations while 64% over-estimated the amount they would receive. On the contrary, IU students tended to expect less from Liberal University students than what they actually sent (the t-test for equality of proportion of students who expect more than Rs. 300 and the proportion who actually sent more than Rs. 300 is statistically significant at 10%).

These differences, however, do not seem to be large enough to generate differences in investment behavior in the trust game (see Result 2), possibly because of the binary nature of the decision.

RESULT 5: *There is incorrect stereotyping. Liberal University students systematically underestimate the trustworthiness of Madrassa students, while Madrassa students systematically overestimate the trustworthiness of Liberal University students.*

V. Why do Madrassa Students Behave Differently?

We find that Madrassa students behave systematically differently from other groups: They trust the most, exhibit the strongest other-regarding behavior, and have highest expectations of others' trustworthiness. Unless there is positive selection into Madrassa—i.e., students enrolling in Madrassas are more trusting and pro-social to start out with than the levels that we observe (something that is unlikely given the high levels of trust and other-regarding behavior we find)—this would suggest that Madrassas are not teaching hatred and distrust, but are on the contrary promoting trust and pro-social behavior towards other members of the Pakistani society. We seek to investigate this in more detail in this section. In particular, we investigate whether the difference in behavior of the Madrassa students is due to characteristics that lead students to attend Madrassas (selection) versus exposure to Madrassa teachings and environment.

One potential explanation for the difference in behavior across groups could be systematic difference in preferences. In particular, lower risk-aversion could explain why Madrassa students are more likely to invest in the trust game. This lower risk aversion could be due to either selection or Madrassa attendance. However, Table 1 reveals that Madrassa students are on the contrary more risk-averse on average than any of the other groups.

We next investigate the role of socioeconomic status. We have seen that Madrassa students hail from humbler backgrounds (Table 1), so their different social origin could possibly explain their trusting behavior. However, in the U.S context, Alesina and La Ferrara (2002) find on the contrary that high-income groups tend to trust more. Using data from the 2000 World Value Survey, we also find that in Pakistan, higher income groups exhibit higher levels of trust, as measured by the proportion of people who state that “most people can be trusted these days” when asked “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” (Panel A in Appendix Table A2). Among the educated groups we consider, socioeconomic status does not have predictive power in the

decision to invest in the trust game (see Appendix Table A1). So the difference in socioeconomic status is unlikely to be the main driver of differences in behavior.

Another possibility is differences in levels of religiosity. This would be an issue in the interpretation of our results if Madrassa students had higher pre-existing levels of religiosity before enrolling into a Madrassa. Existing evidence suggests that religious rituals promote prosocial behavior (Iannacone, 1998; Ruffle and Sossis, 2007, Clingingsmith, Khwaja and Kremer, 2009), though the evidence on the relationship between religiosity and trust and trustworthiness is mixed (Welch et al., 2004; Tan and Vogel, 2008; Daniels and von der Ruhr, 2010; Putnam and Campbell, 2010). Religiosity alone, however, cannot explain the patterns that we observe across the institutions. Note that IU students rank second in terms of their average religiosity and adherence to religious practices, but are less likely to trust (Table 4) and to exhibit other-regarding behavior (Table 5) than Liberal University students. Moreover, when we exclude the Madrassa students, we do not find any statistically significant relationship between religiosity and behavior in the games (table not shown). Finally, using data from Pakistan from the 2000 World Values Survey, we find a non-monotonic relationship between religious attendances and trust (see Panel B in Appendix Table A2). So religiosity is also unlikely to be the main driver of differences in behavior.

Overall, it seems unlikely that selection into Madrassas by observable characteristics explains the trusting behavior of the Madrassa students. We now investigate the possibility that selection into Madrassa by *unobservable* characteristics explains our results. For this, we conduct the following thought experiment within the pool of Madrassa students: In another part of the survey, respondents were asked which type of institutions they would attend if they were admitted to all institutions types and all expenses would be covered. Eleven percent of the Madrassa students stated that they would choose to attend a non-Madrassa institution under those conditions (i.e., would “switch”). We can think of these students as not selecting into Madrassas on the basis of unobservable characteristics since they would have attended another institution without budget or qualification requirements constraints. That is, the difference in behavior between these students and those who would attend a Madrassa regardless should identify the extent to which selection into Madrassas drives our results. We find that this group of students behaves similarly to students who would have chosen a Madrassa anyway: the proportion of students who invest in the trust game is respectively 80.1% and 80.2% and the difference is not

statistically significant. This indicates that the higher trusting behavior of Madrassa students is not a result of selection (on observables or unobservables) into Madrassas. This result holds even if we control for parental income, level of risk aversion and a city dummy (first column of Table 8).³³

We next investigate how Madrassa attendance influences the amount sent in the dictator game. We also find that Madrassa students who would switch to another school give similarly as other Madrassa students (second column of Table 8). Finally, we evaluate whether Madrassa attendance influences expected trustworthiness as measured by the average amount expected back in the trust game. We also find that Madrassa students who would switch to another non-Madrassa school have expectations similar to those of other Madrassa students (third column of Table 8).

This provides suggestive evidence that Madrassas do not inhibit trust, and that the differential behavior we identify in our data is not driven solely by selection into Madrassas. In particular, we fail to find evidence of Madrassas playing a negative role by promoting distrust and anti-social preferences. So what exactly is it about attending Madrassas that may lead their students to be more trusting and selfless? Given that Madrassas are closed institutions, one may argue that because their students have limited interactions with other society members, different aspects of their behavior are not fully formed yet and that, in that regard, their behaviors may be similar to those of children and teenagers. Existing research on behavior of children in experiments similar to ours shows that they are less trusting than adults and that younger children are not more trusting than older ones (Harbaugh et al., 2002), and that altruistic behavior in the dictator game is weakly increasing with age (Benenson, Pascoe, and Radmore, 2007). It is therefore unlikely that something about the Madrassa lifestyle drives our results. However, one possible channel that may lead to our results is the nature of Madrassa teachings. Since religious teachings in general promote selflessness, and studying certain secular subjects is associated with different behavior with regards to cooperation and generosity (Carter and Irons, 1991; Frank,

³³ As another piece of evidence, we investigate the effect of spending more years at a Madrassa and find that more years at a Madrassa is associated with a higher probability to invest in the trust game. This result bears the caveat that the variable “years spent at a Madrassa” is not exogenous.

Gilovich, and Regan, 1993)³⁴, the emphasis of Madrassas on religious teachings and their neglect of secular subjects may be one reason for our findings of high trust and high levels of pro-social behavior of Madrasa students.

VI. Potential Confounding Factors

In this section, we discuss a list of factors that could influence our findings, and argue that they can be ruled out as possible explanations for our results.

