

Religion and Social Behaviors: Using Religious Reminders to Promote Honesty and Using Prompt-based Interactions to Reduce Bias Against Religious Minorities

by

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DEDICATION

إليك أُمي يا من أشتاق أكثر ولولاها لما كنتُ
وإلى الأحمدين الذّين علّمتني معنى الحياة وحبّ التعلّم
وإلى محمّد وإبراهيم وأحمد وكل من ذهب عنا فجاءً
وإلى صفاءٍ وصفيةٍ وسعدٍ وقد أخذوا معهم أرواح بيوتٍ
وإلى حسنة التي وسّعتني قلبها مبكراً
وإلى سعيد الذي أراه في نفسي ولكني لم أراه
وإلى حنانة التي جسدت التفاني في شخصها
وإلى تاج الذي لولا القدرُ سيكون أكثر من يفرح

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PREFACE

”Researchers are beginning to experiment with instruments for behavioral interventions that take into account cultural and social factors. For example, in ”Barriers to Household Risk Management”, [Cole et al. \(2013\)](#) used religious flyers to see how religion affects the perception of the insurance product and as expected participants whose religion matched that in the flyer had higher take-up rates. I would try to do something similar in my own research.”

”I would develop an understanding of the geography and institutions of target research locations, potentially Sub-Saharan Africa where I have racial and cultural ties.”

These are selected quotes I took from my academic statement when I first applied for the Ph.D. program at the University of Michigan. Many years later, I present the findings from the work I did to realize some of the goals I identified in my research statement.

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ABSTRACT

Religion – defined as a set of beliefs and behaviors generally associated with God or a supernatural agent – is intertwined with social behaviors. While most of the world’s population claims an affiliation with some religion, little research exists on how multiple dimensions of religion and religious reminders impact social behaviors. Moreover, some minorities are discriminated against because of their religious affiliation. This dissertation is motivated by two primary questions that revolve around religion and social behaviors: 1) Can dishonesty be reduced through different types of religious reminders, and how do their effects compare with non-religious reminders? 2) To what extent do certain prompt-based interventions reduce bias towards religious others?

In this thesis, we present the findings from two studies. In the first study, we compare the impact of religiously-framed extrinsic and intrinsic reminders versus non-religiously-framed ones in promoting honesty in Sudan, a predominantly Muslim low-income country in sub-Saharan Africa. In doing so, we develop a theoretical framework of how religious beliefs affect prosocial behaviors and identify a set of mechanisms underlying religious-based motivators. A randomized control trial shows that, compared to the control condition that has a cheating rate of 50.4%, the religious extrinsic and intrinsic reminders increase honesty by 16.1 and 15.1 percentage points, respectively. Moreover, we find that the non-religious intrinsic reminder marginally increases honesty by 10.8 percentage points compared to the control. By contrast, the non-religious extrinsic reminder does not increase honesty compared to the control potentially due to common beliefs that the government is corrupt in Sudan or that it has limited monitoring ability. Exploratory analyses further suggest that women respond more to the extrinsic reminders compared to intrinsic ones while men tend to respond more to the intrinsic reminders compared to extrinsic ones. This is in

line with other research findings that suggest women tend to be more rule followers compared to men. Overall, the findings suggest that in contexts where governance is weak but faith is widespread, religion-based mechanisms may be effective in increasing prosocial behavior.

In the second study, we examine the impact of two compact prompt-based interventions — perspective taking and value consistency — on reducing anti-Muslim bias in the United States. Perspective taking entails having people reflect on others’ experiences of being discriminated against while value consistency entails having people reflect on important values they hold, such as kindness or tolerance, which are consistent with bias reduction. We conduct two field experiments – one online and one in person. We find that value consistency increases trust behaviors as measured by the investment amount in the trust game (aka the investment game) on receivers with Muslim or non-Muslim sounding names. Value-consistency participants invest 7% and 13.2% more in their partners in the in-person and online experiments, respectively. Furthermore, we observe that value consistency increases beliefs about the trustworthiness of Muslim and non-Muslim receivers and that perspective taking increases beliefs about the trustworthiness of Muslim receivers in the in-person study compared to their control counterparts. Unlike previous work that shows the effectiveness of perspective taking on reducing bias against transgender individuals, we do not observe an impact of perspective taking on reducing anti-Muslim bias.

Overall, the findings from these two studies suggest that reminders based on intrinsic motivations targeting self-concept can be a promising avenue to promote prosocial behaviors, as there are indications that they work in two very different contexts – Sudan and the United States – and for two different purposes – increasing honesty and reducing prejudice. On the other hand, we find that reminders based on extrinsic motivations are conditional on beliefs about the enforcing agent. Finally, we suggest that religious reminders can be an effective means to promote honesty in some contexts where religion is dominant and institutions are weak or corrupt.

CHAPTER 1

Introduction

Around 86% of the world's population affiliates with religion (Maoz & Henderson, 2013) – "a personal set or institutionalized system of beliefs, attitudes and behaviors"¹. Many religions have two major themes: 1) a belief in God or a supernatural agent and 2) a prescribed set of beliefs and expected behaviors related to God, society and oneself. Past studies have shown that religion can cause positive social behaviors in society. It is used to promote prosocial behaviors such as honesty and charitable giving (Rifat, Chen, & Toyama, 2017; Shariff & Norenzayan, 2007; Shariff, Willard, Andersen, & Norenzayan, 2016). However, religion can also be used by some to promote aggression or prejudice, particularly against out-group members or religious minorities who are discriminated against.

Indeed, religious beliefs are associated with different social, economic, political, and moral decisions in societies that transcend political boundaries. For example, across both the developed and developing world, religion is one of the main predictors of vaccination rates (Harapan, Shields, Kachoria, Shotwell, & Wagner, 2021; Hobson-West, 2003; Shrivastwa, Gillespie, Kolenic, Lepkowski, & Boulton, 2015). Religion is associated with corporate decisions related to finance and risk taking (Dyreg, Mayew, & Williams, 2012; Grullon, Kanatas, & Weston, 2009; Jiang, Jiang, Kim, & Zhang, 2015). Religiously-motivated topics are used to mobilize groups in political engagement (Campbell, 2004; McClendon & Riedl, 2015; Patterson, 2004; Wald, Silverman,

¹Merriam-Webster Dictionary

& Fridy, 2005). Finally, some scholars suggest that religiousness is associated with a range of prosocial behaviors, such as charitable giving or greater honesty (Bekkers & Wiepking, 2011; Hongwei, Glanzer, Johnson, Sriram, & Moore, 2017; Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005). (See Shariff et al. (2016) for a recent review.)

Despite the influence of religion across numerous facets of society, research on how religion affects social behaviors is relatively rare. A scan of Scopus – an online database with millions of research publications – shows that among decision-related disciplines including economics, psychology, business, and decision science, only around 2% mention religion. In that 2%, there is a growing body of evidence on how religious reminders influence social behaviors, but most of it situates religion as a black box that either promotes or discourages prosocial behaviors – little work to-date differentiates among different aspects of religious belief.

This thesis reports on two studies that revolve around religion. In the first study, we investigate how to increase honesty using religious and non-religious reminders in Sudan – a predominantly Muslim country in Sub-Saharan Africa. In the second study, we examine how to reduce bias against religious minorities using two prompt-based interventions in the United States.

We conduct our first study about promoting honesty using religious messaging in Sudan. Specifically, we run a randomized control trial to compare the influence of religiously-framed intrinsic and extrinsic reminders versus non-religiously framed ones in increasing honesty as measured by the coin-flipping game (Gerlach, Teodorescu, & Hertwig, 2019; Houser, Vetter, & Winter, 2012). Sudan is chosen for several reasons. Sudan is a predominant Muslim country in Sub-Saharan Africa that is going through political unrest (Abuelgasim & Magdy, 2021) and is considered one of the most corrupt nations in the world as per Transparency International’s 2021 Index ². Thus, it represents an opportunity to observe the impact of religious-based reminders

²<https://www.transparency.org/en/countries/sudan>

with the context of strong religious faith and weak governmental oversight.

In doing so, we develop a theoretical framework of how religion affects prosocial behaviors, including the identification of a set of beliefs that influence religious people in ways that do not apply to non-religious people. In addition to looking to religion as a source of moral values, many religious people believe in God as an entity who is all-knowing and all-just, and who has the ultimate power to punish, reward or forgive (DeBono, Shariff, Poole, & Muraven, 2017; Shariff & Norenzayan, 2007). Moreover, religious people have an emotional affinity to God driven primarily by love (Kirkpatrick, 2005). Given this set of beliefs, we expect that religious people exhibit prosocial behavior due to extrinsic concerns such as the fear of punishment from God or intrinsic concerns such as showing gratitude to God for the blessings they have in their lives.

The results from this first study suggest that religiously-framed extrinsic and intrinsic reminders increase honesty compared to the control condition that has a cheating rate of 50.4% by 16.1 and 15.1 percentage points, respectively ($p < 0.05$). In comparison, the non-religious intrinsic reminder marginally increases honesty by 10.8 percentage points ($p < 0.10$), while the non-religious extrinsic reminder has no effect on honesty, compared to the control. Examining these results further, we find that women tend to respond more to extrinsic reminders compared to intrinsic ones while men tend to respond more to intrinsic reminders compared to extrinsic ones. Finally, we observe that people who associate God with fear tend to cheat less compared to those who associate God with love. However, we observe that the treatments were mostly effective in increasing honesty in those who associate God with love, compared to the control, while not having much impact on those who associate God with fear. Overall, these findings suggest that religious reminders might be effective in promoting prosocial behaviors and that intrinsic reminders might be more consistent than extrinsic ones.

In our second study, we compare the effectiveness of two short interactive interventions –

perspective taking and value consistency – in reducing anti-Muslim bias in the United States³. Such discrimination is not only frequent but also currently on the rise in part due to the COVID-19 pandemic and ongoing economic challenges (Aroney, 2020; Eckert, 2020; Hernandez, 2021; Mohamed, 2016; Mohamed, Smith, & Cooperman, 2017; Selsky, 2020). In the United States, Eckert (2020) suggests that Muslims and atheists in particular are more likely to face religion-based discrimination. A 2017 report by Pew Research Center indicates that nearly half of Muslims in the United States reported at least one incident of discrimination (Mohamed et al., 2017).

Moreover, while many studies on reducing bias against out-group members investigate one prolonged treatment or are conducted in a lab setting, a recent breakthrough suggests that a short conversation in a real setting reduces bias against transgender community (Broockman & Kalla, 2016). Broockman and Kalla (2016) suggest that perspective taking – a reflection on a minority group’s emotional experiences of prejudice because of who they are – reduces bias both in the short term and three months after. In our study, we adapt a similar treatment and compare it to a value-consistency treatment – an interaction about the important values one adheres to, such as kindness and tolerance – which has proven to reduce bias against out-group members in lab setting (Fein & Spencer, 1997). To implement this study, we conduct both an in-person experiment in the Metropolitan Detroit area – home to one of the largest Arab Muslim communities outside the Middle East – and an online experiment with a representative sample of the United States population based on gender, race, and education.

Our results from the second study show that value consistency increases trust behavior as measured by the trust game in Muslims and non-Muslims in the short term. Value-consistency participants invest 7% and 13.2% more in their partners in the in-person and online experiments, respectively ($p < 0.05$). However, unlike Broockman and Kalla (2016), perspective taking does not increase trust behaviors towards Muslims.

³This study is a joint work with Yan Chen, Change Ge, Ann Lin and Kentaro Toyama.

Overall, the findings from the two studies suggest that intrinsic reminders that target self-concept such as honesty, kindness and tolerance might be effective in increasing prosociality at least in two different contexts – Sudan and the United States – and in inhibiting two different anti-social behaviors – dishonesty and bias against religious minorities. Moreover, extrinsic reminders about reward or punishment appear to be conditional on beliefs about the underlying agent (the one enforcing the reward or punishment) and whether these beliefs might be about the agents' monitoring ability or association with the intended behavior. Moreover, religious reminders – irrespective of whether they are driven by extrinsic or intrinsic motivations – can be effective in reducing dishonesty in Sudan – a country that exemplifies some features present in the developing world: a predominantly religious population and weak institutions including a government with higher perceived levels of corruption.

CHAPTER 2

Honesty in Sudan: A Randomized Control Trial

2.1 Introduction

Religion and social behaviors, including honesty, are intertwined. However, most scholars view religion as a black box that impacts prosocial behaviors, without differentiating among different aspects of religious beliefs. In this study, we exploit one of the fundamental constructs that underlie an individual's belief system – the extrinsic and intrinsic motives that drive people to act in a prosocial manner. Specifically, we design and implement a randomized control trial to measure the impact of religiously and non-religiously framed extrinsic and intrinsic reminders on promoting honesty in Sudan. In doing so, we develop a framework of how religious beliefs might affect prosocial behaviors.

Honesty is one of the key ingredients of economic development ([Cohn, Maréchal, Tannenbaum, & Zünd, 2019](#); [Hardin, 2000](#); [Mokyr et al., 2008](#); [Putnam et al., 2000](#); [Rose-Ackerman, 1999](#); [Wolla, 2013](#)). It promotes confidence among parties involved in economic transactions beyond the narrow circles of trust. While honesty is an important aspect in all societies, it is of special importance in developing countries where institutions are incapable of enforcing the law and there is a lack of technologies to monitor contracts ([Hugh-Jones, 2016](#)). [Mokyr et al. \(2008\)](#) argue that honesty can be transferred from a social relationship to an economic one as it increases trust and acts as an informal contract.

Dishonesty, on the other hand, is detrimental to society. Many scholars highlight the negative impact of dishonesty at the social, political and economic levels (Celse & Chang, 2019; Jolley & Douglas, 2014; Köbis, Verschuere, Bereby-Meyer, Rand, & Shalvi, 2019; Mazar & Ariely, 2006; Shu, Gino, & Bazerman, 2011; Weber, Kurke, & Pentico, 2003). Corruption – one of the most studied forms of dishonesty – is associated with and leads to income inequality, lack of economic growth, lack of investment in infrastructure and public goods, lack of foreign investment, and erosion of public trust in the government (Harstad & Svensson, 2008; Lambsdorff, 2007; Myint, 2000; Svensson, 2005). The United Nations and the International Monetary Fund estimate that corruption alone costs around 5% of global GDP (Graycar, 2020).

Until recently it was challenging to quantify honesty due to its illicit nature (A. Banerjee, Mullainathan, & Hanna, 2012). However, over the last two decades, researchers have made some breakthroughs to measure dishonesty and to estimate the impact of different interventions to reduce it (Abeler, Nosenzo, & Raymond, 2019; Cohn et al., 2019; DeBono et al., 2017; Gerlach et al., 2019; Mazar, Amir, & Ariely, 2008; Schulze & Frank, 2003; Zitzewitz, 2012). These methods include direct observation, comparison of two source and model-based inference (Zitzewitz, 2012). Direct observation, while being the most accurate, is the most challenging because of the secretive nature of dishonesty. Comparison of two source (such as origin and destination) is becoming more popular in research and is mostly applied in natural settings. Finally, model-based inference – which is used mostly in lab or lab-in-the-field settings – is used to compare cheating prevalence in a given sample to an expected distribution. In this study, we employ model-based inference using the reported number of heads in the coin-flipping game to measure honesty.

There are many ways through which religious beliefs might impact prosocial behaviors in general and honesty in particular, yet little research is done to examine different aspects of these beliefs. For example, people might act honestly because they fear the punishment of God

in this life or in the afterlife. It might also be that people act honestly to show gratitude and reciprocate indirectly to God for the positive things in their life. On the contrary, people might act dishonestly believing that God will forgive their wrong doing if they later repent. To date, there has been little research to investigate how multiple aspects of religion might affect social behaviors.

To understand the role of religious messaging in promoting honesty at a finer grain, we consider extrinsic and intrinsic motives. These are two fundamental constructs that have been shown to underlie individual's decision making (Venkatesh, Speier, & Morris, 2002). Many scholars theorized and investigated these motives from an observational perspective, but there are not many attempts to manipulate these motives and observe how they affect prosocial behaviors from a causal viewpoint.

Finally, most of existing research about honesty and religious messaging is conducted in WEIRD (Western, Educated, Industrial, Rich and Democratic) countries (Shariff et al., 2016). While insightful, findings from these studies need to be extended to contexts where they might be needed the most. In particular, it would be helpful to test these insights in contexts where dishonesty is rampant, religion is dominant, institutions are weak and government is corrupt. Sudan, where our study is conducted, currently exemplifies some of these characteristics. In addition, Sudan has long being isolated from the global community due to longstanding sanctions by Western countries and strict limits to accessibility by the previous government and conducting such research in Sudan might provide some insights into its society.

In this chapter, we develop a framework to illustrate how religion might affect prosocial behaviors and compare the impact of two types of religious reminders to the impact of non-religious ones in promoting honesty in Sudan. Religious people have beliefs that might motivate them in a way that does not apply to non-religious people. Particularly, religious people often carry a belief in God as an entity who knows everything and who can reward, punish, disapprove, or be pleased.

Given these beliefs, we identify a set of mechanisms that uniquely apply to religious people, some of which are driven by intrinsic motivations and others by extrinsic ones. We then test some of these mechanisms by comparing the impact of religiously-framed extrinsic and intrinsic reminders to non-religious ones in promoting honesty in Sudan (see Table 2.1). For religiously-framed interventions, we compare the impact of reminding people of a vigilant and punishing God (religious extrinsic) to reminding them about the importance of honesty as a religious virtue (religious intrinsic) on honesty. For the non-religious interventions, we use similar reminders about the rule of the law and punishment by the government for wrongdoers (non-religious extrinsic) and the importance of honesty for oneself (non-religious intrinsic) and measure their relative effectiveness compared to the religious ones. Below is a summary of the four experimental conditions

- **Religious Extrinsic:** Reminder about a vigilant and punishing God of wrongdoers.
- **Religious Intrinsic:** Reminder about the importance of being truthful and trustworthy as a religious virtue.
- **Non-religious Extrinsic:** Reminder about the importance of punishment by the government to establish the rule of the law.
- **Non-religious Intrinsic:** Reminder about the importance of being trustworthy and honest for oneself.

Table 2.1: Experimental Conditions

Frame/Motive	Extrinsic	Intrinsic
Religious	Emphasizing the punishing aspect of God for wrongdoers (Quranic verse) ↓	Emphasizing the importance of honesty and trustworthiness for oneself (Prophet Mohamed’s saying) ↓
Non-Religious	Emphasizing the punishing aspect of the government to establish the rule of law —	Emphasizing the importance of honesty and trustworthiness for oneself ↓

The results from the experiment indicate that both religious extrinsic and intrinsic reminders significantly reduce dishonesty, compared to the control. Moreover, the non-religious intrinsic reminder marginally reduces dishonesty, however the impact is not as robust as the former two. Finally, the non-religious extrinsic reminder does not increase honesty, possibly due to a lack of confidence in the government's honesty and/or monitoring ability.

The rest of the chapter is organized as follows. In Section (2.2), we provide background on Sudan. In Section (2.3), we cover the current literature and existing work. In Section (2.4), we propose a theoretical framework of how religion might affect social behaviors; we present our hypotheses in Section (2.5). In Section (2.6), we describe the experimental design and data collection. In Sections (2.7) and (2.8), we present our sample characteristics and findings, respectively. Section (2.9) covers the discussion and, finally, Sections (2.10) and (2.11) discuss the limitations/future work and our conclusion, respectively.

2.2 Background on Sudan

Sudan shares multiple aspects with other developing world countries: a large religion-following population, a high poverty rate, perceptions of rampant corruption, and weak institutions. It is a predominantly Muslim country with around 91% of the population Muslims¹. It is among the poorest countries in the world and currently witnessing political and economic upheaval. The United Nations estimates the poverty rate in Sudan at 55.6 % in 2021 based on the national poverty line². It is also classified as one of the most corrupt countries in the world, as per Transparency International.

¹<https://www.state.gov/wp-content/uploads/2020/06/SUDAN-2019-INTERNATIONAL-RELIGIOUS-FREEDOM-REPORT.pdf>

²<https://publications.unescwa.org/projects/escwa-survey/sdgs/pdf/en/ESCWA-Economic-Social-Survey-2019-2020-En.pdf/>

Over the last few years, Sudan has been undergoing political and economic turmoil that is potentially weakening its fragile institutions further. A popular uprising in 2019 led to the overthrow of Al-bashir, a dictator who ruled Sudan for 30 years, and the establishment of a civilian-led transitional government based on a partnership between the army and most of the political parties that participated in the uprising. However, this partnership was short lived and in October 2021 the army overthrew the civilian government and retook power (Abuelgasim & Magdy, 2021). Since then, the economic situation has deteriorated drastically with inflation rising to historic levels even after the government took austerity measures to curb it (Abdelaziz, Eltahir, & Lewis, 2022). There are ongoing protests against the military junta that is ruling the country and no signs of political or economic stability in the near future (Abuelgasim & Magdy, 2021). These conditions likely impact the population's perceptions of the government and its ability to establish or enforce the rule of law.

According to Transparency International, Sudan is ranked 164 out of 180 countries on the corruption perception index³. With perceived widespread corruption and a lack of stable institutions to establish the rule of the law, are there any interventions that could reduce cheating and increase honesty in Sudan? Could religion be a solution to promote honesty and trust in society? While past research on the impact of religious reminders as an intervention in promoting honesty mostly suggests their effectiveness, this research was primarily conducted in Western democracies with little research in the developing world where it might be needed the most.

2.3 Related Work

The literature on how religion and religious reminders might affect prosocial behaviors including honesty is relatively small, particularly research establishing a causal link. Furthermore, existing research mostly views religion as a monolithic factor that either induces or reduces prosocial behaviors without tapping into multiple dimensions of religious beliefs. Moreover, most of the

³<https://www.transparency.org/en/countries/sudan>

existing research focuses on extrinsic motives with very little investigation on the impact of intrinsic ones.

Current research views honesty as an outcome driven by economic, social or psychological motives. Some scholars argue that honesty is an outcome of economic motives and can thus be enforced through monitoring and punishment (Becker, 1968). Others suggest that honesty can be driven by social and psychological factors such as moral values and social norms including those driven by religious beliefs (DeBono et al., 2017; Mazar et al., 2008; Randolph-Seng & Nielsen, 2007; Schulze & Frank, 2003).

There is a substantial body of research that examines the role of economic or monetary incentives in promoting honesty. According to this line of research, interventions that aim at increasing honesty adopt a cost-benefit framework by attempting to increase the costs of dishonesty through monitoring and enforcement and/or reducing its benefits (Becker & Stigler, 1974). While proven to be effective in most cases (Abbink, Irlenbusch, & Renner, 2002; R. Banerjee, Baul, & Rosenblat, 2015; Duflo & Hanna, 2005; Fisman & Miguel, 2007; Olken, 2007; Yang, 2008b), this approach has side effects including crime displacement (Yang, 2008a) and low morale – a key indicator of economic and workplace performance (Koike & Saso, 1988; Weakliem & Frenkel, 2006) – since the question becomes an economic question (risk vs rewards) rather than a moral one (Schulze & Frank, 2003).

A more recent and increasing body of work looks at honesty as an outcome of social and psychological rather than just economic motives. Researchers who investigate these motives highlight the impact of social image, self-image and internalized norms on an individual's decision to act honestly (Cohn, Gesche, & Maréchal, 2022; Cohn et al., 2019; Gneezy, 2005; Lundquist, Ellingsen, Gribbe, & Johannesson, 2009). People might choose to act honestly in their communities because of the fear of social sanctions or to preserve their social image (Cohn

et al., 2022). Internalized norms are established preferences that come as a result of social learning and cultural transmission (Gneezy, 2005; Lundquist et al., 2009). A few studies illustrate that individuals can be driven by self-image and internalized norms concerns in the absence of monitoring (Cohn et al., 2019; Schulze & Frank, 2003).