Understanding the game

Given that most students in our sample had never taken a survey, let alone participated in an experimental game, the possibility of students not being able to comprehend experimental instructions has to be considered. When designing the questionnaire, we made a conscious effort to keep the instructions as simple as possible. It was precisely for this reason that we chose the dictator and trust game to measure discrimination, and not a public good game.³⁵ The instructions for the games were read out line by line, and projected on a screen. Students were allowed to ask any clarifying questions by raising their hands. Finally, the decisions involved in both the dictator and trust game really are very simple.

To highlight the point that students did not randomly make decisions in the experiments, we undertake a set of naïve probit regressions, where we regress an indicator of whether the student sent money in the trust game to his match on both 1) the amount he sent to the match in the dictator game (a measure of unconditional other-regarding preferences) and 2) beliefs about the match's trustworthiness.³⁶ The marginal effects of these regressions are reported in column (a) of Table 9 for each institution panel. All the estimates are of the expected sign (positive), and

³⁴ These papers find that students in fields such as Economics are less trusting, less cooperative, and more selfish. However, it seems that this relationship is driven primarily by selection into fields (Frey and Meier, 2005).

³⁵ For example, Castillo and Petrie (2010) use a public good game to measure discrimination in the lab. Another reason why we could not use a public game setup, aside from being harder to comprehend, was that it would have been challenging to give feedback (for example, about others' contributions) to participants in real time using paper surveys.

³⁶ These regressions are *naïve* in the sense that the unobservable term in this regression could be correlated with the amount sent in the dictator game, i.e., the explanatory variable "dictator split" may be endogenous, and therefore the estimates may be biased. Since the purpose of this set of regressions is primarily illustrative, we do not instrument this explanatory variable.

statistically significant (except for the coefficient on trustworthiness for LU-W). This result is similar to that of Ashraf et al. (2006), who also find that trust is related to both expectations of return and unconditional kindness. In columns (b) of this Table, we show the marginal effects of being matched with IU and Madrassa students, with the excluded category being the Liberal University match. These estimates are overall not very precisely estimated, indicating that there is little statistical difference in trust game behavior by match type within an institution (something that is also reflected in Table 4). In columns (c) of Table 9, we include this set of dummies along with the dictator game behavior and trustworthiness expectations as explanatory variables. The results show that, as in columns (a), the dictator game behavior and trustworthiness expectations are significant determinants of the trust game behavior. The institution match dummies become less precisely estimated than in column (b). This suggests that students' actions in the trust game are consistent with their preferences (amount sent in the dictator game) and trustworthiness expectations.

Theory suggests that respondents send weakly larger amounts back in the trust game than they do in the dictator game because of the added concern of reciprocity (Cox, 2004). Column 1 of Table 10 shows the summary statistics of amount sent in the dictator game by institution. Column 4 shows the corresponding statistics for the amount sent back in the trust game (out of Rs. 900 but scaled down to Rs. 400). Abstracting from effects of stake size, this is consistent with theory.³⁷ The null hypothesis that the distributions of amount sent in the dictator game and the rescaled (from Rs. 900 to Rs. 400) amount sent back in the trust game are the same is rejected for each of the institutions.

It is also interesting to note that the findings in the trust game match up fairly well with the self-reported response to the question “*Generally speaking, on a scale from 0 to 10 would you say that most people can be trusted?*”, where zero means “all people cannot be trusted” and 10 “all people can be trusted.” This question is a variant of the question asked in the General Social Survey (see Glaeser et al., 2000, for a discussion on this). As shown in Table 1, the mean

³⁷ Stake size has been found not to matter for amount sent in dictator games (Forsythe et al., 1994; Carpenter, Verhoogen, and Burks, 2005) or for amount sent back in the trust game (Johansson-Stenman, Mahmud, and Martinsson, 2005).

response to this question is highest for Madrassa students (5.1) followed by LU-M students (4.8), who are second-most likely to send money in the trust game (Table 4).

All of this provides strong suggestive evidence that respondents understood the setup of the games.

Anonymity and Stakes

Experimental payoffs for each student had to be computed by matching a student with another student belonging to the designated matched institution, and taking into account the choices of both students in the match pair. While students knew the institution of the student they were matched with, they were never told who they were matched with.³⁸ Also during the administration of the experimental component of the survey, all enumerators were pulled aside and there was ample space between students so that respondents did not feel that their responses were being observed by anyone else. Our survey administration method is therefore equivalent to an anonymous questionnaire.

As mentioned earlier, our experiments involved fairly high stakes. Students earned Rs. 600 (USD 7) on average from the experiments. Rescaling the stakes using per capita GNI numbers at PPP, this corresponds to about USD 120 in the US. Therefore, the stakes involved in the experiments were considerable. This is particularly true for the low-income students in our sample, who predominantly belong to Madrassas and who are found to exhibit the strongest trust and other-regarding behavior. Therefore, our results cannot be attributed to the stakes being low.

Credibility

Nearly all the students in our sample had never been exposed to incentivized experimental tasks. Moreover, as mentioned above, payoffs for the games were made at least one week after the student had taken the survey. Both of these factors may lead subjects to believe

³⁸ Payoffs were only made available to students starting one week after the completion of the survey. Therefore, we needed some way to link students to the questionnaire, while at the same time keeping their identity confidential. In order to achieve this, each student was given a ten rupee bill (that was initially stapled to their questionnaire) and was asked to enter the serial number of the bill on the questionnaire. The computed subject payoffs for each student were then put in sealed envelopes with the corresponding serial number on them. Students simply had to return their ten rupee bill one week later when they came to collect their payoff.

that payments may not actually be made, and they might not find the offer of monetary incentives credible. While it is not possible to rule out this factor, we worked with the administrations of the participating institutions to convey the seriousness of the incentives. Our field teams always included students and faculty members of the participating institutions. Moreover, participants were informed that the experimental payoffs would be available for pickup from the Registrar's Office in sealed envelopes. Finally, participants received an instantaneous show-up fee of Rs. 200 for completing the questionnaire. These measures should have confirmed the legitimacy of the undertaking from the student's perspective.

The show-up rate (to pick up compensation) varied between 69% and 100% at the participating institutions.³⁹ One could argue that respondents who did not claim their compensation may never have intended to do so, and therefore did not play the games the way they would have if they had intended to collect their compensation. We do not find this to be the case—our results are very similar if we exclude this set of respondents (results available from the authors upon request).

A related point is the possibility that students may not have found the matching and randomization procedure credible. Based on how the study was setup, we do not believe that to be the case. Moreover, in Delavande and Zafar (2012), using gender variation in matches, we find significant evidence of (taste-based) discrimination toward certain female students by Madrassa students.

Finally, one may be concerned that the match characteristic (institution of matched student) is not salient enough in our design, and hence the finding that behavior does not vary by match type. The names of institutions printed on the questionnaire are well-known so that is unlikely to be the case.⁴⁰ The match characteristics in our setup were at least as salient as in other

³⁹ The claim rate does not include those respondents who showed up to receive compensation and had either misplaced their Rs. 10 notes, or had no record of their bill serial numbers.

⁴⁰ In another part of the questionnaire, respondents were asked to report average earnings of students aged 30 who had graduated from each of those institutions. All groups report large difference in wages, with highest wages for LU graduates, followed by IU and then by Madrassa graduates, suggesting that those institutions were indeed salient.

studies that use real world groups, such as Fershtman and Gneezy (2001) and Falk and Zehnder (2007); both of these studies find differential behavior by match type.⁴¹

Binary nature of the trust game

One possible reason for the lack of an effect of group membership may be that the binary nature of the trust game prevents us from identifying effects that we would find with a continuous trust game. However, this is unlikely to be the case because (i) we do find differences by institutions in the binary decision to invest the money in the trust game, and (ii) we also do not find a group membership effect in the dictator game where the decision is not binary.

VII. Discussion

Using experiments of economic decision-making (that measure trust and unconditional other-regarding behavior), we investigated how Madrassa students in Pakistan interact with other groups of male youth of very different religiosity, socioeconomic background and exposure to Western ideas. Our first finding is that, in this context, Madrassa students are the most trusting, exhibit the highest other-regarding behavior, and expect others to be the most trustworthy. We provide evidence that this distinct behavior is not driven entirely by selection, and that Madrassas do not inhibit inter-group trust among their students, at least toward other segments of the Pakistani society. It is important to note that the four Madrassas we surveyed are mainstream, and in urban centers. Since most Madrassas are similar to the ones that participated in the study and most prominent Madrassas are located in urban centers (and Madrassas across the country—including rural areas—tend to be affiliated with such Madrassas), our findings would extend to the vast majority of those institutions in Pakistan. Moreover, we believe that when evaluating Madrassas as an institution and determining their general role in shaping their students' behavior, it is the mainstream Madrassas that should be studied; fringe Madrassas are, by definition,

⁴¹ We keep the games anonymous and conceal identities of the players from each other because (1) this is the standard approach used in comparable studies, and (2) this approach allows us (the experimenters) control over the environment. Varying social distance (identification) has been shown to change behavior in games (Hoffman, McCabe, and Smith, 1996; Bohnet and Frey, 1999). Since we are interested in differences in behavior by match type, and we use the same design across matches, this feature of our design cannot explain our results.

outliers and not representative of the institution. In addition, it is hard to know in practice which Madrassas are radical, and even harder to interview their students.

Though we cannot directly extend our conclusions to the role of Madrassas at grade-school or high-school levels, our findings from this group of college-level students—most of whom have spent earlier years in Madrassas too, and in most instances in the same Madrassa where they are pursuing college-level studies—are informative about the general role of Madrassas as an institution. Given that trust and other-regarding behavior are negatively correlated with violence and extremism (Sternberg, 2003; Lichbach, 2005; Nadler and Liviatan, 2006, our results would indicate that Madrassa reforms, which are encouraged by the US government and favored by the Pakistani public, may have only a limited impact on violence in Pakistan. They also suggest that the negative stereotype of Madrassas is unwarranted. Our findings would generally be inconsistent with the claim that Madrassas are the main perpetrators of domestic violence and hatred. However, more research is needed to establish the role of Madrassas and their students in fermenting international terrorism. For this purpose, a setup similar to that in this paper could be used where students are matched with groups of foreign individuals. While theoretically possible, the implementation of such a design may be quite challenging but an important avenue for future research.⁴²

Another important finding from the experiment is the high levels of trust, trustworthiness and other-regarding behavior in our data when compared to existing studies in the literature. It has been argued that hierarchical religions, such as Catholicism and Islam, weaken trust (Putnam 1993, La Porta et al. 1997).⁴³ Since our sample consists of Muslims entirely, the high level of trust found in this study is not consistent with this hypothesis. One possibility could be that Pakistan stands out in terms of trust when compared to other countries, but evidence from other surveys suggests that this is not the case. The World Value Surveys of 2000/2001 ask

⁴² Our experimental setup focuses on games of trust and other-regarding behavior, and so we are unable to say how these students would play in games of cooperation (such as public-good provision) and norm enforcement, in both the absence and presence of punishment. These alternative games may shed light on other important aspects of social and economic life. However, implementing them generally requires feedback in real time, which is usually not possible with paper-based experiments. Given the low computer literacy of certain subgroups of our sample, we chose not to include these other games.

⁴³ There is an extensive body of work investigating the relationship between religion and trust or behavior in games arguing, for example, that Catholicism inhibits trust while Protestantism promotes it (Putnam, Leonardi, and Nanetti, 1993; Benjamin, Choi, and Fisher, 2010).

respondents from 70 countries whether “most people can be trusted” or one “needs to be very careful in dealing with people.” In Pakistan, 31% of the people surveyed agreed with the statement that most people can be trusted, which is very similar to the UK (30%) and the US (36%), and well below countries that are highly ranked in terms of trust such as Iran (65%) or Denmark (66%).

A third important finding is that there is no evidence of in-group or out-group bias for any of the groups we consider in the investment decision in the trust game and no systematic discrimination in the dictator game. We do not find that Madrassa students behave differently when matched with students attending Universities with strong Western influence. Moreover, despite the fact that opinions collected from a subset of our respondents reveal that Madrassas are not viewed positively and are perceived to play some role in fostering extremism and violence, and a large proportion of the students have an acquaintance who died or was injured as a result of the violence in the country (Tables 1 and 2), we do not find that any of the other groups behave differently when matched with Madrassa students.

A possible explanation for the lack of group membership bias could be the fact that our groups are unequal in terms of two important social attributes: religiosity and socioeconomic background. Moreover, those attributes are negatively correlated across the groups. When groups are unequal, the lower status group tends to favor the higher status group (e.g., Jost, Banaji and Nosek, 2004). In our context, each student may feel they are of higher status in one of the dimensions when matched with another student. For example, Liberal University students may feel that they have the highest socioeconomic status, while Madrassa students may feel that they have the highest status when evaluated on the basis of religiosity. Islamic University students, who fare in the middle on both dimensions, may still feel that they have a higher status in terms of religiosity when matched with Liberal University students, and a higher status in terms of socioeconomic characteristics when matched with Madrassa students. The interplay of this two-dimensional status may thus weaken any group membership effect.