Abeler et al. (2019) in their meta-analysis identify two primary motives for being honest: being seen as honest (extrinsic) and the internal reward that comes from feeling that one is honest (intrinsic). Ryan and Deci (2000) define intrinsic motivations as ones that lead to an action or activity because it is inherently satisfying and self-driven (i.e., the reward is in the activity itself). Therefore, decisions driven by self-image or internalized norms are intrinsic. Extrinsic motivations, on the other hand, are ones that lead to a separate outcome which could be physical, economic, or social (Ryan & Deci, 2000). Hence, economic incentives and socially-driven motives (such as social image) are extrinsic in nature because they involve external rewards or observation by other entities.

In the next two subsections, we examine the existing literature on 1) religious motives and reminders and 2) intrinsic and extrinsic motives and reminders, and their respective impact on prosocial behaviors in general and honesty in particular.

2.3.1 Religious Messaging and Reminders

Religion stretches between social and moral norms as well as extrinsic and intrinsic motives (Allport, 1963, 1966; Bryan, Choi, & Karlan, 2021; Dyreng et al., 2012; Ebstyne King & Furrow, 2008; Norenzayan, 2013). Religious beliefs are transmitted in social settings, including, principally, the family setting (Kelley & De Graaf, 1997; Norenzayan & Shariff, 2008). Over time, some of these beliefs are internalized and become a set of established preferences (Allport, 1966). Norenzayan and Shariff (2008) suggest that a religiously-induced prosociality is driven primarily by a belief in a watching God. In a recent study, Bryan et al. (2021) demonstrate in a randomized

controlled trial that religious teachings, particularly promoting Protestant beliefs, increases grit and leads to better economic outcomes.

As mentioned, existing causal research on how religion might affect social behaviors looks at how it induces either prosocial or antisocial behavior. Some studies suggest that religious reminders promote honesty and charitable giving (Aveyard, 2014; Duhaime, 2015; Mazar et al., 2008; Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007). Others indicate that religious reminders might induce antisocial behaviors, such as discrimination, aggression, and animosity against out-group members (Bushman, Ridge, Das, Key, & Busath, 2007; Ginges, Hansen, & Norenzayan, 2009; M. K. Johnson, Rowatt, & LaBouff, 2010).

We are aware of only a few studies that compare different aspects of religion in assessing its impact on prosocial behavior (DeBono et al., 2017; McClendon & Riedl, 2015). In one study, DeBono et al. (2017) find that a reminder about the punishing aspect of God increases honesty, while a reminder about the forgiving aspect of God decreases honesty. McClendon and Riedl (2015) suggest that religiously-framed self-motivated messages are more effective in increasing political participation. However, these studies do not compare their observed outcomes to those in a neutral control group.

Some scholars compare religious versus non-religious (secular) reminders in promoting social behaviors (McClendon & Riedl, 2015; Rifat et al., 2017; Shariff & Norenzayan, 2007). While all find that religious reminders increase prosocial behaviors, the results on non-religious reminders are mixed. Shariff and Norenzayan (2007) suggest that both religious and non-religious reminders about government institutions have positive effects on allocating money to others in a dictator game. Rifat et al. (2017) indicate that sending religiously-framed SMS messages significantly increases donations to a mosque fundraising while non-religiously framed messages have a weak impact. Finally, McClendon and Riedl (2015) suggest self-affirming messages in general and

religiously-framed ones in particular increase participation in political campaigns. These findings show the importance of further examining and comparing these types of reminders to better understand when and potentially how they work.

2.3.2 Extrinsic and Intrinsic Motivations and Reminders

In behavioral science, extrinsically motivated behaviors are those caused by external reward or punishment (or in the belief thereof); intrinsically motivated behaviors are those enacted for their inherent satisfaction (Ryan & Deci, 2000). We note that many behaviors (e.g., not cheating on an exam) can be motivated by either extrinsic or intrinsic motives. In this study, we will additionally refer to *extrinsic* and *intrinsic reminders* – information-based interventions (messages, videos or other type of cues) that remind a person of an association between a prosocial value and an extrinsic (or intrinsic) motivation, with the purpose of inducing a behavior compatible with the value (Fein & Spencer, 1997; Festinger, 1957).

Existing research on promoting honesty is dominated by the study of extrinsic motivations, with fewer studies investigating the impact of intrinsic motives (Abeler et al., 2019; Schulze & Frank, 2003). Most of the research discussed earlier in this section investigates the impact of extrinsic motivations, whether they are economic, or social on promoting prosocial behaviors in general and honesty in particular. These studies suggest that reminders about a monitoring and punishing agent, whether it is God, community or other agents promote prosocial behaviors (Abbink et al., 2002; R. Banerjee et al., 2015; DeBono et al., 2017; Duflo & Hanna, 2005; Fisman & Miguel, 2007; Gneezy, 2005; Olken, 2007; Schulze & Frank, 2003; Shariff & Norenzayan, 2007; Yang, 2008b).

Research on intrinsic reminders shows that they can be effective in promoting prosocial behaviors such as reducing bias against out-group members. However, we are not aware of many studies that measured its impact on honesty (Abbadi, Chen, Lin, & Toyama, 2020; Fein &

Spencer, 1997; Shu, Mazar, Gino, Ariely, & Bazerman, 2012).

Within studies that compare the impact of intrinsic and extrinsic motivations on honesty, intrinsic motives are identified as the exhibition of honesty absent any external factor (Abeler et al., 2019; Cohn et al., 2019; Schulze & Frank, 2003). Schulze and Frank (2003) demonstrate how, when monitoring is not present, some participants act in an honest way and hence conclude these participants are driven by intrinsic motives. However, when external monitoring is present, they find that, while all participants cheat, these participants do so to a lesser degree. Moreover, Cohn et al. (2019) suggest that a combination of altruistic as well as self-image concerns make people more honest in the absence of monitoring. Finally, Abeler et al. (2019) suggest in their meta-analysis and follow-up experiments that two primary motives in determining honesty are being honest (intrinsic) or being seen as honest (extrinsic).

Based on the existing literature, we identify several gaps that we would like to address in our research. First, we are unaware of a comprehensive framework that investigates how religion might affect prosocial behaviors. Moreover, very little research compares the impact of extrinsic and intrinsic reminders on promoting honesty. We are similarly aware of only a few studies that compare different religious types of religious messaging, none of which investigated the impact of various types of religious messaging on honesty. In addition, there do not seem to be many studies that compare the impact of religious versus non-religious reminders on promoting honesty. Finally, most of the existing research about honesty is conducted in a lab setting or in the developed world with only a handful of studies focused on the developing world.

In this study, we make two sets of contributions to the literature. First, we develop a framework to illustrate how religious beliefs might affect prosocial behaviors in general and honesty in particular. In addition, we compare the impact of religiously-framed extrinsic and intrinsic reminders to non-religious ones in promoting honesty in Sudan, a country with a predominant Muslim popula-

tion, a corrupt government and weak institutions.

2.4 Theoretical Framework

There are multiple ways through which religious beliefs might affect social behaviors. In this section, we develop a theoretical framework of how religious beliefs might affect prosocial behaviors including honesty. In doing so, we leverage existing frameworks and theories on religious beliefs and motives. We also draw on religious texts to support our framework where appropriate.

For the purpose of this study, we define religion as a set of beliefs and practices generally associated with God or a supernatural entity that a group of people share (Beit-Hallahmi & Argyle, 1975; Geertz & Banton, 1966; Schilderman, 2014; Sedikides & Gebauer, 2013). Central to many religions is a belief in a God who is the absolute source of power, knowledge, justice and moral values (Atran, 2002; Norenzayan & Hansen, 2006). It is conjectured that these prescribed values might induce prosocial behaviors towards all humans or sometimes towards only in-group members, at the possible expense of out-group members (Allport, 1950; DeBono et al., 2017; Ginges et al., 2009; Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007). Often, a religion's belief system also entails methods of encouragement or enforcement of its moral values; for example, God may punish wrong-doers and reward those who act well (Ausubel, 1955; McAdams et al., 2008; Norenzayan, 2013; Norenzayan & Shariff, 2008).

A key point of our framework is that there are some mechanisms that drive the behavior of religious people but not the behaviors of others. The literature identifies at least three broad categories of such mechanisms. First, and as above, religious people often believe that their religion provides a means to enforce or encourage moral values through the potential punishment or reward, in this life or the afterlife (DeBono et al., 2017; Shariff & Norenzayan, 2007; White,

Kelly, Shariff, & Norenzayan, 2019; White & Norenzayan, 2021). Second, many religious people have an emotional affinity towards religious figures (both natural and supernatural) driven primarily by emotions of love and attachment (Kirkpatrick, 2005; Luhmann, 2012; Ozorak, 2003). Because of that affinity, religious people may be inclined toward moral action to avoid the disapproval of religious figures (whom they believe will somehow know or be able find out), or to emulate them as role models. In addition, religious people tend to attribute positive life outcomes to a higher power (Emmons & Crumpler, 2000; Spilka & Schmidt, 1983) and may reciprocate indirectly or express gratitude to that entity through moral actions to people (Nowak & Sigmund, 2005).

Like non-religious behaviors, religiously driven behaviors can also be based on intrinsic or extrinsic motives. Psychologists differentiate between intrinsic motives, which lead to behaviors that are satisfying to the self, and extrinsic motives, which are driven by the hope or expectation for external rewards whether these are economic, social or physical (Ryan & Deci, 2000).

Regarding intrinsic motives, internalized moral norms and self-image are two main intrinsic motivators for people to act prosocially. People internalize social norms about prosocial behaviors which then become part of their set of preferences and moral values (Cohn et al., 2019; Gneezy, 2005). Accordingly, people act prosocially in order to be consistent with their moral norms to avoid the cognitive dissonance from acting anti-socially as well as a sense of guilt (Festinger, 1957; Kandel & Lazear, 1992; Steele & Liu, 1983). People might also act prosocially to maintain a positive self-image. Self-concept theory suggests that individuals tend to have a view of themselves as physical, social and moral beings (Gecas, 1982). Researchers suggest that activating people's self-concepts by making them more aware of their behaviors leads to a greater prosocial behavior (Mazar et al., 2008; Shu et al., 2012). Attention to moral values could be induced via different types of cues or reminders (Aveyard, 2014; Duhaime, 2015; Mazar et al., 2008; Shu et al., 2012). Hence, people might act prosocially to reinforce a positive self-image and feel good

about themselves.

On the other hand, people may be motivated to act prosocially for extrinsic motivations. For example, people might act prosocially to avoid punishment or receive a reward from an enforcement agent (such as the government or God) (Abbink et al., 2002; Becker & Stigler, 1974; Fisman & Miguel, 2007; Shariff & Norenzayan, 2007). Or else, they might act prosocially to preserve their social image by complying with social norms of their community (Andreoni & Bernheim, 2009; Frey & Neckermann, 2008; Lacetera & Macis, 2010).

Examining the motivations of those who are religious, these concerns – extrinsic or intrinsic – might be triggered by religion, whether it is the belief in God (or other religious figures) as an entity or the prescribed set of religious beliefs – two sources that mostly do not apply to non-religious people. Here and in the remainder of the study, we refer to “God” as the source and enforcer of religious moral values, for convenience and because it aligns with Islam, the dominant religion in our study site of Sudan.

We construct our framework of how religion (and non-religion) might affect prosocial behaviors at four levels. The framework includes non-religious sources and beliefs so as to demonstrate how they relate to the religious elements of the framework. They are not meant to be an exhaustive list of non-religious motivations. At the first level, we identify the source of a given belief as being either religious or non-religious (society, family, education, etc). At the second level, we identify a set of beliefs or preferences associated with the source noted in the first level, whether these beliefs are about God, moral values, or institutions such as the government that some believe is a substitute for God as an enforcement agent in modern societies (Hungerman, 2005). At the third level, we identify the different motives or concerns that these beliefs might elicit or determine whether they are intrinsic (self-image or internalized moral norms) or extrinsic (social-image or reward and punishment). At the fourth level, we identify the outcome – the observed prosocial

behavior. For each route from a source → established belief or preference → motive (or concern) → observed outcome, there is potentially a mechanism or a set of mechanisms that might induce prosocial behavior. We illustrate this framework in Figure (2.1).

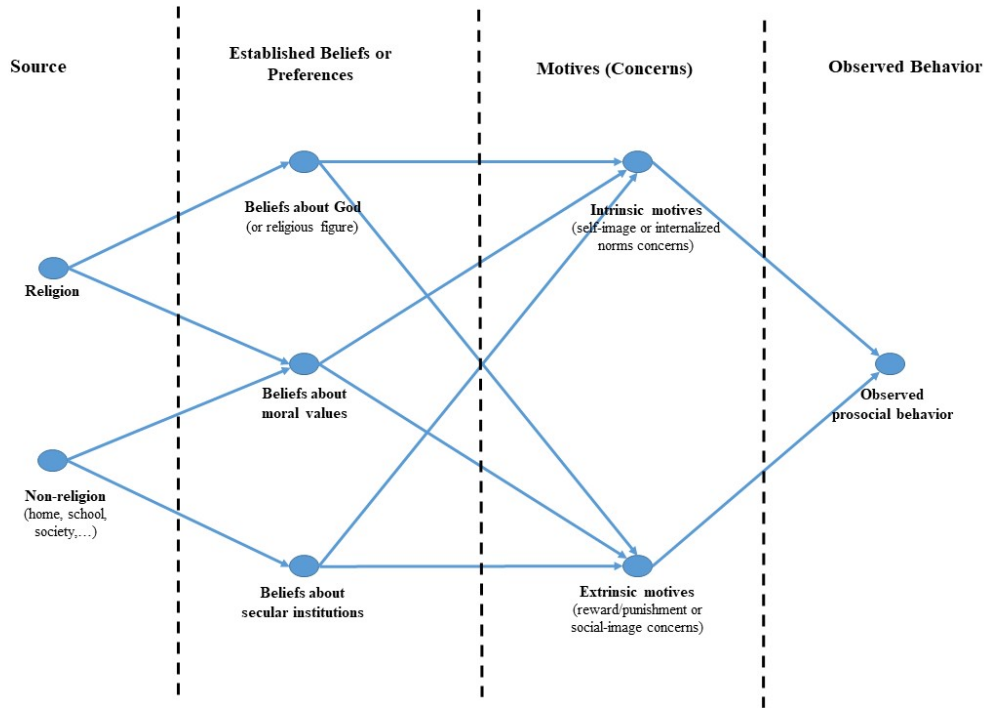


Figure 2.1: **Framework to illustrate how religion (and non-religion) might affect prosocial behaviors.**

Each route from source → established beliefs → motives or concerns → observed social behavior is a potential mechanism for pro-social behavior. For example, religion is a source of one’s beliefs that God knows everything and punishes wrongdoers and because of punishment concerns, one might act prosocially.

According to the framework, we identify a set of mechanisms that underlie prosocial behaviors in religious people and classify these mechanisms according to whether they serve as an extrinsic or intrinsic motive and whether the underlying belief is of God as an entity or of the moral values derived from religion.

In terms of religious mechanisms, we identify at least five different *intrinsic mechanisms* that might motivate religious people to act prosocially – three of which are driven by the belief in God

as an entity.

- ***Driven by beliefs about moral values based on religion, one might act prosocially for the following reasons:***

- to be consistent with their religious moral values. As indicated earlier, people internalize social norms about prosocial behaviors which then become part of their preferences (Cohn et al., 2019; Gneezy, 2005). Moreover, religion plays an important role in constructing social norms about prosocial behaviors (Dyreg et al., 2012; McGuire, Omer, & Sharp, 2012). Therefore, religious beliefs about prosocial behaviors become part of one's moral values. Accordingly, people act prosocially in order to be consistent with their "religious" moral values.
- to maintain a positive self-image based on religious cues or reminders. As suggested earlier, people are more prosocial when their self-concept concerns are activated through behavior-awareness prompts. Moreover, attention to moral values could be induced via religious cues (Aveyard, 2014; Duhaime, 2015; Mazar et al., 2008). Therefore, people act prosocially to have a positive self-image and to feel good about themselves according to their religious beliefs.

- ***Driven by a belief in God (or religious figure) as an entity that is loved, can provide, and can be emulated, one might act prosocially for the following reasons:***

- to feel accomplished by emulating a religious figure. (Shariff & Norenzayan, 2007) suggest that religious-based prosocial behavior might be driven by an association with God or a member of the religious hierarchy as a role model for the behavior. Many religions depict God or a member of the religious hierarchy as moral actors and the ultimate representation of a certain value that people should try to emulate. In Christianity, for example, "Jesus always speaks the truth," while in Islam, Prophet Mohamed is named as "the truthful and trustworthy". Hence, people might try to feel accomplished by emulating Jesus, or Mohamed as role models when acting prosocially. Note, that

this is similar to the positive self-image mechanism but is instead driven by a moral figure or authority rather than a reminder of the moral value.

- to please God because she loves and empathizes with God. Many scholars suggest that religious people show indications of their love of and attachment to God (Beck, 2006; Kirkpatrick, 2005; Ozorak, 2003). Moreover, researchers suggest that individuals tend to show empathy for those they love and feel attached to (i.e., they can feel what these others feel) (Joireman, Needham, & Cummings, 2002; Preece & Ghozati, 2001). Therefore, religious people might act prosocially because they believe that God will be pleased if they do since the intended behavior is important to God and they empathize with God.
- to show gratitude to God for the positive things she has in life that God bestowed upon her. Many scholars suggest that religiousness is associated with gratitude in general and to God in particular for the blessings individuals have (Krause, 2006; Rosmarin, Pirutinsky, Cohen, Galler, & Krumrei, 2011). Moreover, people who feel gratitude towards an entity tend to reciprocate (Bock, Thomas, Wolter, Saenger, & Xu, 2021). Therefore, reminding religious people of the positive events in their life and attributing these events to God might make them want to reciprocate to God indirectly by acting prosocially towards other people (Nowak & Sigmund, 2005).

Moreover, we identify at least four different *extrinsic mechanisms* that may motivate religious people to act prosocially – three of which are driven by a belief in God as an enforcement figure.

- *Driven by beliefs about moral values based on religion, one might act prosocially for the following reasons:*

- to comply with the social norms of one’s religious community for social-image concerns. Norenzayan and Shariff (2008) suggest that religion functions at least in part, to facilitate cooperation among large groups of people. Many religious texts encourage people to act prosocially towards in-group members (C. Batson, Schoenrade, & Ventis,

1993; Durkheim, 1995). People adhere to social norms because they expect a social (or material) reward or are afraid of bearing social (or material) sanctions. Hence religion signifies expected behavior among group members and becomes a source of social norms among religious groups and potentially a source of antisocial behaviors towards out-group members.

- *Driven by a belief in God as an enforcement figure, one might act prosocially for the following reasons:*

- to avoid God’s disapproval. As indicated earlier, many religious people have an attachment to God and love God (Kirkpatrick, 2005; Ozorak, 2003). A normal consequence is that they might fear God’s disapproval if they believe that God will not be happy with the person for acting dishonestly. Hence, they act prosocially to avoid God’s disapproval.
- to avoid God’s punishment in this life or the afterlife. Shariff and Norenzayan (2007) suggest that religious-based prosociality might be driven by a fear of God as a consistent source of enforcement. Many religions portray a watching God who is just and all-knowing and has the power to reward good-doers and punish wrongdoers (Shariff & Norenzayan, 2007, 2011). Hence, religious people might act prosocially believing that they might be punished/rewarded if they act prosocially/antisocially.
- conversely, to receive a reward from God.

It should be noted that mechanisms driven by the love of or attachment to God, emulation of a religious figure, punishment/reward of God and showing gratitude to God are distinctive to religious people. Other mechanisms that religious people may respond to are extensions to non-religious ones and are primarily ones driven by moral values, moral image, and social norms.

As mentioned, there may be other mechanisms that potentially promote anti-social behavior and fit in an analogous framework. For example, [DeBono et al. \(2017\)](#) suggest that reminding people about the forgiving aspect of God may encourage anti-social behaviors by making them feel that, whatever they do, it will be forgiven as long as they repent. Also, [Ginges et al. \(2009\)](#) indicate that certain religious messaging might trigger antisocial behavior towards out-group members. These mechanisms are parallel to the ones in our framework and may be driven mostly by a belief in God as a forgiving (rather than punishing) or religious beliefs that reinforce in-group affiliation by motivating anti-social behavior towards out-group members.

Most of the existing literature on the role of religion as a motivator takes it as a whole, without differentiating between underlying mechanisms. The framework above illustrates that there are many mechanisms for religiously motivated prosocial behavior. In this study, we attempt to identify, from a subset of possibilities, which religious mechanisms are more effective in motivating prosocial behavior. We examine the impact of religiously-framed extrinsic and intrinsic reminders and compare them to non-religious ones in promoting honesty. Particularly, we compare the effects of a reminder about God's punishing of wrongdoers and a reminder about Islam's valuing of honesty. The former represents an extrinsic motivation and the latter an intrinsic one. We also compare the effectiveness of these reminders to that of analogous non-religious reminders: the punishment by government in establishing the rule of law and the importance of honesty and trustworthiness for oneself. Figure (2.2) illustrates the four mechanisms through which our interventions might affect honesty. In addition to participating in our experiment, subjects are given a brief follow-up survey to aid us in exploratory analysis and mechanism identification.

2.5 Pre-registered Hypotheses

According to the existing literature, we hypothesize that all four treatments will reduce dishonesty compared to the control as measured by the reported number of heads in a coin-flipping game. We

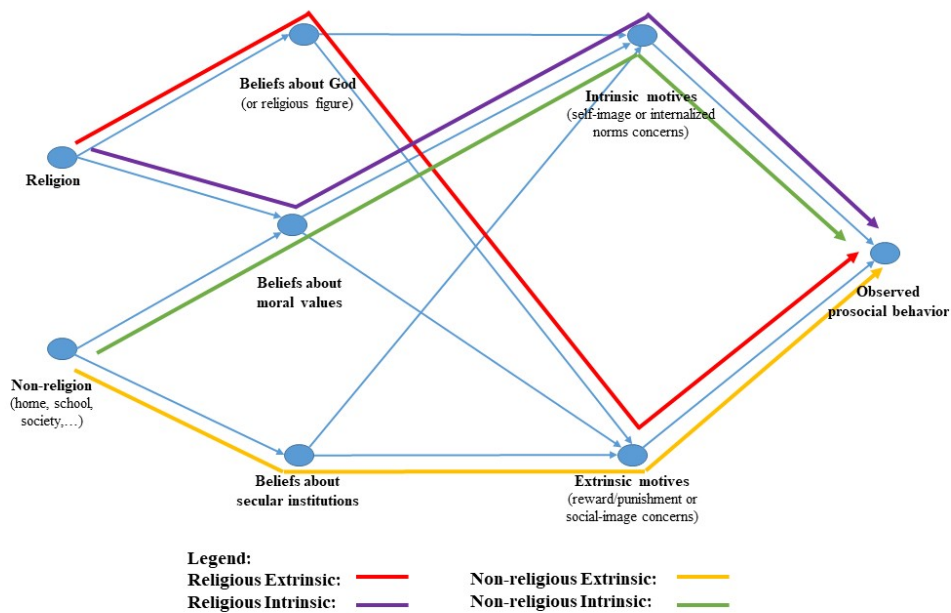


Figure 2.2: **Illustration of mechanisms through which the four interventions might affect prosocial behaviors.**

Each color-coded line illustrates the potential mechanism for the four treatment conditions from the source of the reminder (religious or non-religious), through the underlying beliefs these sources help establish and are highlighted in our reminders (about God, secular institutions or moral values), to the concern we attempt to activate (extrinsic or intrinsic), to the observed behavior. For example, the yellow line represents one treatment with a non-religious source, a secular belief in the authority of government, and a concern about government-imposed punishment, all leading to potentially more honest behavior.

pre-registered our hypotheses in the AEA Registry as [Abbadì and Toyama \(2022\)](#).