Another complementary possible explanation for the equal treatment, and also for the high level of trust and other-regarding behavior we observe, may be that violence within the society unifies people and that other students do not see the average Madrassa student as being responsible for it (despite not having positive perceptions of Madrassas themselves). Recent evidence suggests that community exposure to violent conflict increases the willingness to invest

in trust-based transactions and to contribute to a collective good within the community (Gilligan, Pasquale, and Samii, 2010), enhances altruistic behavior toward neighbors (Voors et al., 2010), and promotes local collective actions and political participation (Bellows and Miguel, 2009; Blattman, 2009). Our paper does not directly test for the impact of community exposure to violence on trust, and takes place in a country where conflict is still on-going. However, given how widespread violence is in Pakistan, conflict may play a role in explaining our results.

Another important aspect of our results is that Liberal Universities under-estimate the trustworthiness of Madrassa students, suggesting that an important segment of the society has mistaken stereotypes about students in religious seminaries, while Madrassa students over-estimate the trustworthiness of Liberal University students. These incorrect stereotypes could negatively influence the social and economic interactions of those two groups outside of the lab. Moreover, since graduates of Liberal Universities are most likely to be future policy makers, their incorrect stereotypes could result in inefficiencies in society.

Overall, our findings offer some cautiously optimistic perspectives for Pakistan's future.⁴⁴ Of course, the high and non-discriminatory levels of trust we find pertain to highly educated groups. However, those groups are likely to be important actors in the economic activity of the country. Several African countries have experienced remarkable post-conflict economic recovery and one of the many channels may be that institutions, including trust, have improved as a result of the conflicts (Cramer, 2006). We can only hope that Pakistan will have a similar fate.

⁴⁴ Our results focus exclusively on interaction between males, but it is also of interest to understand how various segments of the society interact with women, particularly in Pakistan, where gender discrimination appears somewhat paradoxical. On the one hand, Pakistan has the most imbalanced sex ratio in the world but on the other hand, women have prominent political leadership. In Delavande and Zafar (2012), we present results of experiments where students were matched with females from Islamic Universities and Liberal Universities. We find that Madrassa students tend to discriminate against women. However, because they tend to give and trust more than any other male group, they actually treat women almost as well or better than other groups of males in the society. They simply treat men better than they treat women. We also find that there is interplay between the gender and social identity of the parties that interact.

Appendix: Instructions for the elicitation of beliefs

For this choice scenario, you will be asked two questions about Choice 1 [*dictator game*]. If this choice is chosen for compensation, one question will be picked randomly (by the roll of a die) at the end of the session to determine which question you will be paid for. The payoff will be given to you after one week once we have aggregated everyone's actions.

1) **We ask you to guess the interval that contains the average amount that students from your institution chose to give to *gender* (where *gender* = {male, female}) students from “*institution X*” in situation 1 of Choice 1.**⁴⁵ Recall in situation 1 of Choice 1 the decision was how to divide an amount of Rs. 400 between yourself and another student. The interval that contains the average amount is: **(tick one box)**

- i. Rs. 0 – Rs. 50.
- ii. Rs. 51 – Rs. 100.
- iii. Rs. 101- Rs. 150.
- iv. Rs. 151- Rs. 200.
- v. Rs. 201 – Rs. 250.
- vi. Rs. 251 – Rs. 300.
- vii. Rs. 301 – Rs. 350.
- viii. Rs. 351 – Rs. 400.

You will receive Rs. 50 if the interval that you choose actually contains the average amount that students from your institution chose to give to the matched students in situation 1 of Choice 1. Otherwise, you will receive zero. **EXAMPLE:** If you choose interval 3, i.e., Rs. 101 – Rs. 150, and the average amount that students from your institution gave was Rs. 300, you will receive zero. However, if you choose interval 4, i.e., Rs. 151 – Rs. 200, and the average amount that students from your institution gave was in this interval, you will receive Rs. 50.

2) *Gender* (where *gender* = {male, female}) students from institution X also participated in Choice 1 as deciders, in which they were randomly matched with students at your institution.

⁴⁵ Actual instructions had gender of the student, and the name of the institution printed.

Now we ask you to guess the interval that contains the average amount that “male/female” students from “institution X” chose to give to students in your institution in Choice 1. Your reward will depend on your accuracy. You would receive Rs. 50 for choosing the correct interval, and zero otherwise. The interval that contains the average amount is: (tick one box)

- i. Rs. 0 – Rs. 50.
- ii. Rs. 51 – Rs. 100.
- iii. Rs. 101- Rs. 150.
- iv. Rs. 151- Rs. 200.
- v. Rs. 201 – Rs. 250.
- vi. Rs. 251 – Rs. 300.
- vii. Rs. 301 – Rs. 350.
- viii. Rs. 351 – Rs. 400.

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Figure 1: International comparison of terrorism-related death

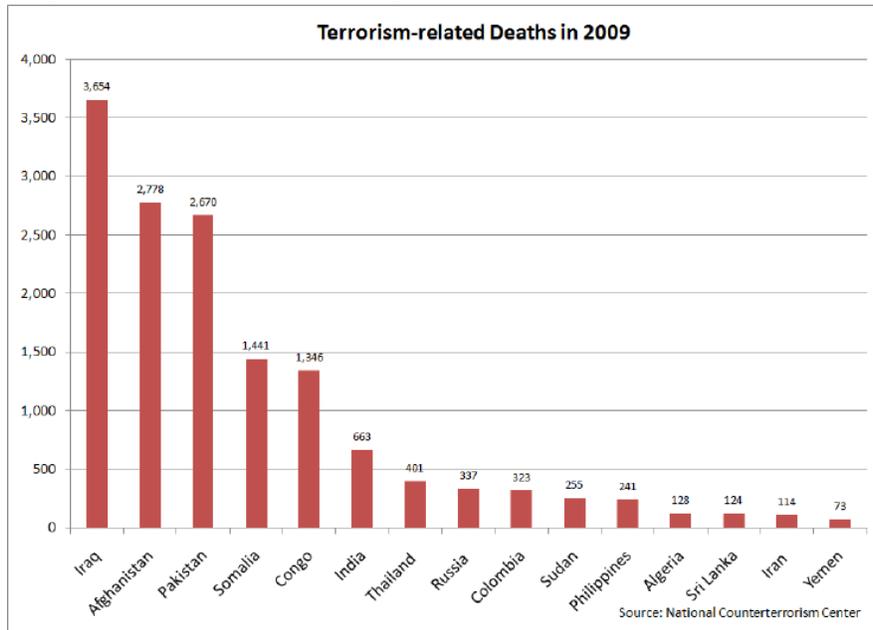


Figure 2: Map of Pakistan



Figure 3: Amount expected back from match in the trust game (out of Rs. 900)

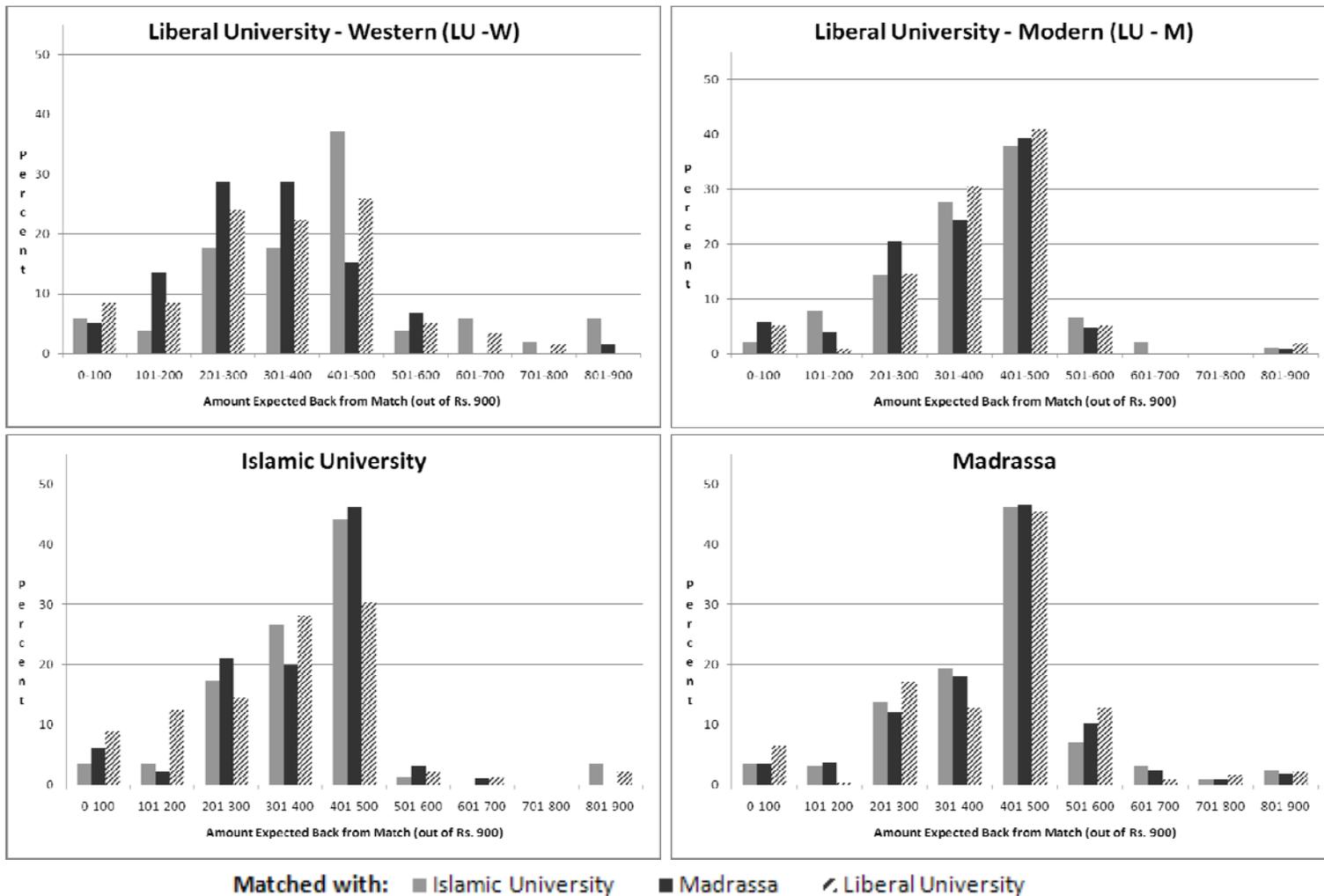


Table 1: Summary Characteristics

	LU-W	LU-M	IU	Madr	City	F-test
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Observations	168	287	270	796	394	
Age	20.37*** (2.66)	21.68** (2.25)	21.75** (2.36)	22.16 (3.04)	33.74*** (13.22)	0.000
Father's years of education	14*** (1.6)	11*** (6.1)	11*** (4.3)	7.1 (5)	7.7* (5.4)	0.000
Mother's years of education	13*** (2.8)	11*** (4.8)	7.1*** (5.1)	3.5 (4.3)	4* (4.9)	0.000
Parents' monthly income (in 1000s Rs)	192*** (235)	99*** (146)	42*** (53)	21 (70)	25 (24)	0.000
Number of siblings (including self)	2.7 (1.4)	3.9+++ (2.1)	4.7+++ (2.4)	-	5.1+++ (3)	0.000
% father attended Madrassa ^a	4***	14**	13***	21	1***	0.000
% mother attended Madrassa	5	13++	7	-	1+++	0.000
% friend attended Madrassa	5	22+++	23+++	-	1+++	0.000
% sibling attended Madrassa	7	23+++	26+++	-	2++	0.000
% Parents own:						
home	92***	86*	84	82	100***	0.000
tv	91***	84***	77***	30	84***	0.000
cellphone	90***	79***	80***	72	97***	0.000
computer	83***	69***	60***	25	70***	0.000
internet access	77***	50***	40***	8	45***	0.000
motorbike	47***	65***	50***	32	61***	0.000
car	84***	68***	43***	11	37***	0.000
Religiosity (0-10) ^b	5.3*** (1.7)	5.9*** (2)	6.3*** (1.6)	9.2 (1.6)	6.1*** (2.4)	0.000
Number of times pray each day	1.5*** (1.6)	2.2*** (1.6)	2.9*** (1.6)	4.9 (.41)	2.9*** (1.9)	0.000
Proportion that fast during Ramadan	.89*** (.24)	.92*** (.2)	.96*** (.14)	.98 (.13)	.89*** (.24)	0.000
Trust (0-10) ^c	4.3*** (2)	4.8 (2.6)	4.5** (2.8)	5.1 (3.4)	-	0.003
Risk general (0-10) ^d	6.7*** (2)	6.9*** (2.4)	6.5*** (2.4)	5.3 (4)	-	0.000
% watch English-language news	86***	83***	82***	24	24	0.000
% watch BBC or CNN	62***	60***	58***	23	12***	0.000
% know victim of violent attack	14	16	34+++	.	14	0.000

^a Percent of respondents whose father attended a Madrassa or any religious institution for more than 2 years (either part time or full time).

^b Self-reported religiosity on a scale of zero (not religious at all) to 10 (very religious).

^c Response to question: "...most people can be trusted?" on a scale of zero (all people cannot be trusted) to 10 (all people can be trusted).

^d Self-reported risk preference on a scale of zero (totally unwilling to take risk) to 10 (fully prepared to take risks).