[DeBono et al. \(2017\)](#) illustrate in their studies how reminding people about the punishment by God of wrong doers will increase honesty. Hence, we hypothesize that:

Hypothesis 1 (Religious Extrinsic). A religious extrinsic reminder will reduce dishonesty compared to the control.

Research on value affirmation ([Abbadì et al., 2020](#); [Fein & Spencer, 1997](#)) finds that, when someone indicates the importance of a certain value for themselves, they are more likely to adhere

to this value by increasing the moral cost. Moreover, as [Mazar and Ariely \(2006\)](#) indicate when someone is reminded about religious virtues, they are similarly more likely to adhere to those virtues. Hence, we hypothesize that:

Hypothesis 2 (Religious Intrinsic). A religious intrinsic reminder will reduce dishonesty compared to the control.

[Shariff and Norenzayan \(2007\)](#) illustrate how reminding people about a credible secular institution such as the court or the police will increase prosocial behaviors based on the moral authority associated with this institution. Hence we hypothesize that:

Hypothesis 3 (Non-religious Extrinsic). A non-religious extrinsic reminder will reduce dishonesty compared to the control.

Finally, research on value affirmation ([Abbadi et al., 2020](#); [Fein & Spencer, 1997](#)) finds that when someone indicates the importance of a certain value, they are more likely to adhere to this value by increasing the moral cost ([Cohn et al., 2019](#)). Hence, we hypothesize that:

Hypothesis 4 (Non-religious Intrinsic). A non-religious intrinsic reminder will reduce dishonesty compared to the control.

2.6 Experimental Design and Data Collection

We implement a randomized control trial to compare the impact of religiously-framed extrinsic and intrinsic reminders and non-religious ones in increasing honesty in Sudan, a country where more than 90% of the population identify as Muslims. Our study consists of approaching individuals in-person and having them complete a survey and coin-flipping game online. Due to the online nature of our survey, we target college students who likely have smart phones and access to the Internet. To conduct the experiment, enumerators visited several universities and

colleges located in different cities in Khartoum State (Khartoum, Omdurman, Khartoum North, and East Nile) from mid February to mid March 2022. Due to security concerns, we did not collect the names of universities in our data collection protocol. The number of visits to different university campuses varied between one to three visits depending on the size of the university as well as students' availability and response rates. We ensured access to each campus by requesting approvals from the universities' administration to recruit students to participate in an online study before each visit so that enumerators would not be questioned by security guards. The determination of which campus to visit was made based on availability of approval from the university's administration, availability of students on campus on that day and whether it was safe to visit a particular area due to ongoing protests in the country.

For subject recruitment, enumerators visited nine colleges and universities and approached students in common areas such as cafeterias to participate in an online survey. In return for their participation, students were told they could earn a mobile credit. Enumerators walked around each campus carrying an A4-sized paper that had a QR-code linked to the online survey. They asked students to participate in an online survey about optical character recognition (OCR) for Arabic text and in return they could earn 500 SDG (~1 USD) or more for their participation. Enumerators also informed potential participants that we were trying to encourage people to participate in online surveys and hence they could earn additional money if they complete the second part of the survey. Those who verbally agreed to participate, were asked to scan the QR-code which would give them access to the survey using their smart phone. We also informed them that they needed to fill out the survey individually at their own time. Finally, we told them they would receive the mobile credit within 24-48 hours and in case they did not receive it, they could reach out to us via the email address that was included in the survey.

The experimental protocol consisted of four parts: a consent form, a demographic survey, a text transcription component, and finally a post survey that includes the coin-flipping game.

Individuals who agreed to participate had to electronically sign the consent form. Following the consent, they filled out a short demographic survey (Section A.1.2 in Appendix A). Following the demographic survey, we asked them to transcribe two handwritten texts and write down what they understood from the text; the first text varied by experimental condition while the second one was a standard neutral text. After completing the transcription, we informed them that they earned 500 SDG in mobile credit and that they would receive it within 24-48 hours. We also informed them that there was another short survey and that they could earn additional money based on their luck by playing the coin-flipping game online and answering a few more questions. For coin-flipping game, we asked them to flip a coin 10 times by using any online coin-flipping site (and provided them with 3 websites as options) and, for each heads versus tails that they reported, they could earn an additional 50 SDG (~0.10 USD). After they completed the coin-flipping game, we asked them whether they played the game and, if so, how many heads they obtained in their coin tosses. We then tried to elicit some of their beliefs and preferences for further analysis of the data.

The hand-written text in the transcription section was similar in length across all groups but varied by experimental condition. We randomly assigned participants to one of five conditions; a control, a religious-extrinsic reminder, a religious-intrinsic reminder, a non-religious extrinsic reminder and, finally a non-religious intrinsic reminder. Those assigned to the control group were asked to transcribe a text containing general information about Sudan (its area, population, and weather). Those assigned to the religious-extrinsic arm were asked to transcribe a text about a verse in the Quran that warns people not to cooperate in sin and aggression and to to fear Allah because Allah is severe in punishment. Those assigned to the religious-intrinsic arm were asked to transcribe a text from one of prophet Mohamed's Hadith (saying) that reminds people about truth telling, trust, good manners and chastity. For the non-religious extrinsic arm, we asked participants to transcribe a text about the importance of the rule of the law and how fear of punishment is an important factor for state sovereignty. For the non-religious intrinsic arm, we asked participants to transcribe a text about honesty and trustworthiness for oneself. The full text of the transcriptions

and their translation can be found in Appendix (A), Section (A.1.3).

Our primary outcome measure, the reported number of heads in the coin-flipping game, is the indicator for level of honesty. We asked participants to flip a coin online using any website and provided them with three options. Hence, participants had a high sense of confidence that they would not be detected if they misreported. Moreover, for every head they reported, they earned an additional 50 SDG (~0.10 USD). Assuming none of the participants under-reported the number of heads they obtained, we can calculate the percentage of reported heads as

$$r = 1 * m + 0.5 * (1 - m) = 0.5 + 0.5m \quad (2.1)$$

where r is the reported number of heads and m is the misreported (or over-reported) component of this reported number (Cohn, Maréchal, & Noll, 2015; Houser et al., 2012). Based on the expected distribution if everyone were honest, the percentage of reported heads should be $\mathbb{E}(0.5)$. We can thus estimate the percentage of cheating by

$$m = 2r - 1 \quad (2.2)$$

After playing the coin-flipping game, we ask participants to respond to some survey questions as well as three item count technique lists. We do so to perform a manipulation check, identify the underlying mechanisms and observe additional interesting trends. For example, we ask participants about different God's attributes that they think of and whether they associate God more with love or fear. A full list of the post survey questions and item count technique statements can be found in Appendix (A) Section (A.1.5.2).

Overall, there were 1,657 people who agreed to participate in the study. Of these, 1396 (84.25%) completed the text transcription section. From those who completed the transcription portion, 790 (56.6%) participated in the second survey and had a chance to play the coin-flipping

game. 698 of this group (88.35%) then reported that they played the coin-flipping game.

The above summary statistics show that we had a high attrition rate after administering the treatments (43.4% of the sample dropped out after the interventions and before participating in the coin-flipping game). Thus, we conduct an attrition analysis to ensure that our results remain valid.

In our main analyses, we exclude 71 observations collected by one enumerator (E1) from the final set of those who reported that they played the coin-flipping game. We exclude these observations since E1 did not follow the outlined protocol for our experiment. Enumerators were supposed to provide the link to the survey to participants and allow participants to complete it at their leisure. Instead, E1 had participants show her their completed survey screen. In normal situations, if participants feel they are being watched, we expect they would be more honest. However, we observe a different pattern for the 71 observations collected by E1. The average number of reported heads from the sub-sample she recruited was significantly higher than that for the sample collected by the rest of the team, as seen in Table (A.3). Column (1) shows the results with the omitted variable being E1 (the enumerator who did not follow the protocol) and Column (2) shows the result one with the omitted variable being E3 (the enumerator closest to the mean before exclusion). Table (A.4) shows the means for each enumerator. Hence, we exclude the observations collected by this enumerator. This gives us a final set to 627 observations for our main analyses.

2.7 Sample Characteristics and Balance Check

The sample in our study is relatively young, gender balanced and well-educated, according to the summary statistics (Table 2.2 Column 1). The average age of participants is ~22 years; 52.6% of the sample are females; and more than 84% of the sample are pursuing their bachelors degree or higher. These characteristics are expected given our focus on recruiting participants on university campuses. More than 43% of our sample did not report their income and hence

we include the "Don't know/Refuse to Answer" category in the summary statistics for income only.

Furthermore, a balance check indicates that the randomization of our subjects has worked in our study. We ran a joint orthogonality test on collected covariates (age, gender, income, and education) and report the respective p-values in Column (7) of Table (2.2). None of the p-values is significant suggesting our procedure effectively randomizes subjects across the different conditions. In order to test the robustness of our main results, we run our OLS regressions after controlling for demographic covariates and report the results in Section (2.8.2).

Table 2.2: Sample Characteristics and Balance Check - Orthogonality Test

Category	Subgroup	(1) Overall Sample	(2) Control	(3) Religious Extrinsic	(4) Religious Intrinsic	(5) Non-Religious Extrinsic	(6) Non-Religious Intrinsic	(7) <i>p</i> -value
Number	N	627	118	122	129	121	137	
Age	mean	21.947	22.325	21.761	22.520	21.600	21.554	0.211
Gender	Female	0.526	0.542	0.516	0.543	0.529	0.540	0.642
Income	Less than 10,000 SDG	0.265	0.271	0.262	0.24	0.24	0.314	0.732
	10,001 to 20,000 SDG	0.123	0.076	0.123	0.163	0.099	0.153	0.228
	20,001 to 40,000 SDG	0.106	0.119	0.115	0.116	0.083	0.102	0.868
	40,001 to 80,000 SDG	0.043	0.059	0.041	0.047	0.041	0.029	0.885
	More than 80,000 SDG	0.032	0.034	0.041	0.031	0.033	0.022	0.963
	Don't Know/Refuse to Answer	0.431	0.441	0.418	0.403	0.504	0.38	0.126
Education	Below High School	0.01	0.017	0.008	0.008	0.008	0.007	0.97
	High School	0.043	0.034	0.049	0.047	0.041	0.036	0.735
	Some College	0.101	0.093	0.09	0.132	0.091	0.095	0.843
	Bachelors Degree	0.82	0.831	0.844	0.791	0.835	0.81	0.771
	Graduate Degree	0.019	0.025	0.008	0.016	0.008	0.036	0.519

Column (1): Summary statistics of age, gender, income and education for the overall sample.

Columns (2)-(6) Summary statistics for each treatment arm.

Column (7) reports the respective p-value based on the joint orthogonality test across different arms.

2.8 Results

According to the pre-registered analysis plan and hypotheses (Abadi & Toyama, 2022), we observe that both religious extrinsic and intrinsic reminders increase honesty similarly, as measured by the reported number of heads in the coin-flipping game compared to the control group ($p < 0.05$). Furthermore, we see that the non-religious intrinsic reminder increases honesty

compared to the control but not at the same level as religious-based reminders and at a marginally significant level ($p < 0.10$). Finally, we find that the non-religious extrinsic reminder does not increase honesty compared to the control group (Figure 2.3).

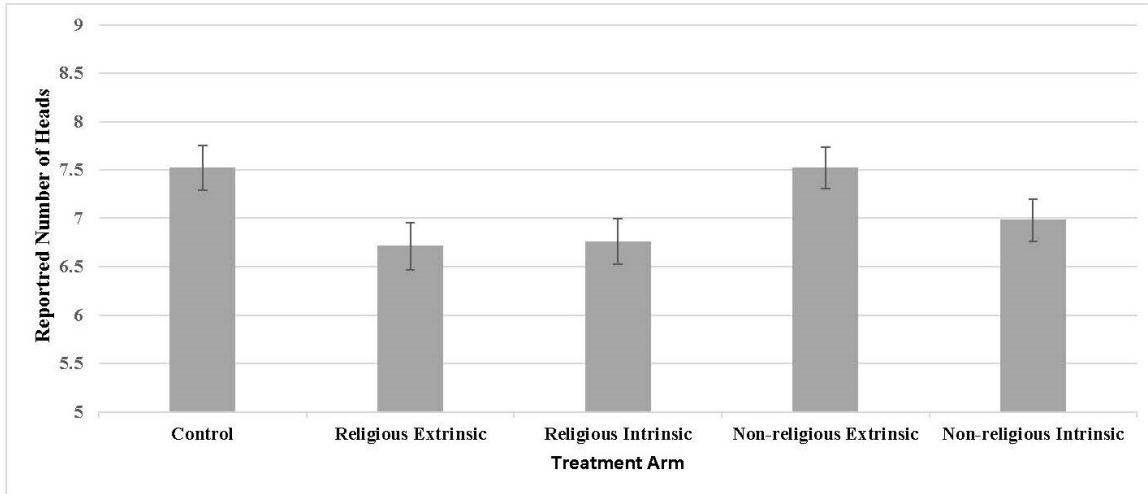


Figure 2.3: **Reported number of heads by experimental condition.**

The figure indicates that both religious reminders significantly reduce the reported number of heads compared to the control ($p < 0.05$). Moreover, the non-religious intrinsic reminder marginally reduces the reported number of heads, compared to the control ($p < 0.10$). However, the non-religious extrinsic reminder does not have any effect on the reported number of heads, compared to the control.

Error Bars indicate standard errors.

The overall mean of our main outcome (reported number of heads) is 7.09 out of possible 10, calculated from the 89.3% of participants (627 out of 702) who reached the second part of the study and indicated that they played the coin-flipping game (Table 2.3). Note that, as part of the post survey, we asked participants whether they played the coin-flipping game (Y/N). 89.3% of our sample indicated that they did so, with no major variation across different conditions (Table 2.3, Panel A). Furthermore, the 7.09 average reported number of heads (out of possible 10) leads us to estimate that the level of cheating is around 41.7% (Equation 2.2). We also observe that

the average reported number of heads in the control group is 7.52. Accordingly, we estimate that 50.4% more heads were reported among the control group than if everyone were to act honestly.

Table 2.3: Outcome Summaries

	Treatment Group	Observations	Mean	S.D.	Min	Max
<i>(Panel A)</i>						
Coin Flip (Y/N)	Overall	702	.8932	.3091	0	1
	Control	135	.8741	.333	0	1
	Religious Extrinsic	133	.9173	.2765	0	1
	Religious Intrinsic	146	.8836	.3219	0	1
	Non-religious Extrinsic	139	.8705	.337	0	1
	Non-religious Intrinsic	149	.9195	.273	0	1
<i>(Panel B)</i>						
Reported Number of Heads	Overall	627	7.088	2.575	0	10
	Control	118	7.517	2.483	1	10
	Religious Extrinsic	122	6.713	2.664	0	10
	Religious Intrinsic	129	6.76	2.687	0	10
	Non-religious Extrinsic	121	7.521	2.388	2	10
	Non-religious Intrinsic	137	6.978	2.554	0	10

Notes:

Panel A shows the percentage of participants who played the coin-flipping game.

Panel B shows the overall average reported number of heads and the breakdown by experimental condition.

Panel A shows that overall 89.3% of participants played the coin-flipping game with no major differences across treatment conditions.

Panel B shows that overall, the average reported number of heads is 7.09 (out of possible 10), with the control group reporting an average of 7.52 heads.

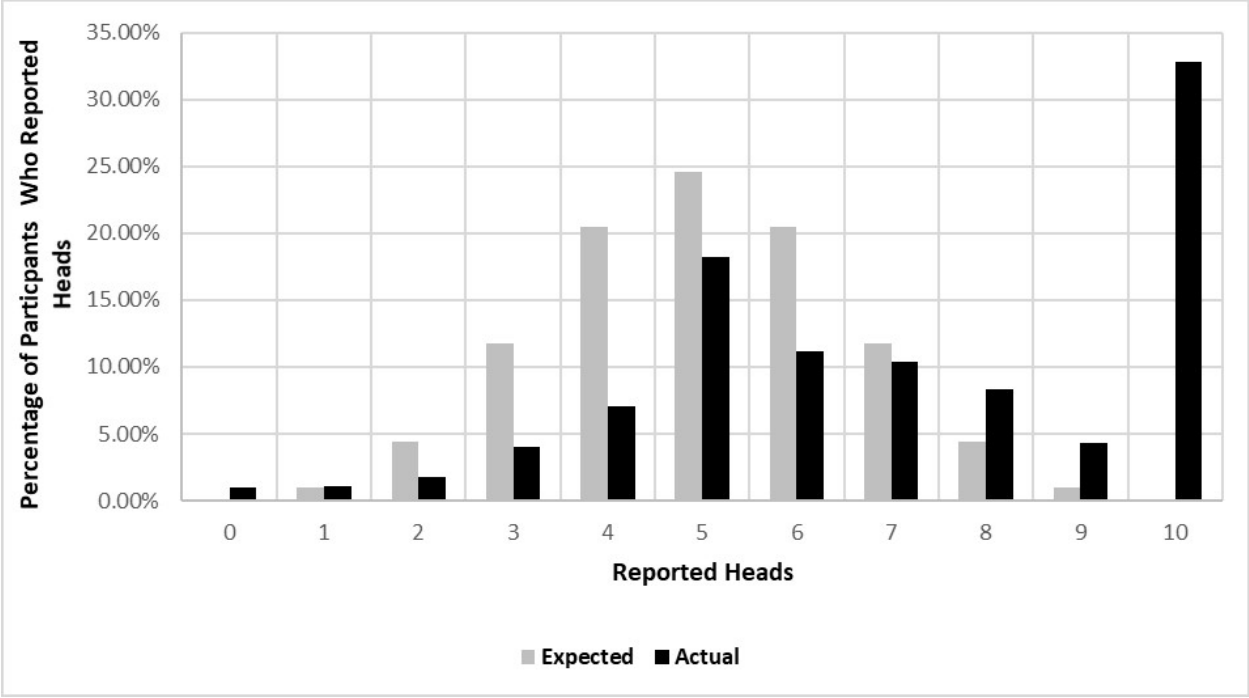


Figure 2.4: **Distribution of reported number of heads (actual versus expected).** Overall, we observe a significant amount of cheating with 32.85% of participants reporting 10 heads (versus expected less than 0.1%). We also observe that under-reporting occurs between 2 and 6 heads (with slight over-reporting at 0 heads) and over-reporting starts at 8 heads. This suggests that, while many of those who cheated did so to the maximum level, a few of those who cheated reported fewer heads than the maximum possible.

In order to estimate the average treatment effect, we employ an OLS model as specified in our pre-registration (Abadi & Toyama, 2022). To check the robustness of our results, we perform a set of checks on our results including Inverse Probability Weighing (IPW) adjustments and a Tobit analysis, and report the results in Section (2.8.2).

2.8.1 Main Results

Based on our pre-registered analysis, we observe that both religious extrinsic and intrinsic reminders increase honesty compared to the control group ($p < 0.05$). Moreover, the non-religious intrinsic reminder marginally increases honesty compared to the control ($p < 0.10$). However, the non-religious extrinsic reminder does not increase honesty compared to the control. Next, we detail the results for our four main preregistered hypotheses. Table (2.4) as well as Figure (2.3) illustrate these results. In Table (2.4), Column (1) shows the average treatment effects based on an OLS model, Column (2) illustrates the results based on an OLS specification using inverse-probability weighting given our relatively high attrition (43.4% of the sample dropped out after administering the treatments and before participation in the coin-flipping game), and Column (3) shows the results based on a Tobit analysis with 10 as an upper bound since 32% of our sample hit the boundary condition and reported 10 heads.

Hypothesis 1: Confirmed. We reject the null of Hypothesis 1 in favor of the alternative and find that the religious-extrinsic reminder increases honesty compared to the control. We observe that the religious-extrinsic reminder reduces the number of reported heads by 0.8 heads (32% or 16.1 percentage points), which is statistically significant ($p < 0.05$) compared to the control group.

Hypothesis 2: Confirmed. We reject the null of Hypothesis 2 in favor of the alternative and find that the religious-intrinsic reminder increases honesty compared to the control. We observe that the religious-intrinsic reminder reduces the number of reported heads by 0.76 heads (30.1% or 15.1 percentage points), which is statistically significant ($p < 0.05$) compared to the control group.

Table 2.4: Main Results: Average Treatment Effects on the Reported Number of Heads

	(1) OLS Reported Heads	(2) OLS – IPW Reported Heads	(3) Probit Reported Heads
Religious Extrinsic	-0.804** (0.332) [0.044]	-0.911*** (0.340) [0.032]	-1.195** (0.495) [0.032]
Religious Intrinsic	-0.757** (0.329) [0.044]	-0.793** (0.331) [0.034]	-1.231** (0.484) [0.032]
Non-religious Extrinsic	0.00371 (0.315) [0.991]	-0.0844 (0.321) [0.792]	-0.0233 (0.508) [0.963]
Non-religious Intrinsic	-0.539* (0.316) [0.119]	-0.588* (0.320) [0.090]	-0.882* (0.480) [0.090]
Constant	7.517*** (0.229)	7.563*** (0.229)	8.500*** (0.378)
N	627	600	627
R^2	0.0186	0.0207	
<i>Pseudo R</i> ²			0.00490

Standard errors in parentheses and FDR-adjusted q-values in square brackets.

Note: Average treatment effects on the reported number of heads based on OLS and Tobit analyses.

Column (1): Average treatment effects with no controls based on OLS.

Column (2): Average treatment effects based on OLS using inverse probability weighting to deal with attrition.

Column (3): Average treatment effects based on Tobit analysis with upper limit = 10.

* $p < .1$, ** $p < .05$, *** $p < .01$

Hypothesis 3: Fail to confirm. We fail to reject the null of Hypothesis 3 in favor of the alternative and find that the non-religious extrinsic reminder does not increase honesty compared to the control. Contrary to our hypothesis, we observe that the non-religious extrinsic reminder does not reduce the number of reported heads compared to the control group.

Hypothesis 4: Confirmed. We reject the null of Hypothesis 4 in favor of the alternative and find that the non-religious intrinsic reminder increases honesty compared to the control. We ob-

serve that the non-religious intrinsic reminder reduces the number of reported heads by 0.54 heads (21.5% or 10.8 percentage points), which is marginally significant ($p < 0.10$) compared to the control group.

2.8.2 Robustness of the Results

To provide greater confidence in our results, we conduct several robustness checks. Our robustness analysis indicates that the impact of the religious-extrinsic reminder is the most robust of our results followed by the religious-intrinsic reminder. The non-religious intrinsic reminder is marginally significant in some cases but not as robust as the former two. We carry out our robustness tests using six alternative analyses. First, since 43.4% of our sample dropped out between administration of one of the interventions and the coin-flipping game, we conduct an attrition analysis to ensure the validity of our results. Our attrition analysis suggests that the attrition was independent of the potential outcome and hence we re-analyze the treatment effects with inverse probability weighting adjustments. Second, we re-run our analysis using a Tobit specification since 32.8% of our sample hit the boundary condition and reported 10 heads. Third, we test the robustness of the results by controlling for covariates as well as enumerator fixed effects. Fourth, we conduct a sensitivity analysis by removing the observations of those who reported 0 heads since the inclusion of these observations might have skewed the results. Six of our participants reported 0 heads (0.96% of our sample) while the expected number should not be more than one (0.1%) based on a normal distribution. Fifth, we analyze the average treatment effects with the complete data set that includes the 71 contaminated observations collected by the enumerator E1 who did not follow our protocols and whose participants' outcomes were statistically greater than other enumerators'. Finally, we run simulations based on our sample size and treatment effects to ensure that the results were not a result of chance.