This table shows pairwise t-tests for each institution group characteristics versus those of Madrassa. Significant at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

For those characteristics not available for Madrassa students, pairwise t-tests are shown versus those of LU-W. Significant at + $p < 0.10$, ++ $p < 0.05$, +++ $p < 0.01$.

Table 2: Perception of Madrassas

	IU	IU(R) ¹	City	City(R) ²
	(1)	(2)	(3)	(4)
Number of observations	444	200	394	37
% Attended Madrassa ^a	45	100	9	100
Madrassa enrollment (0-100) ^b	38***	39	26	24
	(22)	(22)	(22)	(21)
Cause of extremism and violence: (1-7) ^c				
Government Corruption	4.7***	4.6	2.7	2.6
US policies and influence	5.3***	5.3	2.8	3.1
Poverty	4.3***	4.4	3.3	3
Lack of education	4.1	4.1	4.1	4.2
Lawlessness	4	4	3.9	4.2
Religious institutions	3.1***	3.1	5.7	5.5
Income inequality	3.3***	3.2	5.4	5.5
Responsible for civilian attacks: (0-100) ^d				
US and other Western countries	78***	79	67	60
Radical Islamic Organizations	45***	43	34	28
Afghanistan government	47**	47	43	40
Indian government	78***	78	70	67
Favor Madrassa Reform (0-10) ^e	8.1	7.7 ⁺⁺	8.4	8.5
	(2.7)	(2.9)	(2.5)	(2.3)

¹ IU students who have ever attended a religious institution/Madrassa (part- or full-time).

² City sample respondents who have ever attended a religious institution/Madrassa.

^a Ever attended a religious institution (full-time or part-time)

^b Perception of the percent (0-100) of current 18-year old male students that are enrolled in a registered Madrassa.

^c Importance of the following causes for extremism and violence in Pakistan on a scale of 1 (least important) to 7 (most important).

^d Percent chance (on a scale of 0-100) that the following are responsible for recent civilian attacks (bomb blasts, suicide bombings, etc.) in Pakistan.

^e Opinion of government plan to reform madrassas on a scale of 0 (absolutely oppose) to 10 (absolutely favor).

***,**, * t-tests for equality of means between IU and City respondents significant at

1, 5, and 10% levels, respectively.

+++,,+,+ t-tests for equality of means between IU (City) and IU(R) (City(R)) respondents significant at 1, 5, and 10%, respectively.

Table 3: Number of respondents by match

Institution:	Matched with:			Total
	LU [⊕]	IU	Madrassa	
LU-W	58	51	59	168
LU-M	95	90	102	287
IU	89	86	95	270
Madrassa	236	198	362	796
Total	478	425	618	1521

[⊕] LU-M were matched with LU-M. All other institutions were matched with LU-W.

Table 4: Proportion of respondents who send money in the Trust game

Institution:	Total	Matched with			P-value for:^a	
		LU	IU	Madr	F-test	Kruskal-Wallis
	(1)	(2)	(3)	(4)	(5)	(6)
LU-W	0.6310	0.5517	0.6863	0.6610	0.2957	0.2940
N	168	58	51	59		
LU-M	0.7805	0.7368	0.8444 ^{**+}	0.7647	0.1885	0.1881
N	287	95	90	102		
IU	0.6148	0.5506	0.6279	0.6632	0.2815	0.2806
N	270	89	86	95		
Madr	0.8015	0.8263	0.8081	0.7818	0.3975	0.3970
N	796	236	198	362		
Total	0.7456	0.7238	0.7647	0.7492	0.3589	0.3587
N	1521	478	425	618		
P-value for:^b						
F-test	0.0000	0.0000	0.0011	0.0390		
Kruskal-Wallis	0.0000	0.0000	0.0012	0.0394		

^a P-values of tests for equality of means/distributions across matches within a row institution.

^b P-values of tests for equality of means/distributions across institutions.

In addition, the table also conducts two sets of pairwise hypothesis tests between having a match from own institution type versus another institution type. P-values of these tests are not reported but their significance is denoted by plus (+) or asterisks (*): (1) Wilcoxon rank-sum tests significant at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (2) T-tests significant at ⁺ $p < 0.10$, ⁺⁺ $p < 0.05$, ⁺⁺⁺ $p < 0.01$.

Table 5: Amount sent in the Dictator game

Institution:	Total	Matched with			P-value for:		
		LU	IU	Madr	F-test ^{a'}	Median test ^{b'}	Kruskal-Wallis ^{c'}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LU-W							
mean	161	141	179**	166	0.044	0.153	0.108
median	200	200	200**	200			
N	168	58	51	59			
% who did not send	10.7	15.5	5.9	10.2	0.268	0.264	0.266
LU-M							
mean	168	158	181**	167	0.125	0.148	0.368
median	200	200	200	200			
N	287	95	90	102			
% who did not send	7.3	8.4	4.4	8.8	0.450	0.448	0.449
IU							
mean	144	142	135	155	0.280	0.351	0.446
median	200	200	185	200			
N	269	88	86	95			
% who did not send	13.8	15.9	16.3	9.5	0.323	0.321	0.322
Madrassa							
mean	183	187*	189**	177	0.074	0.075	0.040
median	200	200**	200**	200			
N	790	233	198	359			
% who did not send	3.2	3.8	3.0	2.8	0.760	0.759	0.759
Total							
mean	171	167	176	171			
median	200	200	200	200			
N	1514	474	425	615			
% who did not send	6.7	8.4	6.4	5.5			
P-value for:							
F-test ^a	0.000	0.000	0.000	0.059			
Median test ^b	0.023	0.014	0.015	0.850			
Kruskal-Wallis test ^c	0.000	0.000	0.000	0.022			

^aF-test for the equality of means for a given match across institutions (column).

^{a'}F-test for the equality of means across matches within an institution group (row).

^bNonparametric median test for the equality of medians across institutions for a given match.

^{b'}Nonparametric median test for the equality of medians across matches within an institution.

^cKruskal-Wallis test for the equality of distributions across institutions for a given match.

^{c'}Kruskal-Wallis test for the equality of distributions within an institution by match.

In addition, this table also conducts three sets of pairwise hypothesis tests between having a match from own institution type versus another institution type for amount sent. P-values of these tests are NOT reported but their significance is denoted by stars (*). Significance of (1) t-test is reported on the means. (2) Wilcoxon rank-sum test is reported on the medians, and (3) Kolmogorov-Smirnov test is reported on the sample sizes. For all three, *p<0.10, **p<0.05, ***p<0.01.