In our first robustness test, our attrition analysis indicates that it is unlikely that there was selective attrition based on our treatments and observed covariates. As mentioned, around 43.4% of

the initial sample dropped out between the administration of the intervention and the coin-flipping game. While we cannot directly verify whether attrition was independent of participation in the coin-flipping game, we look for indirect evidence based on our treatment assignment and observed characteristics. To do so, we run an ordinary least square regression with participation in the second part of the survey as our binary dependent variable and our treatment conditions and observed covariates as our independent variables (Equation 2.3). In this equation, n_i is an indicator for the non-missing outcome variable. T_{re} , T_{ri} , T_{nre} , and T_{nri} represent the religious extrinsic, religious intrinsic, non-religious extrinsic and non-religious intrinsic treatments, respectively, and X_i is the set of covariates including age, gender, education and income. Based on this regression, the F-test statistic ($p = 0.1009$) indicates that not participating in the coin-flipping game is uncorrelated with the treatments or observed characteristics (Table A.6 Column 1). Moreover, we observe that the non-religious intrinsic reminder significantly increases participation in the coin-flipping game by 9.7 percentage points ($p < 0.05$). However, we believe that this is due to the nature of the intervention itself since this reminder focuses on intrinsic values (being honest and trustworthy). We also note that the response rate for the religious-intrinsic reminder was also very close to the non-religious one (7.28 percentage points), but with a slightly higher p-value ($p = 0.1001$). Hence, it is plausible that the observed attrition – even though it is high – is not related to either our treatments or observed covariates. Therefore, we conclude that attrition does not bias the main results.

$$n_i = \beta_0 + \beta_{re}T_{re} + \beta_{ri}T_{ri} + \beta_{nre}T_{nre} + \beta_{nri}T_{nri} + \gamma X_i + \varepsilon_i \quad (2.3)$$

To ensure the robustness of our results, we re-run our main analysis to measure the average treatment effects with inverse probability weighting based on non-missing outcomes. Subjects with reported outcomes are weighted by a factor of

$$1/(\pi(n = 1, x)) \quad (2.4)$$

where n is the indicator of the non-missing outcome and $(\pi(n = 1, x))$ is the share of subjects with a non-missing outcome among those who are treated and have covariate profile x (Cohn, 2020). Table (2.4), Column (2) shows the average treatment effects based on inverse probability weighting. Compared to the main results (Table 2.4, Column 1), the effects of the religious extrinsic, religious intrinsic and non-religious intrinsic treatments all increase while the religious extrinsic treatment effect becomes more significant ($p < 0.01$) compared to the control.

In another robustness test, our Tobit regression analysis shows that the coefficients increase compared to the control while their statistical significance is unchanged. We decided to adopt a Tobit analysis as a robustness check of our results since the primary outcome variable (reported number of heads) was censored by 10 at the upper bound and more than 32% of our sample hit this boundary. However, we acknowledge that Tobit models assume a normal distribution of the outcome. In our scenario one might argue that those who hit the boundary condition (10) might cheat up to infinity, and by doing so, not fit a normal distribution. We use the following Tobit model denoted by \bar{y}_i :

$$\bar{y}_i^* = \beta_0 + \beta_{re}T_{re} + \beta_{ri}T_{ri} + \beta_{nre}T_{nre} + \beta_{nri}T_{nri} + \varepsilon_i, \text{ and } \bar{y}_i = \max\{0, \min\{\bar{y}_i^*, 10\}\}, \quad (2.5)$$

where ε_i is normally distributed and the latent variable \bar{y}_i^* is not observed, while the actual reported number of heads, \bar{y}_i , is the observed, censored version of \bar{y}_i^* . Our Tobit model takes into account that \bar{y}_i is censored for 32% of our sample who reported 10 heads. The treatment dummies, T_{re} , T_{ri} , T_{nre} , and T_{nri} represent the religious extrinsic, religious intrinsic, non-religious extrinsic, and non-religious intrinsic treatments respectively. Table (2.3) presents the summary statistics of the coin flipping game which shows the over-reporting at the upper limit (10).

After controlling for covariates and enumerator fixed effects, our OLS and Tobit results indicate

that the effects of both religious reminders (intrinsic and extrinsic) are robust and while the effect of the non-religious intrinsic reminder holds only in the Tobit analysis. Tables (A.1) and (A.2) present the robustness of the results based on the OLS and Tobit analyses, respectively. Column (1) shows the average treatment effects without any controls while Column (2) illustrates the effects after controlling for covariates (age, gender, education and income) and Columns (3) show the effects after controlling for covariates and enumerator fixed effects. According to this analysis, we observe that the effects from both religious reminders (intrinsic and extrinsic) are robust in terms of magnitude and statistical significance. Furthermore, the magnitude of the non-religious intrinsic reminder stays the same and remains marginally significant based on the Tobit model (Table A.2, Row 4). However, it becomes non-significant based on the OLS model (Table A.1, Row 4) suggesting that the effects of this treatment are not as robust as those of the religious treatments.

In our next robustness analysis, we exclude the observations of those who reported 0 heads and find that the effect of the religious extrinsic reminder remains statistically significant, while that of the religious intrinsic reminder becomes marginally significant and that of the non-religious intrinsic reminder becomes statistically non-significant. According to a normal distribution, the expected number of those who report 0 heads should not exceed one (0.01% of our sample); however we have six individuals who reported 0 heads (0.96% from our sample). While we cannot definitively describe why this is so, it is possible that their results reflect technical issues with the coin-flipping site they chose, making them unable to complete the game. Table (A.5) as well as Figure (2.4) display the actual distribution of the reported heads of our sample. Hence, we exclude those six observations and perform an OLS analysis with our revised sample (Table A.7). Based on this analysis, we notice a few things. First the magnitude of the coefficient of the religious-extrinsic reminder slightly diminishes (by 1.12 percentage points) but remains significant at the 5% level. For the religious-intrinsic reminder, we observe a slightly larger difference because three of those who reported 0 heads were in the religious-intrinsic condition.

We also observe that the coefficient goes up by 0.161 heads (3.22 percentage points) and becomes marginally significant ($p < 0.10$). Finally, we observe that the impact of the non-religious intrinsic reminder goes down by 2.08 percentage points and becomes statistically non-significant.

Next, in our main analyses, we exclude the observations collected by the enumerator E1 who did not follow our protocol and whose data was contaminated. Including these observations in a robustness test, we observe that while the results remain directionally the same, the impacts of the three treatments fade away (Table A.8, Column 2). Specifically, we find that the coefficients of the religious extrinsic and intrinsic reminders go up by 0.27 (5.4 percentage points) and 0.201 (4.02 percentage points) heads, respectively, and become marginally significant ($p < 0.10$). Furthermore, the coefficient of the non-religious reminder increases by 0.142 heads (2.84 percentage points) and becomes non-significant.

Finally, we compare our results with those from a series of simulations with different cheating rates and find that our religious reminders' results continue to hold while our non-religious intrinsic reminder result somewhat holds based on treatment effects and sample sizes. We compare each treatment effect with three 100,000 simulated samples to represent the control with different underlying assumptions about the relative cheating rate. Following [Maréchal, Cohn, Ugazio, and Ruff \(2017\)](#), we generate the simulated samples assuming that the coin-flip is produced by a binomial process with different cheating rates: 50% (truthful reporting), 65%, or 80% (different degrees of cheating). The red lines in Plots A, B, C and D in Figure (2.6) show the treatment effects for the four conditions compared to the simulated distributions. As the Figure indicates, the religious extrinsic and intrinsic treatment effects appear at the very end of the simulated distributions' tails (Plots A and B respectively) while the non-religious intrinsic treatment effect appears at the edge of the simulated distributions (Plot D). Table (A.13) shows the numeric results of these simulations and the probabilities of having them by chance. For example, Column (1) indicates that the probability of observing the religious extrinsic, religious intrinsic and non-religious intrinsic effects by

chance is 0.005%, 0.011%, and 0.309%, respectively, compared to a simulated control with relative truthful reporting (50% of having a head). Therefore, it is very unlikely that the effects we observe are due to random variations and not due to the treatments.

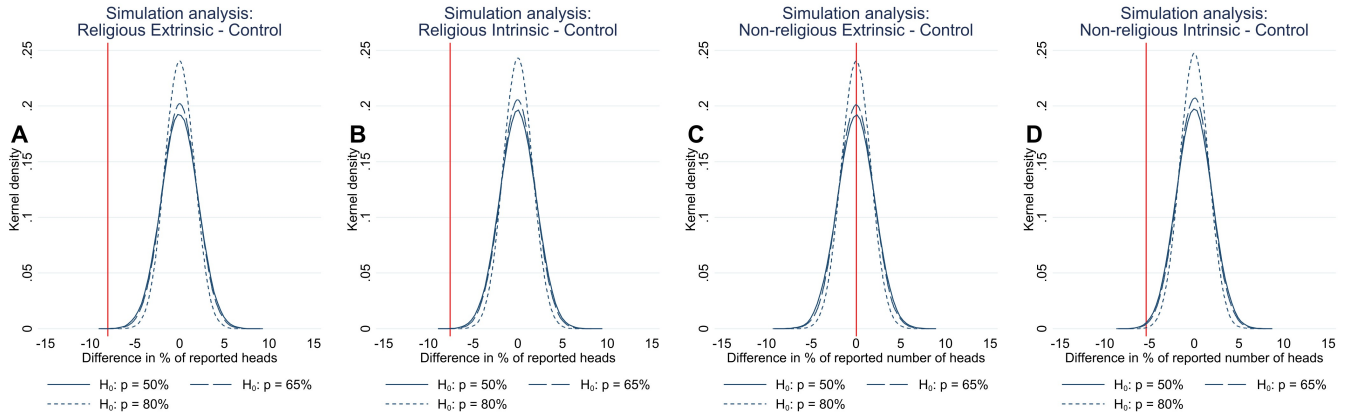


Figure 2.5: Simulation based on the difference between the reported number of heads and the control and sample size for the four conditions.

A simulation analysis suggests that the effects we observe are very unlikely due to random variations rather than our treatment conditions (religious extrinsic, religious intrinsic, and non-religious intrinsic) with the former two being on the extreme ends of the distribution. The red lines represent the treatment effects as a percentage reduction in reported number of heads compared to the control. The simulated distributions represent the control with various cheating rates.

Overall, based on our set of robustness checks and sensitivity analyses, we conclude that the treatment effects of the religious extrinsic and intrinsic reminders as well as the non-religious intrinsic reminder hold, with the religious extrinsic reminder being the most robust, followed by the religious intrinsic, and finally the non-religious intrinsic being the least robust of the three.

2.8.3 Manipulation Check and Potential Mechanisms

The findings from our manipulation check suggest that, while short religious reminders do not change one’s beliefs about God’s attributes or prosocial religious traits, these reminders are effective in promoting honesty. Meanwhile, non-religious reminders might change the beliefs about honesty and rule of law, however they are not as effective as the former two in promoting honesty

compared to the control. Furthermore, according to our exploratory analysis of potential mechanisms, we observe that those who associate God with fear tend to cheat less compared to those who associate God with love. Meanwhile, we find that our treatments are more effective in those who associate God with love. These results likely reflect the already-honest behavior of those associating God with fear, leading to less possibility for the interventions to have an additional effect on this group. This might also imply that multiple mechanisms, according to our framework, affect people's decisions to act honestly since those who associate God with love are more malleable to our treatments. Note that these findings were not part of our pre-registration.

2.8.3.1 Manipulation Check

In order to perform a manipulation check, we ask participants four survey questions – each associated with one of the interventions – to observe whether our reminders induce any changes in short term beliefs about God's attributes, religious traits, government roles and prosocial behaviors. We present the results in Table (2.5). For example, we asked participants which of the following attributes they think of in relation to God: The Forgiving, The Just, The Truth, The Provider, and The All-knowing. The intent here is to observe whether the religious extrinsic reminder about God's punishment for wrongdoers will increase the probability of selecting "The Just" as God's attribute. For the religious intrinsic reminder, we asked participants to identify the most important of the following religious traits: reaching out to one's family, feeding the poor, keeping the trust, supporting the oppressed, and responding back to those who greet, to test if the reminder increases the likelihood of selecting the trust-related option.

Table 2.5: Manipulation Check of Different Treatment Conditions

	(1)	(2)	(3)	(4)
	The Just	Being Trustworthy	Implement the Law	Honesty
Religious Extrinsic	0.0021 (0.050)	0.0504 (0.051)	0.0163 (0.057)	0.0132 (0.062)
Religious Intrinsic	0.0074 (0.050)	0.0129 (0.053)	-0.0294 (0.054)	-0.0141 (0.060)
Non-religious Extrinsic	0.0119 (0.051)	0.0195 (0.054)	0.1011* (0.059)	-0.0251 (0.061)
Non-religious Intrinsic	0.0106 (0.049)	0.0655 (0.054)	-0.0134 (0.054)	0.0905 (0.061)
Constant	0.1864*** (0.036)	0.212*** (0.038)	0.2542*** (0.040)	0.3475*** (0.044)
N	627	627	627	627
<i>Pseudo R</i> ²	0.000140	0.00297	0.00872	0.00579

Standard errors in parentheses

Note: Manipulation check of different treatments.

Column (1): Probit model investigating the treatment effects on selecting God's attribute "The Just"

Column (2): Probit model investigating the treatment effects on selecting religious trait "Being trustworthy"

Column (3): Probit model investigating the treatment effects on selecting government role "Implementing the law"

Column (4): Probit model investigating the treatment effects on selecting human behavior "Honesty"

* $p < .1$, ** $p < .05$, *** $p < .01$

Even though the religious reminders have the strongest effect on honest behavior, our results in Table (2.5), Columns (1) and (2), show that they have no effect on the likelihood of: 1) selecting God's attribute that is associated with punishment of wrongdoers ("The Just") when getting the religious extrinsic reminder or 2) selecting the religious behavior associated with honesty (being trustworthy) when writing about the religious intrinsic reminder. This might suggest that short religious reminders, while effective in promoting honesty, do not change beliefs about God's attributes or religious behaviors.

In terms of association, we observe that those who select "The Just" as God's attribute over the others tend to be more honest as indicated in Table (A.9), as well as those who select "being trustworthy" over other religious behaviors (Table A.10). Those who selected "The Just" reported the least number of heads (6.59 heads) compared to those who selected other attributes. Participants who selected "The Just" reported 0.65 heads fewer than those who selected "The Forgiving" ($p < 0.05$); 0.635 heads fewer than those who selected "The Provider" ($p < 0.05$); and 1.03 heads fewer than those who selected "The All-knowing" ($p < 0.05$). Moreover, our findings show that those who indicate that "being trustworthy" is the most important religious behavior reported the least number of heads (6.8 heads) compared to others. Note that, while others reported a relatively higher number of heads, the only statistically different group is those who selected "responding back to those who greet" ($p < 0.05$).

Regarding our non-religious extrinsic intervention, we find no impact of the treatment on the level of honesty compared to the control. Table (2.5), Column (3) indicates that, when participants received a reminder about the rule of the law and importance of punishment to enforce it (the non-religious extrinsic treatment), there is a 10.1 percentage point increase in the likelihood of selecting "implementing the law" over other roles of the government such as fighting corruption and providing education and health services, a result which is marginally significant ($p < 0.10$). This suggests that the intervention induces the intended reminder but does not increase honest

behavior.

Moreover, those who selected the government role as "implementing the law" tend to cheat the most compared to those who selected other government roles (Table A.11). Individuals who selected "implementing the law" as the most important government role, reported 7.4 heads — the highest level of cheating compared to those who selected other roles of the government. For example, those who selected "maintain political stability" reported 0.89 heads fewer than the former ($p < 0.05$).

Finally, we observe that the non-religious intrinsic reminder increases the likelihood of selecting honesty over other traits compared to the control by 9.05 percentage points while the other interventions have almost zero effect. However, this result is not statistically significant ($p = 0.14$).

We also observe that those who selected honesty as the most important human trait tend to be more honest compared to those who selected other traits (kindness, respect, or loyalty) while those who selected love tend to have a similar level of honesty (Table A.12). Those who selected honesty as the most important human trait reported 6.82 heads on average while those who selected 1) kindness reported 0.96 heads more ($p < 0.05$), 2) respect reported 0.42 more heads ($p < 0.10$) and 3) loyalty reported 0.62 more heads ($p < 0.10$).

Based on our analysis, we conclude that religious reminders induce honesty based on existing beliefs about God and religious moral values. We further conclude that non-religious reminders may have the intended impact on short term beliefs about the role of government or important human prosocial behaviors, but are not as effective in inducing honesty as religious reminders, with the non-religious extrinsic reminder having no impact on honesty as Table (2.7), Column (2) indicates.

2.8.3.2 Association of God with Love or Fear and Potential Mechanisms

As part of our post survey, we asked participants whether they associate God more with love or fear, in order to explore the underlying beliefs about God that might influence honesty. To elicit participants' beliefs about this association, we asked them whether they associate God with fear (34 or 5.7%), love (104 or 17.42%), or both (459 or 76.88%). For those who indicated both, we asked them a follow-up question of which one they associate more with God. In this question, 321 chose love (76.79%) and 97 chose fear (23.21%). Based on these numbers, we created a dummy variable and assign it to either love (425 or 76.44%) or fear (131 or 23.56%). We then split our sample into two: those who associate God more with fear and those who associate God more with love.

Table 2.6: Association of God with Love or Fear and Reported Number of Heads

	(1)	(2)	(3)	(4)
	God's Association with Fear	Reported Heads	Reported Heads	Reported Heads
Religious Extrinsic	-0.087 (0.057)		0.472 (0.822)	-1.248*** (0.386)
Religious Intrinsic	-0.048 (0.059)		-0.329 (0.760)	-0.872** (0.386)
Non-religious Extrinsic	-0.001 (0.061)		1.112 (0.729)	-0.277 (0.366)
Non-religious Intrinsic	-0.011 (0.058)		0.255 (0.693)	-0.822** (0.381)
Associate God More with Fear		-0.548** (0.259)		
Constant	0.236*** (0.136)	7.235*** (0.124)	6.370*** (0.553)	7.907*** (0.262)
N	556	556	131	425
R^2		0.00818	0.0360	0.0293
<i>Pseudo R</i> ²	0.00582			

Standard errors in parentheses

Note: Investigating the relationship between the association of God with fear or love and the reported number of heads.

Column (1): OLS regression of the treatment effects on the observed association of God with fear.

Column (2): OLS regression showing the correlation between the reported number of heads and the association of God with fear.

Column (3): OLS regression showing the treatment effects on reported heads in the sub-sample of those who associate God more with fear.

Column (4): OLS regression showing the treatment effects on reported heads in the sub-sample of those who associate God more with love.

* $p < .1$, ** $p < .05$, *** $p < .01$

Using these two sub-samples, we conduct an average treatment effects analysis, which yields

several results. First, our analysis suggests that the treatments do not have a significant effect on participants' beliefs about the association of God with fear or love, hinting that this belief might be an internalized trait rather than a temporal state⁴. As Table (2.6), Column (1) indicates, we observe that none of the treatments has a significant effect on beliefs about this association, based on a Probit model. Moreover, while we expect the religious extrinsic reminder to increase the likelihood of associating God with fear, rather than love, we observe some indications that it might have a reverse effect.

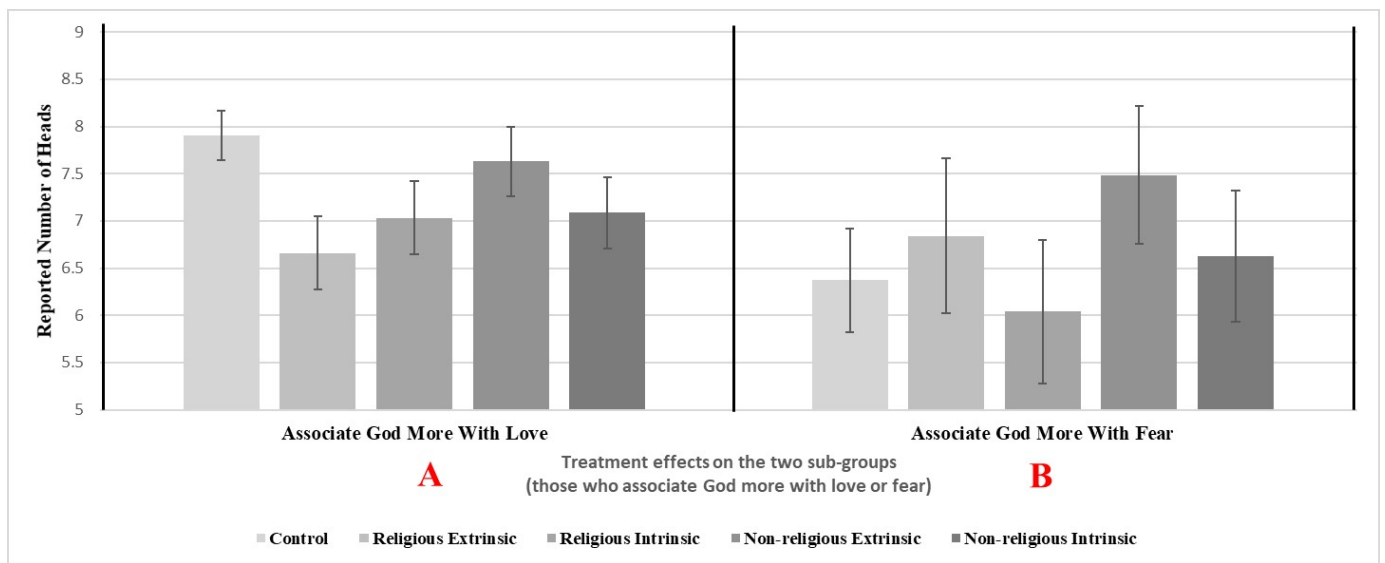


Figure 2.6: Average treatment effects on two sub-samples (those who associate God more with fear versus love).

Plot A suggests that, among those who associate God more with love, while the level of cheating was relatively high in the control condition, the three treatments (religious extrinsic and intrinsic and non-religious intrinsic) had a significant effect on their level of honesty. **Plot B** indicates that, among those who associate God with fear, the treatments did not affect their level of honesty, even though they had a relatively higher level of honesty compared to those who associate God with love.

Error bars indicate standard errors.

⁴We acknowledge that this survey question should have been asked before administering the treatments so as not to be influenced by any of them, especially the religious extrinsic reminder, since it is a reminder about the potential punishment of God. However, we placed it after the interventions to avoid potential demand effects. Moreover, while we expect this reminder to increase the likelihood of associating God with fear, we observe a 8.7 percentage points decrease in this likelihood, albeit not statistically significant ($p = 0.128$) (Table 2.6 Column 1).

Moreover, across all conditions, we observe that those who associate God more with fear tend to cheat less, with the treatments having no effects on their level of honesty. As Table (2.6), Column (2) indicates, those who associate God with fear reported 0.548 heads (10.96 percentage points) fewer than those who associate God with love ($p < 0.05$). In addition, none of the treatments has a significant impact on the level of honesty of those who associate God with fear (Table 2.6, Column 3). This is likely because those who associate God more with fear are already quite honest, compared to those who associate God more with love, so there is less room for the interventions to have an effect.

Regarding those who associate God more with love, we note that the baseline level of cheating for this group (control) is relatively very high, reporting 7.91 heads, indicating that cheating was around 58.1%. We also observe a significant reduction in the reported number of heads for those receiving religious extrinsic, religious intrinsic and non-religious intrinsic reminders, with the strongest effect for the religious extrinsic reminder as Table (2.6), Column (4) indicates. Among those who associate God more with love, the religious extrinsic reminder reduces the number of reported heads by 1.248 (24.96 percentage points) ($p < 0.01$) and the religious intrinsic reminder reduces the number of reported heads by 0.872 (17.44 percentage points) ($p < 0.05$). Moreover, the non-religious intrinsic reminder reduces the number of reported heads by 0.822 (16.44 percentage points) ($p < 0.05$), while the non-religious extrinsic reminder does not have an impact on the reported number of heads. This suggests that those who associate God with love are more malleable to our treatments.