Table 6: Amount Expected back from match out of Rs.900

Institution:	Total	Matched with:			P-value for:		
		LU	IU	Madr	F-test	Median test	Kruskal-Wallis
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LU-W							
mean	350.59	336.21	406.86**	316.10	0.011	0.003	0.012
median	350.00	350.00	450.00**	350.00			
Prop. expect >200	0.845	0.828	0.902	0.814	0.402		0.400
Prop. expect >300	0.607	0.586	0.725	0.525	0.094		0.094
Prop. expect >400	0.375	0.362	0.549	0.237	0.003		0.003
N	168	58	51	59			
LU-M							
mean	370.91	379.47	376.67	357.84	0.455	0.884	0.556
median	350.00	350.00	350.00	350.00			
Prop. expect >200	0.913	0.937	0.900	0.902	0.601		0.600
Prop. expect >300	0.746	0.789	0.756	0.696	0.314		0.313
Prop. expect >400	0.470	0.484	0.478	0.451	0.885		0.884
N	287	95	90	102			
IU							
mean	357.78	333.15**	379.07	361.58	0.095	0.099	0.082
median	350.00	350.00**	350.00	450.00			
Prop. expect >200	0.878	0.787	0.930	0.916	0.005		0.006
Prop. expect >300	0.700	0.640	0.756	0.705	0.250		0.249
Prop. expect >400	0.452	0.360	0.488	0.505	0.100		0.100
N	270	89	86	95			
Madrassa							
mean	405.78	404.08	405.89	406.82	0.975	0.566	0.875
median	450.00	450.00	450.00	450.00			
Prop. expect >200	0.918	0.919	0.919	0.917	0.993		0.994
Prop. expect >300	0.779	0.750	0.783	0.796	0.418		0.418
Prop. expect >400	0.612	0.623	0.591	0.616	0.774		0.774
N	787	233	195	359			
P-value for:							
F-test	0.000	0.000	0.283	0.000			
Nonparam median test	0.000	0.007	0.070	0.002			
Kruskal-Wallis test	0.000	0.000	0.161	0.000			

This table conducts three sets of pairwise hypothesis tests of equality of amount expected from a match from own institution type versus match from another institution type. P-values of these tests are NOT reported but their significance is denoted by stars (*). Significance of (1) t-test is reported on the means. (2) Wilcoxon rank-sum test is reported on the medians, and (3) Kolmogorov-Smirnov test is reported on the sample sizes.

For all three, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: How do Expectations Compare with Actual Choices of Trustees?

Institution:	Total	Matched with			P-value for:	
		LU	IU	Madr	F-test	Kruskal-Wallis
LU-W						
Prop. expect >300	0.607	0.586	0.725	0.525	0.094	0.094
Prop. match sent >300	0.709	0.621	0.584	0.814	0.000	0.000
p-value actual v. expected ^a	0.015	0.646	0.096	0.000		
Prop. accurate expectation	0.185	0.224	0.176	0.153	0.603	0.600
Prop. under-estimated	0.494	0.414	0.275	0.763***	0.000	0.000
N	168	58	51	59		
Actual sent by match	411.186	365.44	347.29	465.08	0.000	0.109
LU-M						
Prop. expect >300	0.746	0.789	0.756	0.696	0.314	0.313
Prop. match sent >300	0.709	0.621	0.584	0.814	0.000	0.000
p-value actual v. expected ^a	0.276	0.0053	0.015	0.017		
Prop. accurate expectation	0.328	0.305	0.278	0.392	0.208	0.207
Prop. under-estimated	0.341	0.211	0.244	0.549***	0.000	0.000
N	287	95	90	102		
Actual sent by match	411.186	365.44	347.299	465.08	0.000	0.101
IU						
Prop. expect >300	0.700	0.640*+	0.756	0.705	0.250	0.249
Prop. match sent >300	0.753	0.745***++	0.756	0.758	0.962	0.962
p-value actual v. expected ^a	0.124	0.0923	1	0.3406		
Prop. accurate expectation	0.404	0.303*+	0.442	0.463	0.060	0.060
Prop. under-estimated	0.548	0.640*+	0.512	0.495	0.100	0.100
N	270	89	86	95		
Actual sent by match	428.429	409.08	410.58	449.98	0.026	0.010
Madr						
Prop. expect >300	0.779	0.750	0.783	0.796	0.418	0.418
Prop. match sent >300	0.748	0.708	0.779	0.757	0.370	0.370
p-value actual v. expected ^a	0.168	0.3551	0.9403	0.2124		
Prop. accurate expectation	0.361	0.1274***+++	0.455	0.461	0.000	0.000
Prop. under-estimated	0.339	0.237***+++	0.394	0.376	0.000	0.000
N	796	236	198	362		
Actual sent by match	413.69	397.39	415.79	420.47	0.240	0.001

^a T-test for the equality of proportion that expect more than 300 and the proportion of match group that actually sent back more than 300.

In addition, this table conducts two pairwise hypothesis tests on the proportions between having a match from own institution type versus another institution type. P-values not reported but significance of the tests is denoted:

(1) Wilcoxon rank-sum tests significant at *p<0.10,**p<0.05,***p<0.01.

(2) T-tests significant at +p<0.10, ++p<0.05, +++p <0.01.

Table 8: Does Madrasa Attendance lead to higher trust and pro-social behavior?

Dependent Variable:	Send money		Amount sent		Amount Expected	
	in trust game ^a	dictator game	Back in Trust Game	Back in Trust Game	Back in Trust Game	Back in Trust Game
Parents' Income (in 100,000 Rs.)	0.013 (0.020)	-1.59 (3.65)	2.17 (7.43)			
Risk general (0-10) ^b	0.003 (0.008)	-	-			
Father's years of schooling	0.005 (0.003)	0.621 (0.602)	-1.25 (1.24)			
Mother's years of Schooling	-0.006 (0.004)	-0.504 (0.699)	-0.72 (1.43)			
Switch ^c	0.015 (0.049)	5.90 (8.73)	-0.463 (17.79)			
Constant	0.789*** (0.044)	180.71*** (5.70)	423.08*** (11.63)			
Dummy for city	Yes	Yes	Yes			
Mean of Dependent Variable	0.80	183.15	405.78			
R-squared	0.006	0.003	0.006			
Number of Observations	687	687	684			

Table reports OLS regressions of column variable onto row covariates. Sample restricted to Madrasa students.

Standard errors in parentheses. Significant at * p<0.10, ** p<0.05, *** p <0.01.

^a Dummy that equals 1 if the respondent sends money in the trust game.

^b Self-reported risk preference on a scale of 0 (totally unwilling to take risk) to 10 (fully prepared to take risks).