In line with our theoretical framework, we predict that religious reminders might induce honesty through multiple mechanisms based on different beliefs and associations of God. In our framework (Section 2.4), a certain set of mechanisms are driven by the love of God as a figure while others are driven by a fear of punishment from God. Based on the above, it seems that participants who associate God with love are more likely to respond to reminders that evoke the concept of being

honest. Meanwhile those who associate God with fear were already more honest compared to the former, on average, so that the treatments did not have any additional significant effects on their level of honesty. We acknowledge the shortcoming in our experimental design of asking the question(s) about these associations following the treatments. However, we intentionally sequence our survey questions in this way for justifiable reasons, as discussed earlier.

2.8.4 Other Findings

In this section, we compare the relative cheating in this study to that found in similar studies. Following that, we report the findings from our exploratory analysis of the data.

First, we note that the level of cheating in this study is relatively high compared to similar studies on honesty. Next, from our additional analyses, we observe that overall religious reminders promote honesty far better than non-religious reminders and that intrinsic reminders are effective in doing so compared to the control. The findings also indicate some gender differences in terms of response. Specifically, we observe that women tend to respond to extrinsic motives better than intrinsic ones, while men respond better to intrinsic motives compared to extrinsic ones. Finally, we observe that the level of cheating is the highest among those who pray the most in a congregation – our proxy for observed religiousness – and that there is no correlation between religious affiliation and honesty.

As part of our data collection, we asked additional survey questions such as religious affiliation and the frequency of attending a congregation, a proxy for observed religiousness, to gain further insight into our results. We perform an exploratory analysis of this data and report the findings in this section.

2.8.4.1 Overall Cheating

One of the interesting findings in our study is the relatively high level of cheating compared to that found in other studies (Abeler et al., 2019; Gerlach et al., 2019). In their meta-analysis of honesty literature, Abeler et al. (2019) find a level of cheating of 23% in general, while (Gerlach et al., 2019) find it is around 30% for the coin-flipping game in particular. We estimate the level of cheating in our sample to be around 41.7% overall (95% confidence interval: 37.7%-45.8%) and 50.4% in our control condition (95% confidence interval: 41.3%-59.4%) (Equation 2.2). This is almost a 100% increase in the level of cheating compared to that identified in Abeler et al. (2019). We also observe that 32.85% of our sample cheats to the maximum extent possible, accounting for 78.77% of our overall observed cheating. These numbers are higher than those reported in Abeler et al. (2019), who find that maximum cheaters account for 60% of those who cheat. We also report a conservative estimate of those who cheated by looking at the distribution of the reported number of heads. Overall, we observe that over-reporting started at 8 heads and by accounting for those only, the percentage of those who cheated is around 40% (Figure 2.4 and Table A.5 in Appendix A). In the control condition, we observe that over-reporting based on the distribution, also started at 8 heads and accordingly the percentage of those who cheated is around 46.2%.

We can attribute this high level of cheating to two main causes. First, the marginal gain from reporting just one additional head is low. Participants gain 50 SDG (~0.10 \$) from reporting a single head, which might not be worth the lie if they over-report by only one or two heads. While there are no official statistics of income in Sudan, as per the World Bank, Sudan is considered a low income country with a GDP per capita of \$484.4 (2020)⁵. An unofficial website suggest that the average monthly (daily) salary in Sudan is 36,500 SDG (1217 SDG) which is approximately \$65 (\$2.17)⁶. Secondly, it costs additional time and effort to be honest because participants had to play the game online which requires additional effort. Most participants used their smart phones to

⁵<https://data.worldbank.org/?locations=SD-XM>

⁶<http://www.salaryexplorer.com/salary-survey.php?loc=205loctype=1>

access the survey and had to navigate between tabs to actually play the coin-flipping game. Hence, it might have been cheaper from an effort perspective simply to report having obtained 10 heads without actually playing the game.

2.8.4.2 Intrinsic versus Extrinsic Treatment Effects and Gender Differences

According to our analysis, we find that the intrinsic reminders increase honesty compared to the control while the extrinsic reminders do not have similar effects. We compare the average treatment effects of the combined religious and non-religious extrinsic reminders as well as the combined religious and non-religious intrinsic reminders on the reported number of heads and report the results (Table 2.7, Column 1). We observe that the intrinsic reminders reduce the reported number of heads by 0.645 (12.9 percentage points) compared to the control ($p < 0.05$). Moreover, although we observe that the extrinsic reminders reduce the reported number of heads by 0.402 (8 percentage points) compared to the control, the result is not statistically significant ($p = 0.15$). According to our main analysis (Section 3.6), the effect of the extrinsic reminders is muted by the non-religious extrinsic reminder having no effect on the level of honesty.

Furthermore, we observe that while women tend to respond better to extrinsic reminders compared to intrinsic ones, men respond better to intrinsic reminders than extrinsic ones. Table (A.14) in Appendix (A) reflects these differences. Column (1) and Figure (2.7) illustrate the aggregate effects of the extrinsic and intrinsic reminders while Column (2) and Figure (A.10) show the effects of the different treatment conditions by gender.

Examining the results in detail, our findings indicate that, among women, the extrinsic reminders reduce the number of reported heads by 0.885 (17.7 percentage points) compared to the control ($p < 0.05$) while the intrinsic reminders reduce the number of reported heads by 0.571 (11.42 percentage points) compared to the control, but that this result is not statistically significant ($p = 0.12$) (Table A.14, Column 1 in Appendix A). Figure (2.7) depicts these differences visually.

Table 2.7: Average Treatment Effects Comparing Religious versus Non-religious and Extrinsic versus Intrinsic Treatments on Reported Heads

	(1) Reported Heads	(2) Reported Heads
Extrinsic	-0.402 (0.281)	
Intrinsic	-0.645** (0.279)	
Religious		-0.780*** (0.284)
Non-religious		-0.284 (0.276)
Constant	7.517*** (0.228)	7.517*** (0.228)
Religious vs Non-religious		-0.496** (0.229)
Extrinsic vs Intrinsic	-0.243 (0.230)	
N	627	627
R ²	0.00826	0.0140

Standard errors in parentheses

Note: Comparing the average treatment effects of Religious/Non-religious.

and Extrinsic/Intrinsic reminders on the reported number of heads based on OLS.

Column (1): Comparing average treatment effects of Extrinsic/Intrinsic reminders.

Column (2): Comparing average treatment effects of Religious/Non-religious reminders.

* $p < .1$, ** $p < .05$, *** $p < .01$

For men, our findings indicate that the intrinsic reminders reduce the number of reported heads by 0.682 (13.64 percentage points) compared to the control, but that this the result is not statistically significant ($p = 0.11$) (Table A.14, Column 2 in Appendix A). Meanwhile, the extrinsic reminders *increase* the number of reported heads by 0.14 (2.8 percentage points) compared to the control ($p = 0.74$).

We detail the average treatment effects among men and women in Table (A.14), Column (2) (Appendix A). The results indicate that, for women, the religious extrinsic reminder reduces the number of reported heads by 1.355 (27.1 percentage points) ($p < 0.01$) compared to the control while the religious intrinsic reminder reduces the number of reported heads by 0.828 (16.6 percentage points) ($p < 0.10$) compared to the control. We also observe that the non-religious extrinsic reminder reduces the number of reported heads by 0.422 ($p = 0.32$) while the extrinsic reminder reduces it by 0.313 ($p = 0.45$) compared to the control (both results not statistically significant). For men, however, we observe a somewhat opposite trend. The religious extrinsic reminder reduces the number of reported heads by 0.199 (4 percentage points) ($p = 0.68$) while the religious intrinsic reminder reduces it by 0.674 (14.5 percentage points) ($p = 0.18$) compared to the control. Finally, the non-religious extrinsic reminder *increases* the number of reported heads by 0.49 (9.8 percentage points) ($p = 0.30$) while the non-religious intrinsic reminder reduces the number of reported heads by 0.690 (13.8 percentage points) ($p = 0.15$) compared to the control. Figure (A.10) in Appendix (A) visually illustrates these results.

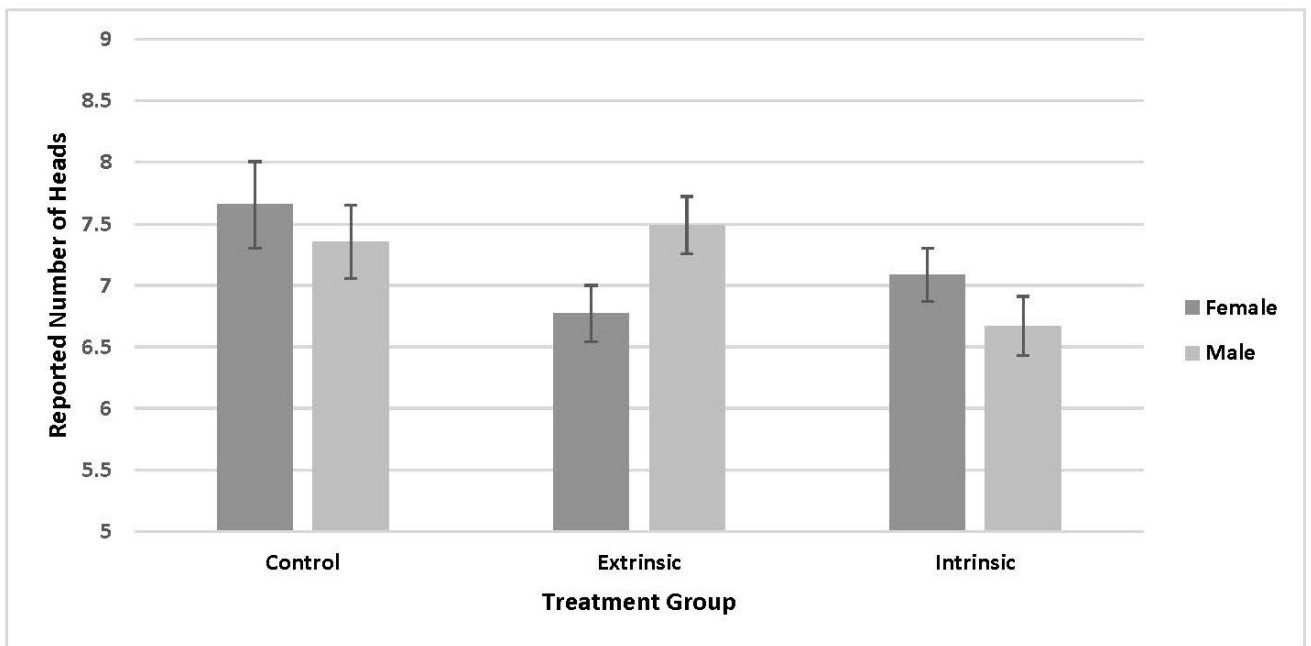


Figure 2.7: **Reported number of heads by type of reminder (extrinsic/intrinsic) and gender.** We observe that women tend to respond better to extrinsic reminders when compared to intrinsic ones while men tend to respond better to intrinsic reminders compared to extrinsic ones. *Error Bars indicate standard errors.*

2.8.4.3 Religious vs. Non-Religious Treatment Effects

Next, we compare the impact of religious and non-religious reminders on promoting honesty, and observe that religious reminders are more effective than the non-religious reminders as well as the control. Table (2.7), Column (2) shows the results which indicate that religious reminders reduce the number of reported heads by 0.78 (15.6 percentage points) ($p < 0.01$) compared to the control while non-religious reminders reduce the number of reported heads by 0.284 (5.7 percentage points), with the result not being statistically significant ($p = 0.30$). We further note that the religious reminders increase honesty by 9.92 percentage points compared to the non-religious ones, a result which is statistically significant ($p < 0.05$). We note that our survey sample is relatively young and less religious⁷.

2.8.4.4 Observed Religiousness and Cheating

Interestingly, we observe that participants who indicate that they pray in a congregation the most – our proxy for observed religiousness – tend to also cheat the most compared to those who do not pray in a congregation or those who pray once a week in a congregation. As part of the survey, we asked participants how frequently they pray in a congregation as a sign of their observed religiousness. As Table (2.8), Column (1) indicates, we observe that those who pray at least 2-3 times a day reported 0.829 heads (16.58 percentage points) ($p < 0.01$) more than those who do not pray in a congregation. The effects are even larger compared to those who pray once a week in congregation.

Moreover, the correlation between those who pray in a congregation the most and dishonesty increases after controlling for gender fixed effects. Given that women are not obligated to pray in congregation in Islam (Khraim, 2010), we control for gender effects and re-run our analyses. As Table (2.8), Column (2) indicates, the reported number of heads goes up by 1.227 (25.54 percentage points) compared to those who do not pray in a congregation ($p < 0.01$).

⁷We asked participants about the religious affiliation of most of their friends (see Appendix A.1.5.2) and 27.59% of participants indicated that most of their friends are not affiliated with any religion.

These findings suggest that observed religiosity is correlated with dishonesty.

Table 2.8: Correlation between Frequency of Praying in a Congregation and Reported Number of Heads

	(1) Reported Heads	(2) Reported Heads
I pray at least once a week in a congregation	-0.276 (0.392)	-0.174 (0.401)
I pray at least once every 2-3 days in a congregation	0.117 (0.448)	0.368 (0.472)
I pray at least once in a congregation daily	0.124 (0.348)	0.478 (0.422)
I pray 3 or more times in a congregation daily	0.829*** (0.300)	1.227*** (0.402)
Female		0.502 (0.329)
Constant	6.835*** (0.188)	6.394*** (0.359)
N	479	477
R2	0.0211	0.0251

Standard errors in parentheses

Note: Investigating the correlation between the frequency of prayers in congregation and reported number of heads.

Column (1): OLS regression of reported number of heads on frequency of prayers in a congregation.

and Column (2): OLS regression of reported number of heads on frequency of prayers in a congregation after controlling for gender.

* $p < .1$, ** $p < .05$, *** $p < .01$

2.9 Discussion

Overall, our study confirms some of the findings in the existing literature on how religion affects social behaviors and adds to it in multiple ways. In addition to developing a framework that illustrates how religion and religious beliefs might affect prosocial behaviors, we identify a set of religious interventions that are effective in promoting honesty in Sudan. Our findings also demonstrate some of the complexity of religious beliefs and how they might impact social behaviors. Finally, we provide new insights into extrinsic and intrinsic reminders and how they

might trigger different responses in women versus men.

First, we develop a new framework to illustrate how religion might affect prosocial behaviors and identify a set of mechanisms by which it does so. While the current literature identifies some general mechanisms regarding how religion and religious beliefs might affect social behaviors, we are not aware of a comprehensive framework of how religion impacts social behaviors. For example, [Shariff and Norenzayan \(2007\)](#) suggest that a fear of punishment from God or the moral association of God or a religious figure (role model) might motivate religious people to act prosocially. They further suggest that religious people might adhere to the social norms of their religious community to avoid sanction. Moreover, [Kirkpatrick, 2005](#) suggest that people might have an emotional affinity with God and that attachment might drive certain behaviors. Our proposed framework enables a new way of thinking about religiously motivated behaviors, integrating previously researched religious motivations in a way that clearly shows that they are myriad and that they differ from non-religious motivations: fear of God's punishment; a desire to show gratitude to God; a desire to emulate God; etc. These are beliefs that do not exist in non-religious people, by definition. Conversely, it could be argued that anyone who is moved by these motivations is religious to some degree, even if they explicitly claim to be non-religious.

Second, findings in this study demonstrate some of the intricacies of religious beliefs and that religion is not a black box as many scholars currently investigate it. For example, our findings that those who associate God with fear are more honest than those who associate God with love, but those who associate God with love are more malleable to cues and reminders, suggest that multiple mechanisms related to religious beliefs affect how people behave prosocially. We suspect at least two possible explanations why we observe such trends. First, there is potentially more room for the interventions to have an effect on those who associate God with love, given that they are less honest compared to those who associate God with fear, as indicated earlier (Table 2.6, Column 2). Second, as [Slotter and Gardner \(2012\)](#) suggest, people who have an emotional affinity

to an entity have a more malleable self-concept because of attachment anxiety and the fear they may lose their relationship. This might be in line with some of the mechanisms that we illustrate in our framework. For example, religious people might act prosocially to avoid God's disapproval, to please or represent God, or to emulate a religious figure. These motivations are primarily driven by an emotional affinity to God or to a religious figure rather than just fear of punishment.

In addition, while religious reminders do not change one's beliefs about God's attributes or important religious traits, these reminders have a positive and robust impact in promoting honesty compared to the control, highlighting the importance of religion in promoting prosocial behaviors in certain contexts. Our manipulation check indicates that religious reminders do not change one's beliefs about God or important religious values, yet the findings show that these reminders are very effective in promoting honesty. This confirms findings by [Mazar et al. \(2008\)](#); [Shariff and Norenzayan \(2007, 2011\)](#) and others that religious reminders act as nudges that promote prosocial behaviors because of existing beliefs about the moral authority of God and religious traits rather than changing these beliefs.

Moreover, our study confirms some of the findings in existing research on the relationship between certain religious beliefs or traits and honesty. First, in line with [\(DeBono et al., 2017\)](#), we observe that those who associate God with forgiveness tend to cheat more compared to those who associate God with justice. [DeBono et al. \(2017\)](#) find that priming people with a forgiving God induces dishonesty. Our findings suggest similar trends based on our correlational analysis. Moreover, in line with the findings from [\(Guttman, 1984; Pruckner & Sausgruber, 2008\)](#) which suggest that observed religiousness is positively correlated with dishonesty, we observe that participants who pray in congregation the most tend to cheat the most compared to those who do not pray in a congregation or once a week in a congregation. While neither study examines the mechanism driving this correlation, it may be that participants consider such dishonesty a minor sin which God will forgive.

Comparing extrinsic and intrinsic reminders, we observe that intrinsic reminders are more consistent in promoting honesty, while extrinsic reminders are not. Other studies suggest that intrinsic reminders targeting self-concept are effective in promoting prosocial behaviors such as reducing bias against out-group members (Abadi et al., 2020; Fein & Spencer, 1997; Leippe & Eisenstadt, 1994). Our study confirms these findings with an additional dimension – having religion as a source of the intrinsic reminders makes them more effective in promoting honesty. Our framework posits that both religious and non-religious intrinsic reminders tap into underlying beliefs about honesty and trustworthiness, while having the religious one framed in a sacred text (Figure A.8 in Appendix A). On the contrary, we observe that the extrinsic reminders are not consistent since the religious-extrinsic reminder has a large effect on reducing dishonesty, while the non-religious extrinsic reminder has no effect. We suspect at least two possible explanations why we observe such contradiction. First, it might be the general beliefs about the association between the underlying agent (God or government) and the intended behavior (Shariff & Norenzayan, 2007). While God is believed to be the source of moral values including honesty, the government in Sudan is perceived to be corrupt, and hence not inducing the intended behavior. An alternative explanation would be the belief that God's knows everything, while the government has limited monitoring abilities. However this does not fully explain Shariff and Norenzayan (2007) findings that reminding people with the government promotes prosocial behavior.

Finally, this study gives one of the first insights into how men and women respond differently to extrinsic and intrinsic reminders designed to promote honesty. As Table (A.14) weakly suggests, women respond better to extrinsic reminders than intrinsic reminders, especially religious extrinsic reminders, while men respond better to intrinsic versus extrinsic reminders. Correlational research in organizational studies suggests that women abide more by the rules compared to men (Portillo & DeHart-Davis, 2009). Green and Melnick (1950) speculate that women tend to go by the book in response to insecurity and hostility. Our findings indicate similar patterns of behaviors.

From a policy perspective, our findings suggest that in contexts like Sudan where religion is widespread and institutions are weak, religion-based interventions can be an effective method of promoting prosocial behaviors. In addition, they suggest that intrinsic reminders are relatively effective in promoting honesty and do not carry the potential side effects of extrinsic reminders such as aggression and prejudice, with a religious framing making these reminders even more effective. Hence, they could be applied in more diverse settings, given that around 9% of the population in Sudan are non-Muslims and that the youth are less affiliated with religion than the older population, as indicated in our survey (see Appendix A, Section A.1.5.2). Finally, given how men and women responded differently to extrinsic and intrinsic reminders, we suggest tailoring different interventions based on the gender composition of the population they are applied to.

2.10 Limitations and Future Work

While our study provides interesting insight into the role of different types of motivational reminders in promoting honesty, we acknowledge that this study has its limitations. First, our target sample was 1350, as per the pre-registration ([Abbadi & Toyama, 2022](#)). However, due to security concerns and ongoing protests in Sudan, we were able to collect only 790 observations, out of which 698 participated in the coin-flipping game. From this number, we excluded 71 observations collected by the enumerator who did not follow protocol. While the results are robust, a larger sample would give us more confidence in the estimates.

Second, as part of our survey, we did not properly capture the socioeconomic status or beliefs about the government, which might have provided us with more insights into the findings. Given that our sample was primarily composed of college students, capturing a proper socioeconomic indicator, such as family income, might have helped explaining some of the variability in the responses to different interventions. In future iterations, we would also like to enrich the data

set and elicit beliefs about other participants' reporting (beliefs about others honesty) to better understand injunctive norms and how these norms impact one's decision to act dishonestly. In addition, eliciting beliefs about trust in the government and its monitoring abilities might better help understand why reminders about non-religious institutions were not effective in increasing honesty in our study.

Third, unlike the religious extrinsic reminder which was phrased in a descriptive way (what God will do), the non-religious extrinsic reminder was phrased in a prescriptive way (what the government should do). The prescriptive wording of the non-religious extrinsic reminder might have heterogeneous effects on participants who received this treatment, some believing that this is *not* what the government in Sudan currently does and others believing that this is what the government should do. Future research can address this by having a similar type of messaging across reminders.

Finally, we suspect that our extrinsic and intrinsic reminders have respective negative and positive valences which might influence the outcomes. We observe that our intrinsic reminders have a positive valence in our second study ([Abbad et al., 2020](#)), while other studies indicate that extrinsic reminders about a punishing agent have a negative valence and some side effects such as aggression and prejudice against out-groups ([Bushman et al., 2007](#); [M. K. Johnson et al., 2010](#); [Schulze & Frank, 2003](#); [Yang, 2008a](#)). Hence, we propose for future work to have reminders with similar valences to avoid any potential confounding factors due to the valence and side effects.

For future research this work could be extended in multiple directions. First, the theoretical framework we developed opens the door to investigate different mechanisms of how religious beliefs might affect social behaviors. For example, research could explore the impact of reminding people with the love of God versus the potential punishment of God on their social behaviors, potentially towards in-group versus out-group members. A second direction would be developing

a better understanding of why women and men respond differently to extrinsic and intrinsic reminders and how this could inform research as well as policy makers about honesty and gender differences.

2.11 Conclusion

While most of the world believes in a religion, relatively little research has examined how different dimensions of religious beliefs and reminders affect prosocial behaviors in general and honesty in particular. In this study, we conduct a randomized control trial to compare the impact of religiously-framed extrinsic and intrinsic reminders on promoting honesty to non-religious ones in Sudan. In doing so, we develop a framework that illustrates a set of mechanisms that may drive the observed prosocial behavior of religious people – and mostly do not apply to non-religious people. Our findings suggest that both religiously-framed reminders (extrinsic or intrinsic) increase honesty compared to the control. We also observe that the non-religious intrinsic reminder increases honesty, to a lesser extent. Finally, we find no impact of the non-religious extrinsic reminder on honesty, possibly reflecting perceptions of the government or its monitoring ability.

The study highlights the importance of religion in promoting prosocial behaviors in contexts where government is perceived as corrupt and institutions are weak. However, those seeking to promote honesty through religious-based messaging should take care to avoid potential negative side effects such as aggression and discrimination, particularly against out-group members, as indicated in other studies ([Bushman et al., 2007](#); [Ginges et al., 2009](#); [M. K. Johnson et al., 2010](#)).

Finally, this is one of the first social science experiments in Sudan. As such, it provides policy alternatives to promote honesty and potentially other prosocial behaviors within a broader environment of perceived dishonesty and corruption. These policy alternatives could provide fruitful ways to increase prosocial behaviors under such conditions.

CHAPTER 3

Chapter 3: Reducing Bias Against Muslims in the United States: A Field Study

The study is a joint work with Yan Chen, Change Ge, Ann Lin and Kentaro Toyama. I am the main author of this chapter; other collaborators contributed to this work.

3.1 Introduction

Muslim Americans are one of the fastest growing minority populations in the United States. Estimated at 3.45 million in 2017, the size of the population is projected to double by 2050, making Islam the second-largest major religion in the United States (Mohamed, 2018). Diverse in race, language, and national origin, American Muslims do not fit neatly into American identity categories. Unfortunately, their image within the United States has been shaped by the public's association of Islam with violent extremism, primarily though not exclusively from abroad. As a result, a 2021 Pew Research Center survey found that 50% of Americans, and 72% of Republicans, agreed that Islam "was more likely to increase violence among its followers," a 25 percentage point (pp) increase among Americans and a 40 point increase among Republicans compared to survey responses in 2002 (Hartig & Doherty, 2021).

These beliefs have resulted in many types of anti-Muslim discrimination. Hate crimes directed against Muslims increased sharply after the September 11, 2001 attack on the World Trade Center,

and over 60% between 2015 – 2019, compared to the previous five years.¹ The 2016 Pew survey found that 48% of Muslims experienced at least one incident of discrimination in the past year, including suspicion from airport security or law enforcement, offensive name-calling, or physical threats. In the professional context, audit studies have reported that applicants with Muslim names are less likely to be called back for job interviews, especially if their resumes also contain other markers of religious affiliation (Bartkoski, Lynch, Witt, & Rudolph, 2018; Lajevardi, 2020; Stasio, Lancee, Veit, & Yemane, 2019; Valfort, 2020; Vernby & Dancygier, 2019; Wright, Wallace, Bailey, & Hyde, 2013, 2014), and that female job applicants dressed in Muslim hijab (headscarf) or abbaya (cloak) reported a greater number of negative interactions with interviewers, absent proactive efforts to signal warmth (King & Ahmad, 2010; Weichselbaumer, 2019). In Europe, bias against Muslim refugees has been associated with perceived competition for marriage partners (Dancygier, Egami, Jamal, & Rischke, 2021) as well as with fears of terrorism (Coninck, 2020).

Despite this evidence of widespread bias against Muslims, there has been relatively little research aimed at examining what might reduce this bias. A recent review of studies on discrimination (Paluck, Porat, Clark, & Green, 2021) finds that interventions directed to address racial and ethnic discrimination are by far the most prevalent, with studies of religious discrimination (of any kind) occupying less than 10%. However, field experiments on transphobia, anti-Roma sentiment, and anti-immigrant bias, find that conversational interventions, administered in-person, on the phone, or online, can substantially and at least briefly reduce bias, as measured by surveys of self-expressed attitudes and policy positions (Kalla & Broockman, 2015, 2020; Simonovits, Kézdi, & Kardos, 2017). Because such interventions are short and do not require intense effort to administer, these experiments might provide a fruitful basis for developing a broader model for combating discrimination.

In this chapter, we use randomized controlled experiments to compare the effectiveness of two

¹Data compiled from Federal Bureau of Investigation, Table 1, "Hate Crime Incidents" annual reports, 2010-2019. Accessed at <https://ucr.fbi.gov/hate-crime>.

prompt-based interventions in reducing anti-Muslim bias, in in-person and online interactions. Our interventions – "perspective taking" and "value consistency" – are based on two causal theories drawn from the school of psychological theories of bias reduction. The perspective-taking intervention, which is patterned on the conversational intervention used in [Broockman and Kalla \(2016\)](#), tests the value of empathy in reducing bias. The value-consistency intervention, which follows [Fein and Spencer \(1997\)](#) and others, aims to reduce resistance to change by first affirming participants' values and self-image. We test the results of the interventions using instruments from behavioral economics and political science: a trust game ([Berg, Dickhaut, & McCabe, 1995](#)) and an "item count technique" (ICT) measurement of bias at the group level, also known as a "list experiment" ([Glynn, 2013](#); [Kuklinski, Cobb, & Gilens, 1997](#)). We also apply text analysis approaches to explore a potential mechanism for the different results we find across our perspective-taking and value-consistency interventions.

Overall, the results show that both value consistency and perspective taking have some positive effects in reducing bias and/or increasing feelings of trust towards others. The highlights of these findings are as follows:

- Across both the in-person and online experiments, participants in the value-consistency treatment show greater trust in their partners, irrespective of the partner's religious identity, as indicated by a higher investment amount compared to the control group.
- The perspective-taking treatment, contrary to findings in [Broockman and Kalla \(2016\)](#), does not have an impact on trust behavior in either the in-person or online experiment.
- In the in-person experiment, the value-consistency treatment increases participants' beliefs about the trustworthiness of their partners, as indicated by predictions of the amount of the investment that their partners will return to them . In addition, the perspective-taking treatment increases participants' beliefs about the trustworthiness of their Muslim partners in the in-person experiment.

- An examination of the mechanisms driving our online experiment findings shows that the value-consistency treatment works by increasing positive feelings, while the perspective-taking treatment may be undercut by its potential to elicit negative sentiments and experiences.

The rest of this paper is organized as follows: Section (3.2) discusses our theoretical and methodological choices in the context of related work; Section (3.3) presents our hypothesis; Section (3.4) describes the study design, including location selection, protocol, and data analysis strategy; Section (3.5) describes our sample characteristics. Section (3.6) presents the results; Section (3.7) discusses the findings and compares them to other research; and Section (3.8) covers the conclusion and future work.

3.2 Theory and Measurement

The literature documenting the existence of prejudice and its correlates has historically been more extensive than the literature examining potential remedies (see [Bertrand & Duflo, 2016](#); [Paluck & Green, 2009](#), for overviews of this work). However, recent studies have begun to tip this balance. For example, a recent meta-analysis of 418 experiments from 2007-2019, finds "rapid growth" in the number of studies designed to test prejudice reduction, catalyzed by multi-disciplinary interest in the subject and a growing focus on "light touch interventions": "treatments that are easy to implement, brief (under 10 minutes), inexpensive, and thought to have lasting effects" ([Paluck et al., 2021](#), 534-535). In an era of deep social concern about prejudice, these interventions promise the possibility of reaching large numbers of people and creating substantial change. Despite this change, [Paluck et al. \(2021\)](#) caution that the effect sizes derived from light touch interventions are highest with smaller sample sizes (539) and that these studies are more apt to test for self-reported attitude changes rather than changes in behavior.

Our research addresses each of these concerns. First, we test two substantially similar inter-

ventions to determine their *relative* effects and to better understand the underlying mechanisms driving these effects. The perspective-taking intervention seeks to elicit empathy for an other by encouraging introspection about being a victim of discrimination. The value-consistency intervention is based on the theory that participants who affirm a positive value that they hold will have the ego-strength to resist prejudice by remaining consistent with the stated value.

To assess the effect of our interventions in reducing prejudice, we employ both behavioral and attitudinal measures. Our experiments include several hundred participants for each intervention condition, totaling over a thousand for the in-person and online experiments. We also include contact measures to help us evaluate the effect of sample composition on our results. We discuss each of these aspects of our research below.

3.2.1 Prejudice Reduction Theory

Prejudice is multi-faceted. It can be automatic and implicit, cognitive and emotional, or experiential and informational. An extensive literature has demonstrated how the brain's processes for storing, classifying, and retrieving concepts can lead to prejudicial behavior in the absence of conscious decision-making (Bargh & Williams, 2006; P. Dasgupta, 2008; Jost, Federico, & Napier, 2009; Wilson & Brekke, 1994). At the same time, prejudice also results from conscious learning and deliberate choices to use stereotypes, both of which can exacerbate implicit biases (Croskerry, Singhal, & Mamede, 2013a, 2013b; Lilienfeld, Ammirati, & Landfield, 2009; Wegener & Petty, 1997). Finally, prejudice can arise when people are faced with imperfect information. That is, in the absence of contact or experience with a given group, or when contact occurs primarily in situations of unequal power and status, people may form inaccurate or discriminatory ideas about each other and then overgeneralize those ideas to an entire group (Allport, Clark, & Pettigrew, 1954; Pettigrew & Tropp, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011).

While these different theories of prejudice point to different mechanisms, prejudice reduction

approaches often address more than one mechanism at the same time. For instance, some studies have found that exposing subjects to positive examples about a disfavored group can activate alternative associations for that group – addressing implicit prejudice – while also correcting stereotypes – addressing conscious prejudice (Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2009; N. Dasgupta & Greenwald, 2001; N. Dasgupta & Rivera, 2008). Others have found that addressing even a single mechanism can yield positive results. For example, information provision alone can stimulate resistance in that prejudiced subjects may value the advantages attached to their own favored position, and/or perceive costs to their self-image or their sense of a just world if they admit their prejudices are wrong (C. D. Batson et al., 1997, 106).

Our study expands this research by comparing the effectiveness of two interventions designed to reduce resistance to changing one's attitude. The first is perspective taking, or evoking feelings of empathy for a disfavored group (C. D. Batson et al., 1997). Stimulating empathy gives subjects an emotional stake in the welfare of an other, leading them to merge others' experiences with their own experiences and applying the positive evaluations they have of themselves to those others (Wang, Ku, Tai, & Galinsky, 2013). A variety of experiments have documented this mechanism in the laboratory (Berthold, Leicht, Methner, & Gaum, 2013; Dovidio et al., 2004; Galinsky & Ku, 2004; Galinsky, Ku, & Wang, 2005; Galinsky & Moskowitz, 2000; Shih, Wang, Bucher, & Stotzer, 2009; Stephan & Finlay, 1999; Todd, Bodenhausen, Richeson, & Galinsky, 2011) and as an instructional technique in elementary and high school classrooms (Salomon, 2004).

The second intervention is value consistency, based on the idea that "many manifestations of prejudice stem, in part, from the motivation to maintain a feeling of self-worth and self-integrity" (Fein & Spencer, 1997, 31). These theories posit that affirming a person's values and positive self-image can reduce that person's need to negatively stereotype an "other." A related strand of research makes use of cognitive dissonance theory to propose that showing the inconsistency between a person's values and prejudice can reduce prejudicial beliefs or behaviors (Ball-Rokeach,

1971, 1973; Eisenstadt, Leippe, Rivers, & Stambush, 2003).

Our interest in these two approaches to prejudice reduction is also informed by our focus on anti-Muslim prejudice in our study. In the few studies that examine religious prejudice, namely anti-Muslim prejudice in particular, informational interventions have been shown to be effective in reducing prejudice (Clemons, McBeth, Peterson, & Palmer, 2020; Moritz, Lasfar, Reininger, & Ohls, 2018). In designing and implementing our study, we note that we were cognizant of the political climate in the United States at the time. Specifically, our study was conducted during the presidency of Donald Trump, whose campaign included discredited lies about American Muslims and who made a "Muslim ban" one of his first executive orders (BridgeInitiativeTeam, 2017). In this context, we posited that our informational strategies might be less effective than attitudinal or behavioral interventions, given the widespread negative public discourse related to Muslims (Adida, Lo, & Platas, 2017; Williamson, 2019). The waves of refugees from Syria in this period also created new interest in applying perspective-taking or value-consistency approaches to anti-Muslim prejudice reduction (Adida, Lo, & Platas, 2018; Alan, Baysan, Gumren, & Kubilay, 2020; E. G. Bruneau, Kteily, & Urbiola, 2019).

While our focus on interventions designed to evaluate the relative efficacy of perspective taking and value consistency in reducing prejudice, we also take advantage of the large Arab population in metropolitan Detroit to evaluate the contact hypothesis. Mansouri and Vergani (2018) show that greater intercultural contact with Muslims results in lower levels of prejudice, and greater factual knowledge about Islam both lowers prejudice independently and enables greater contact with Muslims. As we discuss below, we conduct our in-person field experiment in two demographically similar communities that differ dramatically in the overall proportion of Arab immigrants and Arab/Muslim political power. In our online survey experiment, we use self-reported contact measures instead.

3.2.2 Measures of Prejudice

Most studies of prejudice reduction use attitudinal measures to evaluate prejudice, such as approval of discriminatory or anti-discriminatory policies, willingness to interact with a disfavored group, or feelings of warmth/opposition. More recently, studies have begun to use behavioral measures of discrimination as well ([Bertrand & Duflo, 2016](#)). In their meta-analyses of prejudice reduction, [Paluck and Green \(2009, 357\)](#) and [Paluck et al. \(2021, 554\)](#) propose that behavioral measures should be combined with attitudinal measures, especially in field experiments, in assessing the effectiveness of prejudice-reduction intervention techniques.

Taking this suggestion to heart, our study uses a combination of behavioral and attitudinal measures. Specifically, we use a behavioral measure of discrimination via the trust game (aka the investment game) ([Berg et al., 1995](#)), as well as an attitudinal measure based on questions applying the "item count technique" to control for social desirability bias ([Glynn, 2013](#); [Kuklinski et al., 1997](#)). Within behavioral economics, the trust game is widely used to measure trust or relative trust behaviors and trustworthiness (reciprocity) as well as altruism ([Cox, 2004](#)). It also has been shown to have an additional effect beyond that of risk attitudes and behaviors ([Houser, Schunk, & Winter, 2010](#)). For the purpose of this study, we refer to this game as the trust game. Trust games are used as a method of eliciting subjects' willingness to discriminate by evaluating differential willingness to send money to partners who are specified as members of out-groups versus in-groups. In their overview of this area of research, [Balliet, Wu, and Dreu \(2014\)](#) examine 212 studies, including 34 using trust games, and find evidence that discrimination primarily reflects in-group favoritism. In another overview, [Lane \(2016\)](#) examines 441 results from 77 studies, all in economics journals, that use a variety of games, including trust games, and finds that out-group discrimination is generally caused by taste-based discrimination (386), and that religious identity leads to out-group discrimination (382). More recent papers using trust games to evaluate discrimination based on religious or ethno-religious identity, find that members of the same religious group are generally preferred, while the treatment of religious out-groups depends

greatly on context (Adida et al., 2017; Cetre et al., 2020; Chuah, Fahoum, & Hoffmann, 2013; Chuah, Gächter, Hoffmann, & Tan, 2022; Chuah, Gächter, Hoffmann, & Tan, 2016; Gereke, Schaub, & Baldassarri, 2020; Gupta, Mahmud, Maitra, Mitra, & Neelim, 2018; Thunström, Ritten, Bastian, Minton, & Zhappassova, 2021; Westwood et al., 2017).

A key concern in assessing prejudice in the lab is that respondents may fear being negatively judged if they admit to prejudiced attitudes or discriminatory behavior. Survey researchers have thus developed techniques to minimize the potential that respondents will under-report bias, generally by allowing respondents to answer in ways that are "masked," meaning they are not required to express bias directly. One well-known such methodology is the "item count technique" or ICT (also referred to in the literature as "list response" or "list experiment"). In this approach, a statement of bias is inserted among a set of other statements. One randomly-chosen group of respondents reports how many of those statements they agree with, and the mean is compared with a control group that receives all but the biased statement in the set. Literature reviews and a meta-analysis of research findings show that ICT can increase the reporting of socially-undesirable behaviors (Li & den Noortgate, 2019; Zigerell, 2011). For example, research on voter turnout finds that using ICT can correct for over-reporting, though not as much as other approaches (Rosenfeld, Imai, & Shapiro, 2015). On LGBTQ issues in the United States, where both policy change and survey results demonstrate a dramatic increase in mainstream acceptance, use of ICT suggests that opposition to gay rights is actually quite significant in many though not all contexts (Coffman, Coffman, & Ericson, 2017; Lax, Phillips, & Stollwerk, 2016).

The success of ICT depends on both a large sample size and an accurate diagnosis of a reluctance to indicate bias (Blair, Coppock, & Moor, 2020). Stated differently, ICT is most useful when a certain prejudice is widespread but also widely and publicly deemed as unacceptable. Although racial prejudice was generally considered the paradigmatic case of this kind, research comparing list and direct response surveys on racial and anti-immigrant/refugee bias suggests an increase in

the social acceptability of these prejudices (Axt, 2017; Creighton, Jamal, & Malancu, 2015; Dancygier et al., 2021; Rinken, del Amo, Rueda, & Cobo, 2021). These findings have implications for our own study. Since the immigrants in these studies are often Muslim, the greater acceptability of Islamophobia is hard to disentangle from the acceptability of opposition to expansive immigration. Nonetheless, given evidence that ICT provides greater insight into actual prejudice levels in a study of Brexit, we include ICT as a secondary measure of prejudice in our study (Creighton & Jamal, 2020).

3.3 Hypotheses

Based on the literature on reducing bias, we hypothesize that a participant's trust in a Muslim person, and their belief about a Muslim person's trustworthiness will be affected as follows. As research on value affirmation finds that publicly expressing support for a specific value leads to a greater likelihood of acting in accordance with that value (Fein & Spencer, 1997), our first hypothesis is as follows.

Hypothesis 1 (Value consistency). Compared to control-group participants, value-consistency participants will:

- a. invest more in the responder, irrespective of the religious identity of the responder's name;
- b. be more likely to believe that the responder is more trustworthy (irrespective of the religious identity of the responder's name); and
- c. be less likely to agree with a reduction in Muslim immigration or overall immigration, as measured by list elicitation.

Research on the effectiveness of short perspective-taking conversational interventions (Broockman & Kalla, 2016) demonstrates that these interventions can cause participants to vote in a way that is consistent with empathy for a marginalized group. Thus, we hypothesize the following.

Hypothesis 2 (Perspective taking). Compared to participants in the control condition, perspective-taking participants will:

- a. invest more in Muslim-name responders;
- b. believe that a Muslim-name responder is more trustworthy; and
- c. be less likely to agree with a reduction in Muslim immigration or overall immigration as measured by list elicitation.

The intergroup contact hypothesis suggests that individuals with a prejudice toward a particular group will tend to lose this prejudice with greater social interaction with members of that group ([Allport et al., 1954](#)). This leads us to our final hypothesis.

Hypothesis 3 (Contact). A participant who has more contact with Muslim people will have a more accurate belief about the trustworthiness of Muslim-name responders.

The experiment and hypotheses are registered in the AEA RCT Registry ([Abbadi et al., 2020](#)).

3.4 Experiment Design

To conduct our study, we implement two randomized controlled experiments – (1) an in-person experiment in Metropolitan Detroit cities, and (2) an online experiment with a representative sample of the US population – to evaluate the effectiveness of two interventions for reducing prejudice: perspective taking and value consistency. We conducted the in-person experiment during the Summer and early Fall of 2017, with a follow-up survey two to three months later. We conducted the online experiment during the Summer and Fall of 2020. In both experiments, participants are randomly assigned to one of three experimental conditions: the perspective-taking treatment, the value-consistency treatment, or a control condition. The hypotheses and analysis plans for the online experiment were pre-registered in the AEA RCT Registry ([Abbadi et al., 2020](#)). The in-person experiment was not officially pre-registered, but a similar set of hypotheses and analysis

plans were documented in our proposal to the Russell Sage Foundation, submitted a year before we conducted our experiment. Full details of the protocols can be found in Appendix (B) (In-person Protocol B.1.1 and Online Protocol B.1.2).

3.4.1 In-Person Experiment

For the in-person experiment, we selected two cities in Metropolitan Detroit: Dearborn and Warren. We then sent two-person teams of canvassers to administer the experiment door-to-door in selected neighborhoods within these cities. In all, we hired 32 canvassers, 26 of whom were women and 13 of whom wore hijab. Canvassers began going door-to-door to administer the interventions in late June and continued through August 2017. If a resident opened the door, the canvassers explained the study and requested the resident's participation. Residents who agreed were randomly assigned to one of three interventions: a control conversation about recycling: a perspective-taking conversation about Arab Muslims: or a value-consistency conversation about opportunity, kindness, or tolerance.

Following [Broockman and Kalla \(2016\)](#), the three conversations were designed to contain substantially similar components. In the recycling conversation, participants were asked to rate their support for increasing recycling efforts in their city. They then watched a one-minute video² with arguments for and against recycling, followed by a 5-10 minute conversation with the canvasser about their experiences with recycling. At the end of this intervention, they were asked if their rating of their support for recycling had changed. In the perspective-taking conversation, participants were asked to rate their support for a Muslim candidate for governor. They then watched a one-minute video of a Muslim woman in hijab discussing her experiences after which they engaged with the canvasser in a 5-10 minute conversation about being judged by or treated differently from others. At the end, they were asked if their rating of their support for the candidate

²All three videos – one for each experimental condition – can be found at: <https://github.com/changgge/IncreasingTrustInMuslims-FieldInterventions>

had changed. In the value-consistency conversation, participants were asked to choose a value – opportunity, kindness, or tolerance – that was most important to them, and to rate its importance. They then watched a one-minute video of a person discussing the value the participant chose after which they engaged with the canvasser in a 5-10 minute conversation about why that value was important to them. At the end, they were asked if they would change their rating of the importance of their chosen value.

After the intervention, all participants played a trust game. In each condition, half the participants were told that they were playing with a partner identified by a common English name (e.g., Douglas, Tracy), while the other half played with a partner with a common Arabic name (e.g., Omar, Sahr). The participant was given \$5 and told they could give as much of it as they wanted, in increments of \$1, to their partner, with the explanation that whatever amount they invested would be tripled and the partner would then choose how much of the tripled amount to return to the participant. The canvassers shuffled a stack of ten envelopes and the participant chose one (without seeing the name) from the stack – five with English names and five with Arabic names – each associated with an explicit strategy based on real players who played the role of partners prior to the experiment.³ In the strategy method, we collected the receivers' responses for every option the investor (first mover) decided to invest. Once the participant made their decision, the canvasser asked the participant to guess how much their partner would return; they were told that they would receive a bonus of \$2 if the guess was within \$1 of the actual amount.⁴ The canvasser would determine this by looking up the partner's decision and paying the participant the partner's amount plus any bonus.

The final stage of the experiment was a short survey. Each participant was asked a series of

³We collected the receivers' responses using the strategy method (Selten, 1998) on the University of Michigan campus prior to the experiment. We pre-tested common English and Arabic names among our student subjects, and kept five of the most unambiguously recognized names from each group, and put their strategy sheets into envelopes, with their first name written on the envelope.

⁴This particular incentive elicits the mode of the belief elicitation, but it is simple and easy to understand (Babcock, Recalde, Vesterlund, & Weingart, 2017; Charness & Dufwenberg, 2006a).

demographic questions and then randomly placed into one of three groups for the item count technique survey. Those in the control group received three statements and were asked to indicate how many they agreed with. Each of the other groups received four statements in their survey – the three from the control condition plus an additional statement about whether immigration to the US, or whether Muslim immigration to the US, should be increased. In total, the entire experiment took 20-30 minutes.

In the first wave, canvassers visited 22,356 households over a three-month period. Of these households, 20% (4,496) opened their doors. From those who opened their doors, approximately 24% (1,073) agreed to participate in the study. We excluded 151 of these from the final sample because they either indicated they were Muslim (97) or ended the visit before responding to the trust game, resulting in 922 final observations. Figure A1 summarizes the response rates across the two cities.