^c Binary variable that equals 1 if the Madrasa respondent would switch to a non-Madrasa institution if there were no financial or ability constraints (equals 1 for 80 of the 734 respondents)

Table 9: Determinants of investment decision in the Trust game

	LU-W			LU-M			IU			Madrassa		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Trustworthiness ^a	0.004 (0.024)		0.000 (0.024)	0.088*** (0.021)		0.090*** (0.021)	0.083*** (0.024)		0.080*** (0.025)	0.037*** (0.010)		0.038*** (0.010)
Dictator Split ^b	0.160*** (0.048)		0.153*** (0.049)	0.063* (0.033)		0.056* (0.033)	0.179*** (0.041)		0.180*** (0.041)	0.099*** (0.020)		0.098*** (0.020)
IU match ^c		0.144* (0.087)	0.099 (0.093)		0.115** (0.054)	0.102* (0.053)		0.066 (0.073)	0.057 (0.078)		-0.023 (0.041)	-0.038 (0.041)
Madrassa match ^d		0.094 (0.086)	0.061 (0.090)		0.028 (0.056)	0.051 (0.054)		0.103 (0.070)	0.072 (0.076)		-0.047 (0.034)	-0.040 (0.034)
Observations	165	165	165	284	284	284	263	264	263	753	765	753

Dependent Variable: Whether respondent sends money in the Trust game.

Table reports marginal effects of a probit regression of trust game decision (coded as 1 or zero) on dictator game behavior and expectations of match's trustworthiness.

^a Reported expectation of match's trustworthiness (center of the interval) on a 0-Rs. 900 scale, which is then scaled down by 100 to 0-9.

^b Amount sent to match by the respondent in the dictator game on a 0-Rs. 400 scale, which is then scaled down by 100 to 0-4.

^{c(d)} Dummy that equals 1 if respondent is matched with a student at IU (Madrassa). Excluded category is a match with a LU student.

Standard Deviations in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 10: Games Summary Statistics

Institution	Dictator game: amount sent out of Rs.400	Trust game: proportion that sent the Rs.300	Trust game: amount sent back	
			out of Rs.900	scaled to Rs.400
	(1)	(2)	(3)	(4)
LU-W				
mean	161	0.6310	375	167
median	200		400	178
% who did not send	10.71		8.33	
N	168	168	168	168***
LU-M				
mean	168	0.7805	399	177
median	200		450	200
% who did not send	7.31		1.39	
N	287	287	287	287***
IU				
mean	144	0.6148	392	174***
median	200		450	200***
% who did not send	13.75		6.29	
N	269	270	267	267***
Madrassa				
mean	183	0.8015	441	196***
median	200		450	200***
% who did not send	3.15		1.25	
N	790	796	787	787***
Total				
mean	171	0.7456	417	185***
median	200		450	200***
% who did not send	6.65		2.95	
N	1514	1521	1509	1509***

This table shows three sets of pairwise hypothesis tests for the equality of amount sent in the dictator game and the amount returned in the trust game (scaled down to Rs. 400 from Rs. 900): (1) t-test is reported on the means. (2) Wilcoxon rank-sum test is reported on the medians, and (3) Kolmogorov-Smirnov test is reported on the sample sizes.

For all three, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix Table A1: Role of Group Membership and Observables in the Games

Dependent Variable:	(Dummy for) Invest			Amount sent in			Expectation of amount		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ownership index (0-7) ^a	0.003 (0.007)		0.010 (0.008)	-0.998 (1.298)		0.063 (1.337)	1.404 (2.451)		2.866 (2.544)
Father's years of education	-0.001 (0.003)		0.003 (0.003)	-0.205 (0.475)		0.260 (0.481)	-1.294 (0.899)		-0.804 (0.919)
Mother's years of education	-0.004 (0.003)		-0.005* (0.003)	-0.260 (0.508)		-0.389 (0.544)	-1.547 (0.959)		-1.312 (1.035)
Parent's monthly income (in 10,000 Rs.)	0.100 (1.024)		0.108 (1.051)	312.888* (180.306)		262.847 (184.625)	527.414 (340.067)		553.313 (351.565)
Age	0.009* (0.005)		0.007 (0.005)	1.459* (0.882)		1.357 (0.881)	3.034* (1.663)		2.876* (1.676)
Religiosity (0-1) ^b	0.014** (0.006)		-0.000 (0.007)	3.369*** (1.096)		1.013 (1.300)	6.963*** (2.064)		3.895 (2.475)
Risk general (0-10) ^c	0.007 (0.007)		0.008 (0.007)						
Islamic University Dummy		-0.017 (0.041)	-0.041 (0.051)		-17.192** (7.487)	-19.069** (8.860)		6.564 (14.394)	-4.853 (16.847)
LU-M Dummy		0.126*** (0.032)	0.136*** (0.036)		7.844 (7.385)	12.091 (8.169)		19.816 (14.208)	15.257 (15.559)
Madrassa Dummy		0.171*** (0.035)	0.171*** (0.058)		22.062*** (6.478)	19.064* (10.496)		54.262*** (12.466)	33.769* (19.960)
Constant				116.452 (22.707)	159.970 (5.873)	120.602 (23.066)	277.161 (42.774)	1230 (11.300)	272.777 (43.844)
Number of observations	1228	1478	1228	1230	1476	1230	1230	1476	1230

^a Index of parents' ownership of durables (home, television, cellphone, computer, internet access, motorbike, car)

^b Self-reported religiosity on a scale of zero (not religious at all) to 10 (very religious).

^c Self-reported risk preference on a scale of zero (totally unwilling to take risk) to 10 (fully prepared to take risks).

^d Probit regression of dummy for investment in trust game. Marginal effects shown in columns (1)-(3). Excluded category is LU-W.

^e OLS regression of amount sent in dictator game (Rs. 0- 400).

^f OLS regression of amount expected back from partner in the trust game (Rs. 0-900).

Standard errors in parentheses. *p<0.10, **p<0.05, ***p<0.01.

Appendix Table A2: Relationship of Trust with Income and Religious Attendance
in Pakistan (2000 World Value Survey)

	Proportion reporting "Most people can be trusted"	Sample Size
Panel A: Relationship between income and trust in Pakistan		
<u>Income scale^a</u>		
Lower and second step	0.225	138
Third step	0.329	407
Fourth step	0.278	413
Fifth step	0.286	325
Sixth step	0.378	209
Seventh to tenth step	0.380	234
Total	0.313	1726
P-value for F-test of equality	0.003	
Panel B: Relationship between religious attendance and trust in Pakistan		
<u>Religious Attendance</u>		
More than once a week	0.324	910
Once a week	0.290	449
Once a month	0.268	314
Only on special holy days	0.412	102
Once a year	0.235	51
Total	0.308	1826
P-value for F-test of equality	0.031	

^a Income scale is elicited as follows: Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.

^b Religious attendance is elicited as follows: Apart from weddings, funerals and christenings, about how often do you attend religious services these days?