In terms of response rate, we observe that, on average, the response rate is 8.46% higher when one of the canvassers is hijab-wearing (28.83% compared to 20.38%), a trend that holds in both cities. We also observe that people open their doors more often in Warren (23.4%) than Dearborn (16.9%), but that Dearborn residents are more likely to participate (32.04% versus 20.10%), conditional on opening their door.

Between two to three months later, canvassers visited the same households, and 38% (351 subjects) out of the original 922 participated in the follow-up intervention. We attribute the high attrition rate to the cold temperatures and early darkness of late Fall in metro Detroit. Participants were first asked to recall the subject of their first conversation with canvassers and to discuss if or how their feelings had changed. They then played the second part of the trust game that elicits beliefs about trustworthiness and repeated the survey.

3.4.1.1 Location Selection

To compare how degree of exposure to Muslim Arabs affects outcomes, we chose Dearborn and Warren which have relatively similar characteristics in terms of population and socioeconomic status but differ greatly in the proportion of Middle Eastern residents. The median family income in both cities is around \$45,000, with the median family income in Dearborn slightly higher. The percentage of high school graduates is around 82% in both cities. However, in terms of ethnic composition, 42% of Dearborn residents are from Middle Eastern origins, with most being Muslims, compared to 3% of Warren residents being of Middle Eastern origins.

Dearborn is home to one of the largest Middle Eastern communities in the United States. People of Middle Eastern descent are a majority in the city and are represented in the city council and other publicly elected positions. While there are many locations within the city where Arabs are a majority based on census data, there are a few locations where they are still a small minority - i.e., less than 20%. The residents of such locations are of special interest to our study. On the one hand, given the composition of their city, they likely have some contact with individuals with Middle Eastern origins and Muslims in particular. Yet, unlike many other communities in Dearborn, these neighborhoods still consist of a majority of people who are not of Middle Eastern origins. In this study, we look into the levels of prejudice against Muslims among these communities which have some contact with Muslims yet do not live together in the same neighborhood.

Warren, while being economically similar to Dearborn, is in line with the demographic profile of the United States in terms of ethnic composition – 70% whites, 17% black, and 11.5% foreign born. It is also located in Macomb County, home to what is famously known as "Reagan Democrats" and in the 2016 presidential elections, was a county that went for Trump. In Table (3.1), we illustrate the general demographics of both cities.

For data collection, we started in the northernmost tracts in Warren since they were the safest

for the canvassers and then proceeded east to west. We skipped tracts with 9% or more of the population from Middle Eastern origins. In Dearborn, we skipped tracts with more than 15% of the population from Middle Eastern origins.

Table 3.1: Comparison of Dearborn and Warren characteristics

City	Population	Female	Average Household Size	High School Graduate	Median Income	Arab
Dearborn	95,100	50.60%	3.05	81.20%	46,700	42%
Warren	135,400	51.60%	2.52	83.90%	43,500	3%

Source: American Community Survey, US Census Bureau (2014)

3.4.2 Online Experiment

In the online version of the study, we worked with Dynata, an online surveying platform to reach out to a representative sample of the United States population based on gender, race and education. The online protocol was similar to the in-person protocol with two modifications to account for the online-based interactive format. First, instead of participating in a live, directed conversation, participants responded in writing to a set of questions patterned after the questions in the in-person experiment, with minor changes to account for the online format. Second, we also asked the demographic questions immediately after the introduction, so as to ensure appropriate quotas for the different representations in our sample. These questions were part of the final survey in the in-person experiment.

Data collection for the online experiment occurred between June and September 2020. Dynata sent out a link with the survey to thousands in its subject pool. From 9,717 subjects who accessed the survey, 8,757 agreed to participate. From those, 8,721 responded to the three demographic survey questions that determined eligibility (gender, race and education). 1,956 participants were qualified and randomly assigned to one of the three treatment conditions. 1,796 participants re-

sponded to at least one of our outcome measures in the trust game and 1,575 finished the whole survey.

3.5 Sample Characteristics

Our in-person experiment is balanced in sample characteristics across experimental conditions in both waves. Our online experiment is also balanced across experimental conditions in most observable characteristics.

Table (B.2) presents the sample characteristics of the 922 participants who completed the trust game in Wave 1 of the in-person experiment. The following are the characteristics of this group: average age of 49, 53% female, 82% white, 74% Christian, and 46% with a bachelor's or graduate degree. Column (5) reports the p -values of the joint orthogonality tests, which indicate that our randomization works in all observable characteristics except in the distribution of the income brackets between \$40,000 to \$64,999 ($p = 0.027$, joint orthogonality test).

For Wave 2, we observe a high attrition rate of 62% (351 participants responded to Wave 2 compared to the original 922). We perform a secondary analysis of the differential attrition and a balance check of the Wave 2 sample and present the results in Table (B.3) in Appendix (B). Despite the high attrition rate, we find that the sample continues to be balanced across experimental conditions on all observable characteristics.

Table (B.20) presents the sample characteristics of the 1,796 participants we recruited through Dynata in the online experiment. The sample has the following characteristics: an average age of 60 years old, 51% female, 77.5% white, 70% Christian, and 33% with a bachelor's or graduate degree. Column (5) reports the p -values of our randomization check, which indicate that our randomization holds in most observable characteristics with a few exceptions; age ($p = 0.046$),

white representation ($p = 0.039$), and those who do not associate with any religion ($p = .009$). To confirm the robustness of our results, we run the same set of regressions that we present in this paper after controlling for all covariates. As indicated, one of the main purposes of the online experiment is to have a representative sample of the United States population based on gender, race, and education. We are able to achieve this representation across gender (female sample= 51.20%, US population = 50.8%), (white sample=77.5%, US population= 76.3%), and education (bachelor's or higher sample = 33.3%, US population = 32.1%). However, we are not able to fulfill this representation across different education segments, particularly those who do not have a high school degree (sample < 1%, US population = 10.4%).

3.6 Results

We first present our pre-registered hypotheses and analyses together with the corresponding results.

3.6.1 Pre-Registered Hypotheses and Results

In the trust game, we are interested in two outcome variables: "trust," as measured by how much a participant decides to invest in the receiver (the investment amount) and "trustworthiness," the participant's belief in how much the receiver will return conditional on their investment amount (investor guess). Recall that we use the strategy method to collect the respondents' amount returned for each possible investment amount.

Figure (3.1) presents the investment amount allocated in each of the three experimental conditions. From this figure, we observe that the value-consistency treatment increases the investment amount compared to the control, while perspective-taking does not. These findings hold in both our in-person and online experiments, though the mean investment in the in-person experiment is greater than that in the online experiment in each pair of corresponding experimental conditions. The difference in means is likely due to either the heightened social image concerns in the

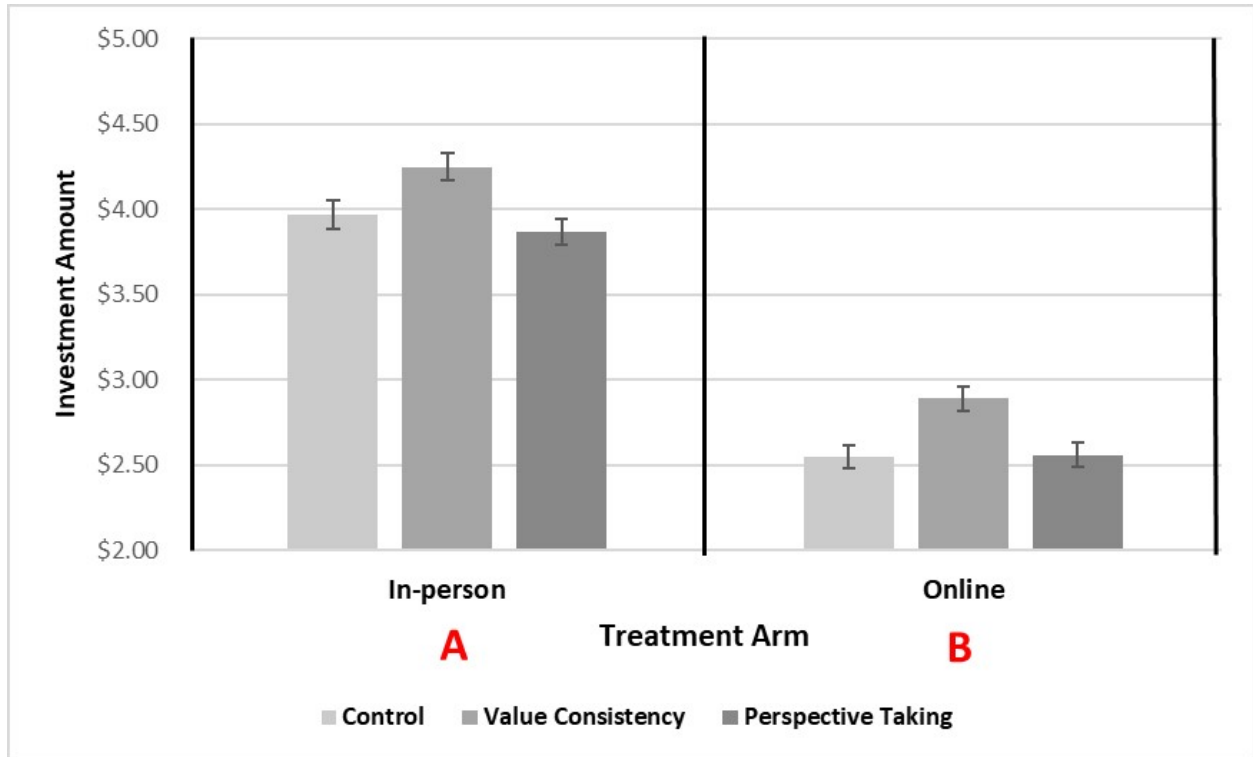


Figure 3.1: **Investment amount by experimental condition**

Plots **A** and **B** show the average investment amount by experimental condition from the in-person and online experiments, respectively. Effect sizes are based on Table 3.2 Column (1) Panels A and B. Overall, we observe that the value-consistency treatment increases the invested amount compared to the control in both experiments ($p < 0.05$), with a significant increase in the average investment amount in the in-person experiment.

Error bars indicate standard errors.

in-person interaction (DellaVigna, List, & Malmendier, 2012) or a self-selection bias of people willing to open their door and talk with the canvassers.

Next, we estimate the average treatment effect on the investment amount. We show results based on an OLS specification as well as on a Tobit model, since the investment amount is censored below at 0 and above at 5. The Tobit model is as follows:

$$\bar{y}_i^* = \beta_0 + \beta_v T_v + \beta_p T_p + \gamma X_i + \varepsilon_i, \text{ and } \bar{y}_i = \max\{0, \min\{\bar{y}_i^*, 5\}\}, \quad (3.1)$$

where ε_i is normally distributed; and the latent variable \bar{y}_i^* is not observed, while the actual investment amount, \bar{y}_i , is the observed, censored version of \bar{y}_i^* . Our Tobit model takes into account

that \bar{y}_i is potentially censored for 64.31% of our in-person experiment sample observations (3.9% invested \$0, and 60.41% invested \$5) and 37.81% of the online one (12.81% invested \$0, and 25% invested \$5). The treatment dummy, T_p (T_v) represents the perspective-taking (value-consistency) treatment, whereas X_i represents demographic controls.⁵

Table 3.2: Average Treatment Effects on Investment Amount and Investor Beliefs

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
<i>Panel A: In-person</i>					
Value-Consistency (β_v)	0.282** (0.115) [0.030]	0.642** (0.317) [0.086]	0.060*** (0.021) [0.008]	1.072*** (0.394) [0.014]	-0.058 (0.038) [0.268]
Perspective-Taking (β_p)	-0.098 (0.113) [0.388]	-0.229 (0.304) [0.452]	0.039* (0.020) [0.057]	0.818** (0.387) [0.035]	0.014 (0.039) [0.722]
Constant (β_0)	3.966*** (0.082)	5.613*** (0.240)	0.383*** (0.015)	-1.221*** (0.282)	0.341*** (0.016)
N	922	922	918	917	908
R^2	0.013		0.009	0.009	
<i>Pseudo R²</i>		0.003			0.003
<i>Panel B: Online</i>					
Value-Consistency (β_v)	0.338*** (0.0997) [0.002]	0.519*** (0.159) [0.002]	0.00720 (0.0177) [0.685]	-0.00129 (0.262) [0.996]	0.0135 (0.0284) [0.682]
Perspective-Taking (β_p)	0.00454 (0.0977) [0.963]	-0.0197 (0.155) [0.899]	0.0358** (0.0173) [0.038]	0.404 (0.255) [0.114]	-0.0113 (0.0275) [0.682]
Constant (β_0)	2.551*** (0.0692)	2.701*** (0.110)	0.387*** (0.0122)	-0.0287 (0.180)	0.3423*** (0.0195)
N	1796	1796	1716	1716	1716
R^2	0.00828		0.00277	0.00192	
<i>Pseudo R²</i>		0.00216			0.000345

Notes:

- Standard errors are in parentheses and FDR adjusted q-values are in square brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
- Average treatment effects on investment amount: Columns (1) and (2); investor guess proportion: Column (3); difference between the guess and actual strategy outcome: Column (4); and probability of making the right guess based on Probit model: Column (5).
- Demographic controls not included.
- Tables B.6, B.7 and B.8 in the Appendix present the results with demographic controls for the in-person panel and B.23, B.24 and B.25 present the results for the online panel.

Table (3.2) presents the average treatment effect (ATE) on the investment amount based on our OLS (Column 1) and Tobit (Column 2) specifications, respectively. Specifically, we find that the

⁵Table B.1 presents the summary statistics of the trust game outcomes (Panel A: the in-person experiment and Panel B: the online one).

value-consistency treatment increases the uncensored investment amount by \$0.28 ($p < 0.05$) in the in-person experiment and by \$0.34 ($p < 0.01$) in the online one (Column 1). The respective impacts on the latent variable become \$0.64 (in-person) and \$0.52 (online) (Column 2). By contrast, we do not find any significant effect of perspective-taking on the investment amount in either experiment.

To measure an investor's beliefs about the receiver's trustworthiness, we use *investor guess proportion*, defined as the ratio of the investor's guess of the amount the receiver decides to return over her overall endowment. Table (3.2), Column (3) reports an OLS specification on the ATE on investor guess proportion. Again, we see that value-consistency investors believe that the receiver is 6 percentage-points (p.p.) more trustworthy ($p < 0.01$) in the in-person experiment, though not in the online one. In comparison, perspective-taking has a smaller (3.9 p.p.) and marginally significant effect on investor guess proportion ($p < 0.10$) in the in-person experiment and a similar (3.6 p.p.) and statistically significant ($p < 0.05$) impact in the online one. We next examine the accuracy of the investor beliefs using two measures. The first measure, *investor guess difference* = investor guess - actual amount returned, is the distance between the investor's guess and the actual amount returned by the receiver. The second is whether a guess is within a dollar of the actual amount returned. Table (3.2), Columns (4) and (5), respectively, report the results of an OLS specification on the investor guess difference and a Probit specification on whether a guess is within a one-dollar range. The results show that participants in the control condition underestimate the amount returned by \$1.22, whereas both value consistency and perspective taking correct for this underestimation, by \$1.07 ($p < 0.01$) and \$0.82 ($p < 0.05$), respectively, in the in-person experiment.

We next examine whether our results change based on the receivers names provided to the investors, using the following specification:

$$y_i = \beta_0 + \beta_p T_p + \beta_v T_v + \beta_m M + \beta_{pm} T_p M + \beta_{vm} T_v M + \gamma X_i + \varepsilon_i \quad (3.2)$$

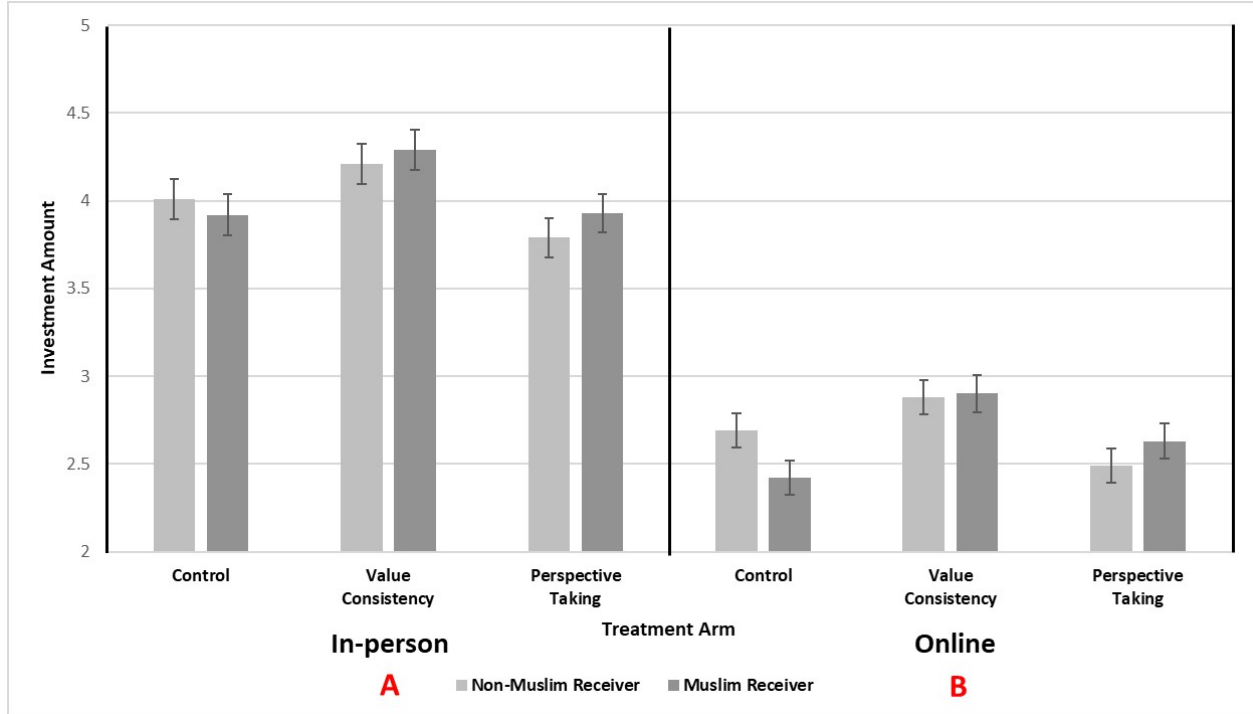


Figure 3.2: **Investment amount by experimental condition and identity of receiver (Muslim or non-Muslim)**

Plots **A** and **B** show the average investment amount by experimental condition and identity of the receiver (Muslim or non-Muslim) from the in-person and online experiments, respectively. Effect sizes are based on Tables 3.3 and 3.4 Columns (1). In the in-person experiment, we observe that there is no difference in the amount invested in Muslim and non-Muslim receivers in the control condition, suggesting that there is no bias against Muslims (Plot **A**). However, in the online experiment, the amount invested in Muslim receivers is less than that invested in non-Muslim receivers in the control condition, suggesting that there might be bias against Muslims (Plot **B**). This difference is marginally significant ($p < 0.10$). We also observe that the value-consistency treatment increases the invested amount in Muslim and non-Muslim receivers compared to the control in both the in-person and online experiments ($p < 0.05$), while the perspective-taking treatment does not.

Error bars indicate standard errors.

The results show that there are no indications of biased behavior against Muslims in the in-person experiment, since there is no difference in the amount invested in Muslim and non-Muslim receivers in the control condition (Figure 3.2 Plot **A**). As indicated earlier, this might be due to

Table 3.3: Heterogeneous Treatment Effects on Investment Amount and Investor Guess Outcomes: In-Person Experiment

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
<i>Panel A: In-person</i>					
Value-Consistency (β_v)	0.202 (0.163) [0.535]	0.351 (0.446) [0.497]	0.057* (0.029) [0.205]	0.800 (0.556) [0.378]	-0.114** (0.057) [0.079]
Perspective-Taking (β_p)	-0.214 (0.161) [0.535]	-0.586 (0.433) [0.497]	0.002 (0.029) [0.956]	0.127 (0.550) [0.818]	-0.060 (0.057) [0.296]
Muslim Responder (β_m)	-0.082 (0.164) [0.618]	-0.302 (0.443) [0.497]	0.016 (0.029) [0.956]	-0.276 (0.563) [0.78]	-0.207*** (0.055) [0.001]
Value-Consistency \times Muslim Responder (β_{vm})	0.160 (0.231) [0.612]	0.586 (0.633) [0.497]	0.006 (0.041) [0.956]	0.545 (0.788) [0.78]	0.112 (0.076) [0.23]
Perspective-Taking \times Muslim Responder (β_{pm})	0.223 (0.227) [0.542]	0.688 (0.609) [0.497]	0.070* (0.040) [0.205]	1.358* (0.774) [0.378]	0.151** (0.077) [0.079]
Constant (β_0)	4.007*** (0.116)	5.762*** (0.331)	0.375*** (0.021)	-1.083*** (0.398)	0.458*** (0.042)
Value-consistency treatment effects on Muslim receivers ($\beta_v + \beta_{vm}$)	0.362** (0.164)	0.937** (0.450)	0.063** (0.029)	1.345** (0.558)	-0.002 (0.051)
Perspective-taking treatment effects on Muslim receivers ($\beta_p + \beta_{pm}$)	0.009 (0.160)	0.103 (0.428)	0.072** (0.028)	1.485*** (0.545)	0.092* (0.052)
N	921	921	917	917	907
R^2	0.015		0.021	0.014	
Pseudo R^2		0.004			0.019

Notes:

- Standard errors in parentheses and adjusted FDR p-values in square brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
- Heterogeneous treatment effects on investment amount: Columns (1) and (2); investor guess proportion: Column (3); difference between the guess and actual strategy outcome: Column (4); and probability of making the right guess based on a Probit model: Column (5)
- Demographic controls not included.
- Tables B.9, B.10 and B.11 in the Appendix present the results with demographic controls.

social-image concerns since most of our canvassers were Muslims and/or hijab wearing or our sample was generally nicer or more open. By contrast, we observe potential bias against Muslims in the online experiment since the amount invested in Muslim receivers is less than that invested in non-Muslim receivers in the control condition (Figure 3.2 Plot B). This difference is marginally significant ($p < 0.10$). We further observe that the value-consistency treatment increases trust in both Muslim and non-Muslim receivers compared to the control in both experiments, while perspective-taking does not change the level of trust.

To measure the heterogeneous treatment effects (HTE), we use Equation (3.2), where M is an indicator for a Muslim-sounding name. Similar to Table (3.2), Tables (3.3) and (3.4) present

Table 3.4: Heterogeneous Treatment Effects on Investment Amount and Investor Guess Outcomes: Online Experiment

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
<i>Panel B: Online</i>					
Value-Consistency (β_v)	0.193 (0.138) [0.162]	0.282 (0.220) [0.199]	0.0356 (0.0244) [0.233]	0.252 (0.361) [0.809]	0.0203 (0.0388) [0.752]
Perspective-Taking (β_p)	-0.201 (0.137) [0.162]	-0.328 (0.217) [0.177]	0.0347 (0.0242) [0.233]	0.481 (0.358) [0.708]	0.0275 (0.0385) [0.752]
Muslim Responder (β_m)	-0.270* (0.138) [0.128]	-0.407* (0.219) [0.158]	0.0323 (0.0244) [0.233]	0.0854 (0.360) [0.813]	0.0379 (0.0389) [0.752]
Value-Consistency \times Muslim Responder (β_{vm})	0.286 (0.200) [0.162]	0.469 (0.318) [0.177]	-0.0597* (0.0356) [0.233]	-0.565 (0.526) [0.708]	-0.0094 (0.0571) [0.861]
Perspective-Taking \times Muslim Responder (β_{pm})	0.414** (0.196) [0.128]	0.619** (0.309) [0.158]	0.00499 (0.0346) [0.885]	-0.156 (0.511) [0.813]	-0.079 (0.0549) [0.752]
Constant (β_0)	2.689*** (0.0990)	2.910*** (0.157)	0.370*** (0.0174)	-0.0722 (0.257)	0.323*** (0.0274)
Value-consistency treatment effects on Muslim receivers ($\beta_v + \beta_{vm}$)	0.479*** (0.145)	0.751*** (0.230)	-0.024 (0.026)	-0.312 (0.382)	0.011 (0.042)
Perspective-taking treatment effects on Muslim receivers ($\beta_p + \beta_{pm}$)	0.213 (0.139)	0.291 (0.221)	0.039 (0.025)	0.325 (0.365)	-0.052 (0.039)
N	1796	1796	1716	1716	1716
R^2	0.0110		0.00579	0.00289	
Pseudo R^2		0.00283			0.00149

Notes:

a. Standard errors in parentheses and adjusted FDR p-values in square brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

b. Heterogeneous treatment effects on investment amount: Columns (1) and (2); investor guess proportion: Column (3); difference between the guess and actual strategy outcome: Column (4); and probability of making the right guess based on a Probit model: Column (5) c. Demographic controls not included.

d. Tables B.26, B.27 and B.28 in the Appendix present the results with demographic controls.

five specifications investigating the HTE on investment amount (Columns 1 and 2), as well as investor's beliefs about the trustworthiness of the receiver (Columns 3-5) in the in-person and online experiments, respectively. For our independent variables, we include the two treatment dummies, a Muslim-sounding name dummy and their interactions. Columns (1) and (2) report the effects on the investment amount from OLS and Tobit specifications.

We summarize our results below as per our pre-registered hypothesis.

Result 1 (Value-consistency average treatment effects). Compared to participants in the control

condition, value-consistency participants invest 7% more in the receiver in the in-person experiment and 13.2% more in the online experiment. In-person participants also believe that the receiver will be 6 p.p. more trustworthy (measured by the amount participants believe they will get back from the receiver, conditional on their endowment), and that they will return \$1.07 more (the latter two results hold in the in-person experiment only).

From our item count technique (ICT) questions in the survey, we observe that the value-consistency intervention reduces opposition to specifically Muslim immigration by 25.6% in the in-person experiment (Table B.12) and 16.3% in the online one (Table B.29). It also reduces opposition to overall immigration by 32.7 pp in the in-person survey. However, none of these results are statistically significant. We further find that value consistency reduces opposition to all immigration by 31% in the online experiment, a result which is marginally significant ($p < 0.10$).

By Result 1, we reject the null in favor of Hypotheses 1(a) and 1(b) that a value-consistency intervention increases trust behaviors and beliefs about the trustworthiness of the second player. While we observe some reduction in opposition towards Muslims and immigrants, we fail to reject the null in favor of Hypothesis 1(c) at the conventional level.

Result 2 (Value-consistency heterogeneous treatment effects on Muslim receivers). Compared to their control counterparts, participants in the value-consistency condition invest \$0.362 (9.2%) more in the in-person experiment ($p < 0.05$) and \$0.479 (19.8%) in the online experiment ($p < 0.01$) in Muslim receivers, believe that these receivers are 6.3% more trustworthy ($p < 0.05$), and believe that these receivers will return \$1.35 more ($p < 0.05$) in the in-person experiment.

Accordingly, we observe that the value-consistency treatment increases trust behaviors in Muslim receivers both in-person and online, and increases beliefs about the trustworthiness of Muslims in the in-person setting.

Result 3 (Perspective-taking average treatment effects). Compared to participants in the control condition, participants in the perspective-taking condition invest the same amount in the receiver,

and believe that the receiver will be 4 p.p. marginally more trustworthy ($p < 0.10$) in the in-person experiment and 3.6 p.p ($p < 0.05$) in the online one, and that receiver will return \$0.82 ($p < 0.05$) more compared to the control in the in-person experiment.

These results suggest that a perspective-taking intervention does not increase trust behaviors despite increasing beliefs about the trustworthiness of the receiver.

Result 4 (Perspective-taking heterogeneous treatment effects on Muslim receivers). Compared to participants in the control condition, participants in the perspective-taking condition do not invest more in Muslim receivers; however, they believe that Muslim receivers are 7.2% more trustworthy ($p < 0.05$), that they will return \$1.49 more ($p < 0.01$), and that their beliefs are 9.2 p.p marginally more accurate ($p < 0.10$) in the in-person experiment. Using the item count technique (Tables B.1.1.8 and B.1.2.8), we observe that perspective taking does not reduce opposition towards Muslims or immigrants.

By Result 4, we fail to reject the null of Hypothesis 2 (a) that perspective taking increases trust behaviors and reject the null in favor of Hypothesis 2 (b) that perspective taking increases beliefs about trustworthiness of Muslim receivers in the in-person experiment. Furthermore, we fail to reject the null in favor of Hypothesis 2 (c) that perspective taking reduces opposition towards Muslims or immigrants.

We use observational measurements to test the contact hypothesis which postulates that participants with greater likelihood of contact with Muslims will have more accurate beliefs about the trustworthiness of Muslim-name receivers. In the in-person experiment, we observe that participants in Warren and Dearborn do not behave differently in the trust game, nor do they hold different beliefs towards Muslims (Table B.5 in Appendix B), even though Dearborn has a higher proportion of people of Arab descent compared to Warren. However, we observe that Warren's participants are 10.5 p.p. more accurate in their guesses about non-Muslim receivers than Dearborn's participants ($p < 0.05$), suggesting that their accuracy about non-Muslim receivers is

correlated with their likelihood contact with other non-Muslim neighbors.

We further test our contact hypothesis in the online experiment by asking participants whether they have Muslim neighbors or coworkers. The results in Tables (B.21) and (B.22) suggest that having some or many Muslim neighbors or coworkers does not correlate with the accuracy of a participant's guess. Therefore, we fail to reject the null of Hypothesis 3 that people with a greater likelihood of contact with Muslims have more accurate beliefs about the trustworthiness of Muslim receivers.

Interestingly, the results in Table (B.21) indicate that participants who have some or many Muslim neighbors tend to invest more in *non-Muslim* receivers. Particularly, those who have some Muslim neighbors invest \$0.36 ($p < 0.05$) more and those who have many Muslim neighbors invest \$0.77 ($p < 0.01$) more in non-Muslim receivers compared to those who do not know any Muslims. Furthermore, those who have many Muslim neighbors tend to believe that non-Muslim receivers are 12.7 p.p. ($p < 0.05$) less trustworthy compared to those who do not know any Muslims. Finally, participants who know many Muslims underestimate how much they would get back from non-Muslim receivers by \$2.43 ($p < 0.01$) compared to those who do not know any Muslims. However, we do not observe similar trends among those who have Muslim coworkers with the exception of an underestimation by those who know many coworkers of how much they would get back from non-Muslim receivers by \$2.10 compared to those who do not know any Muslims.

3.6.1.1 Other Findings – Impact of the Treatments on the Accuracy of Guess

In addition to our pre-registered hypotheses and analysis, we explore treatment effects on belief accuracy. Regarding the control group, we find that participants underestimate the amount returned to them by the receivers in the in-person experiment, irrespective of the receiver's identity (see Figure B.3). For those in the value-consistency treatment, we find significantly

less underestimation for both Muslim and non-Muslim receivers ($p < 0.05$), while those in the perspective-taking treatment exhibit less underestimation primarily for Muslim receivers ($p < 0.01$) (Table 3.3 Specification 4). We do not observe a similar trend of underestimation in the online experiment (Table 3.4 Specification 4). Figure (B.3) in Appendix (B) illustrates these results visually.

Finally, we find that the gap in the probability of participants making the right guess (or within \$1) of how much they would get back from Muslim and non-Muslim receivers in the control group is 20.7 p.p. ($p < 0.01$) in the in-person experiment. Furthermore, both perspective taking and value consistency reduce this gap with perspective taking having a larger impact. Specification (5) in Table (3.3) as well as Figure (B.4) Plot (A) illustrate these results. We do not observe a similar gap in the online experiment (Table 3.4, Specification 5).

3.7 Discussion

Overall, we find that at least in the short term, the value-consistency treatment increases trust behaviors and beliefs toward the receiver regardless of the receiver's identity, confirming Hypotheses 1 a and 1 b (*Panel A* Table 3.2 Columns 1, 2, and 3) in the in-person experiment. Furthermore, we observe a similar impact in the online experiment in terms of behaviors; however we do not detect a statistically significant difference in beliefs (*Panel B* Table 3.2, Columns 1, 2, and 3). By contrast, we find that the perspective-taking treatment does not seem to have a similar impact on trust behaviors, thus failing to confirm Hypothesis 2 a. However, perspective taking does have a differential impact on beliefs about Muslim receivers in the in-person experiment, partially confirming Hypothesis 2 b (Tables 3.3 and 3.4).

These findings build on the research of [Broockman and Kalla \(2016\)](#) and provide additional insight into the effectiveness of short interventions in reducing bias. In their work, short,

perspective-taking conversations reduced anti-transgender bias, with effects lasting for at least three months. Our results provide additional insight into the core finding of [Broockman and Kalla \(2016\)](#) on the effectiveness of interventions. First, our results indicate that perspective taking does not have similar effects for Muslims when compared to the transgender community. One interpretation of this result is that the bias against Muslims is different from that against the transgender community. Based on the text analysis of the online experiment responses, participants indicate some ambiguity in their beliefs towards Muslims candidates. We asked participants on a scale of 1-10, how confident they were in their response regarding whether they would vote for a Muslim candidate if he or she would run for office and the average response was 6.13. In comparison, participants who received the value-consistency treatment indicated an average of 8.59 when asked about how confident they were about their chosen value. While we do not observe similar trends in the in-person study, this may reflect an effect of experimental demand given that more than half of our canvassers were hijab wearing or an effect of context given the large Muslim population in the Metropolitan Detroit area.

Second, we observe similar trends in terms of the impacts of the treatments on behavior in the in-person and the online experiments (with a shift in the baseline). However, we find different effects in terms of beliefs in the in-person experiment. This finding may reflect the nature of the in-person interaction or the selection bias in our in-person sample. People tend to be more present in in-person interactions compared to online ones. An alternative explanation would be the selection bias in our in-person experiment. Subjects in the in-person study were comprised of those who answered their door, who may be seen as nicer or more trusting than the average population. These participants spent approximately 30 minutes talking to our canvassers and invested an average of \$4.02, with more than 60% investing the maximum amount (\$5). This fits with the findings of [N. D. Johnson and Mislin \(2011\)](#) that first-movers, in their overview of 161 trust-game studies, contributed an average of 0.52% of their endowment.

Third, we consider possibilities for why we did not observe the same direct effects as [Broockman and Kalla \(2016\)](#). One likely reason is that our participants were more certain of their beliefs about Muslims than Broockman and Kalla's were about transgender people. Indeed, [Petty and Cacioppo \(1986\)](#) finds that perspective taking allows participants to think through their beliefs on a previously unconsidered topic. Once they feel they have given an issue due consideration, they become more solidified in their views, which could explain the sustained impact of the conversations as observed by [Broockman and Kalla \(2016\)](#). Given the considerable pre-existing discussion of Muslim issues in the public sphere, our participants may already have had a chance to think through their views, and they may have been less prone to being moved by a 10-minute conversation.

Another possibility is a difference in the quality of the interventions between our study and those of [Broockman and Kalla \(2016\)](#). [Broockman and Kalla \(2016\)](#) evaluated perspective-taking interventions implemented by non-profit organizations devoted to debiasing. Conversations with their program staff suggest that the staff spent comparatively greater time and effort training their canvassers compared to our canvassers who were mostly college students recruited for the purpose of this study ([Chan, Gupta, Li, & Wang, 2019](#)).

Finally, given that our in-person control group exhibited no initial bias against Muslims, compared to some level of bias in our online control group, it may be that our self-selected participants who opened their door were more trusting or open by nature. Where there is no bias, there is no opportunity for debiasing.

From a policy perspective, value consistency shows promise as an intervention that can be deployed in-person or online. Furthermore, our results indicate that perspective taking is not a universal treatment for bias. While it is shown to be effective in reducing transgender bias, ([Broockman & Kalla, 2016](#)), we do not find similar results in reducing anti-Muslim bias. It would be inter-

esting to study how these interventions translate to other types of biases. We asked participants additional questions to observe whether any of these interventions had an effect on Asian bias due to COVID-19 (B.1.2.9 in Appendix B.1.2) and found no changes in participants' beliefs regarding which government (United States or China) was to blame, whether COVID-19 was a bio-weapon developed by China, or whether medical equipment should be shared with other countries.

3.8 Conclusion

This study examines the use of short interventions to reduce bias against out-group members. Of the field studies examining similar type of interventions, most focus on a single intervention (E. Bruneau, Kteily, & Falk, 2018). Motivated by the lack of comparison of compact interventions to reduce anti-religious bias, we conduct two field experiments – online and in-person – to compare the effects of two interactive interventions – value consistency and perspective taking – on reducing anti-Muslim bias.

The results from the study suggest that value consistency increases trust behaviors in Muslims and non-Muslims as measured by the trust game, while perspective taking does not have similar effects. These results hold in both the online and in-person experiments.

Moreover, the results suggest that value consistency increases beliefs about the trustworthiness of the receiver irrespective of the receiver's identity as measured by the participants' guesses of how much they would get back from the receiver in the in-person experiment. Meanwhile, perspective taking increases beliefs about the trustworthiness of Muslim receivers in the in-person study. We do not find similar effects in the online experiment.

This study has implications for broader research on the use of interventions by highlighting the importance of comparing the effectiveness of different interventions to reduce bias and by showing

that de-biasing may not be a one-size-fits-all approach. Unlike [Broockman and Kalla \(2016\)](#), who find that perspective-taking conversations reduce bias against those who are transgender, our study suggests that perspective taking is not effective in reducing anti-Muslim bias. It also highlights the importance of being able to replicate results in different settings to validate the findings.

This work could be extended in multiple directions that revolve around our lack of an effect of the perspective-taking treatment. It could be that we frame our perspective-taking intervention around voting for a Muslim candidate to be an elected governor or official while [Broockman and Kalla \(2016\)](#) frame their intervention around a specific issue for the community. It could be that this difference in the level of specificity in the perspective-taking interventions in the different studies (voting for on an issue versus voting for a candidate) created a different response in our participants.

Another potential direction is investigating the type of valence triggered by the perspective-taking intervention. We conduct Natural Language Processing (NLP) analysis and observe that our perspective-taking intervention triggered negative emotions in our participants. As [Estes and Adelman \(2008\)](#) suggest, when attention is drawn to a negative valence, this disrupts attention to other stimuli. Hence, looking into neutral- or positive-valenced interventions is another possibility to investigate in future research.

CHAPTER 4

Discussion and Conclusion

Overall, this thesis highlights some of the intricacies and importance of how religion and religious beliefs interact with social behaviors. In the first study, we develop a framework on how religion might affect prosocial behaviors and identify a set of mechanisms that uniquely apply to religious people. In addition, we find that religious-based interventions are more effective in increasing honesty compared to non-religious ones in Sudan. In the second study, we attempt to reduce anti-Muslim bias in the United States using short prompt-based interventions and find that value consistency increases trust behaviors in Muslims while perspective taking does not.

The results from the first (honesty) study suggest that religiously-framed extrinsic and intrinsic reminders increase honesty by 31.9% and 30.1%, respectively, compared to the control. Moreover, the non-religious intrinsic reminder increases honesty by 21.4% compared to the control. By contrast, the non-religious extrinsic reminder does not increase honesty, possibly because of the specific context of Sudan, where participants may lack faith in the government's honesty or monitoring ability. One of the main contributions from this study is a framework that illustrates how religious individuals may be guided in their social behaviors by a delineated set of mechanisms based on their belief in God as an entity.

The second study compares the impact of two compact prompt-based interventions in reducing bias against religious minorities. The results indicate that while value consistency increases

trust behaviors in Muslims and non-Muslims in both online and in-person experiments, as measured by the trust game, perspective taking does not have a similar effect. We find that value consistency increases the investment amount by 7% and 13.2% in the in-person and online experiments, respectively. Moreover, both treatments increase beliefs about the trustworthiness of the responder in the in-person setting while not having a similar impact in the online one.

Together, these two studies share a common thread. In the first study, we define intrinsic reminders (religious or non-religious) as ones that remind a person with a personal value that is consistent with the intended behavior (honesty). We label these reminders as intrinsic because they are driven by intrinsic motivations, while extrinsic reminders have an external agent (God or government) as the source of the threat (or reward). In the second study, we follow [Paluck and Green \(2009\)](#)'s definition of value-consistency as one that reminds people of values they hold such as kindness and tolerance that are inconsistent with the unintended behavior (bias against out-group members). Therefore, while the labels may be different, they address the same underlying concept at a semantic level. For simplicity, we might refer to them as *intrinsic reminders* where applicable.

In line with findings from other research, our two studies suggest that intrinsic reminders, possibly driven by self-image concerns, might be effective in promoting prosocial behaviors irrespective of the context – the United States or Sudan – or goal – increasing honesty or reducing bias against out-group members. The results from the first study about increasing honesty in Sudan indicate that intrinsic reminders are effective in increasing honesty as measured by a coin-flipping game (Table 2.7 Column 1). The results from the second study about reducing bias against Muslims in the United States suggest a similar impact of intrinsic reminders (value consistency) on reducing anti-Muslim bias in both online and in-person settings as measured by a trust game (Tables 3.2, 3.3 and 3.4 Column 1). Other studies on promoting prosocial behaviors such as reducing bias against out-group members ([Fein & Spencer, 1997](#); [Leippe](#)

& Eisenstadt, 1994) indicate similar effects. Previous studies suggest that the positive effects are driven primarily by induced compliance. That is, reminding people about values (such as honesty or kindness) that are inconsistent with the unintended behavior (dishonesty or bias against out-group members) makes them comply with the former, possibly because of self-image concerns.

Second, beliefs about the agent underlying an extrinsic reminder can be an important prerequisite for it to be effective. The results from the honesty study show that while the religious extrinsic reminder was effective in inducing prosocial behavior, the non-religious one was not. We suspect that there might be two possible explanations for this. First, it might be that the findings were impacted by the association of the underlying agent with the intended behavior as Shariff and Norenzayan (2007) suggest. Honesty is one of the most important religious virtues in Islam and hence the association between God and honesty is strong. However, the government in Sudan is perceived as corrupt, possibly resulting in a lack of an effect for the non-religious extrinsic reminder. It could also be that participants do not believe that government has the ability to monitor honesty behavior. Since the probability of detection of cheating by an earthly power is almost non-existent in our study, this might be an alternative explanation.

Finally, religion might be an effective source of prosocial behaviors in contexts where faith is dominant, government is corrupt, and institutions are weak. Our honesty study suggests that both religious reminders were effective in promoting prosocial behaviors in Sudan, which has a predominant Muslim population, a perception of a government corruption and weak institutions. Other studies in Muslim or non-Muslim countries indicate similar trends (Aveyard, 2014; Mazar et al., 2008; Randolph-Seng & Nielsen, 2007). Therefore, our findings could provide insight to other countries with similar characteristics.

In conclusion, these studies shed some light on the importance and complexity, yet understudied, relationship between religion and social behaviors. While most of the world believe in a

religion, causal research on how religious beliefs affect behaviors is still in its early stages. Our examination of different interventions in different countries on different aspects of prosocial behaviors underscore the importance of developing a better understanding of the interaction between religion, context and social outcomes.

APPENDIX A

Appendix A: Increasing Honesty in Sudan

A.1 Appendix: Protocol – Honesty in Sudan

A.1.1 Consent Form

Consent to Participate in a Research Study

- **Title:** Optical Character Recognition and Decision-making Experiment
- **Principal Investigator:** Mohamed Elamin Mustafa
- Researchers from the University of Michigan invite you to participate in an online research study about Arabic Optical Character Recognition to create a corpus to train an Artificial Intelligence (AI) software to recognize Arabic text and better understand how different information might affect how we make decisions. In order to participate, you have to be 18 years or older. If you agree to participate, you need to sign this consent form, fill out a short demographic survey, and transcribe a few photographs that include text. Immediately after the transcription, we will give you 500 SDG in mobile credits (MTN, Sudani or Zain) that should appear in a text message within 24-48 hours, and which you can cash out at any Point of Sale or use as credit for your mobile line. After you finish transcription, you might have the opportunity to earn additional mobile credit as a bonus by playing the coin-flipping game. Finally, you will need to answer a few questions about yourself.

- In order to participate, you will need stable access to the internet. This could be a wifi hotspot or in case you have a data plan. If you use your own data plan, you will need 50 MB of data available to complete this task. Participating in this study is completely voluntary and there is no risk associated with participating. Even if you decide to participate now, you may change your mind and stop at any time. You can also skip questions you do not want to answer. Only the researchers involved in this study will have access to the data. We will never share information that could identify you with any party.
- As part of their review, the University of Michigan Institutional Review Board Health Sciences and Behavioral Sciences has determined that this study is no more than minimal risk and exempt from ongoing IRB oversight (HUM00209836). By checking this box, I agree to the terms of the study. I understand that I will be paid 500 SDG in mobile credits in exchange for completing the task and any additional credit that I earn from playing the coin-flipping game. I also understand that my responses will be saved for a period of up to ten years for research purposes. If you have
- If you have questions about this research, including questions about scheduling or your compensation for participating, you may contact the principal investigator (email: ai-research-sd@umich.edu).
- Note that you cannot participate more than once in this study!
- Do you consent to participate in this research project?
 1. Yes
 2. No

A.1.2 Demographic Survey

- What is your gender?
 - Female (*433 out of 790, 54.81%*)
 - Male (*354 out of 790, 44.81%*)
 - Don't know/refuse to answer (*3 out of 790, 0.38%*)

- In which year were you born? (*Mean: 21.78*)
 - 2004 (1)
 - ...
 - ...
 - 1930 (75)

- What is your educational attainment?
 - Below high school (*8 out of 790, 1.01%*)
 - High school (*30 out of 790, 3.80%*)
 - Some college (diploma) (*80 out of 790, 10.13%*)
 - Bachelors (*651 out of 627, 82.41%*)
 - Graduate degree (masters or above) (*15 out of 627, 1.90%*)
 - Don't know/refuse to answer (*6 out of 790, 0.76%*)

- What is your monthly income bracket?
 - Less than 10,000 SDG (*202 out of 790, 26.63%*)

- 10,001 - 20,000 SDG (*95 out of 790, 12.03%*)
 - 20,001 - 40,000 SDG (*88 out of 790, 11.14%*)
 - 40,001 - 80,000 SDG (*45 out of 790, 5.70%*)
 - 80,001 SDG + (*29 out of 790, 3.67%*)
 - Don't know/refuse to answer (*331 out of 790, 41.90%*)
- What is your phone number for mobile reimbursement? (Note that you cannot participate more than once in this study, otherwise you won't be paid!) Format (0xxxxxxxx). For example, 0912345678 _____

Who contacted you to Who contacted you to participate in the survey?

- E1 (*88 out of 790, 11.14%*)
- E2 (*141 out of 790, 17.85%*)
- E3 (*145 out of 790, 18.35%*)
- E4 (*221 out of 790, 27.97%*)
- E5 (*35 out of 790, 4.43%*)
- Someone else (*76 out of 790, 9.62%*)
- Don't Remember (*84 out of 790, 10.63%*)

A.1.3 Treatment Arms

- In the next section, you will see a set of 2 images with written text. Please write down the full text in the given space below, without errors and including any and all annotations. Furthermore, we need you to write in your own words what you understood from this text.
- Please write down the full text in the image in the given space below, without errors!

A.1.3.1 Control Text

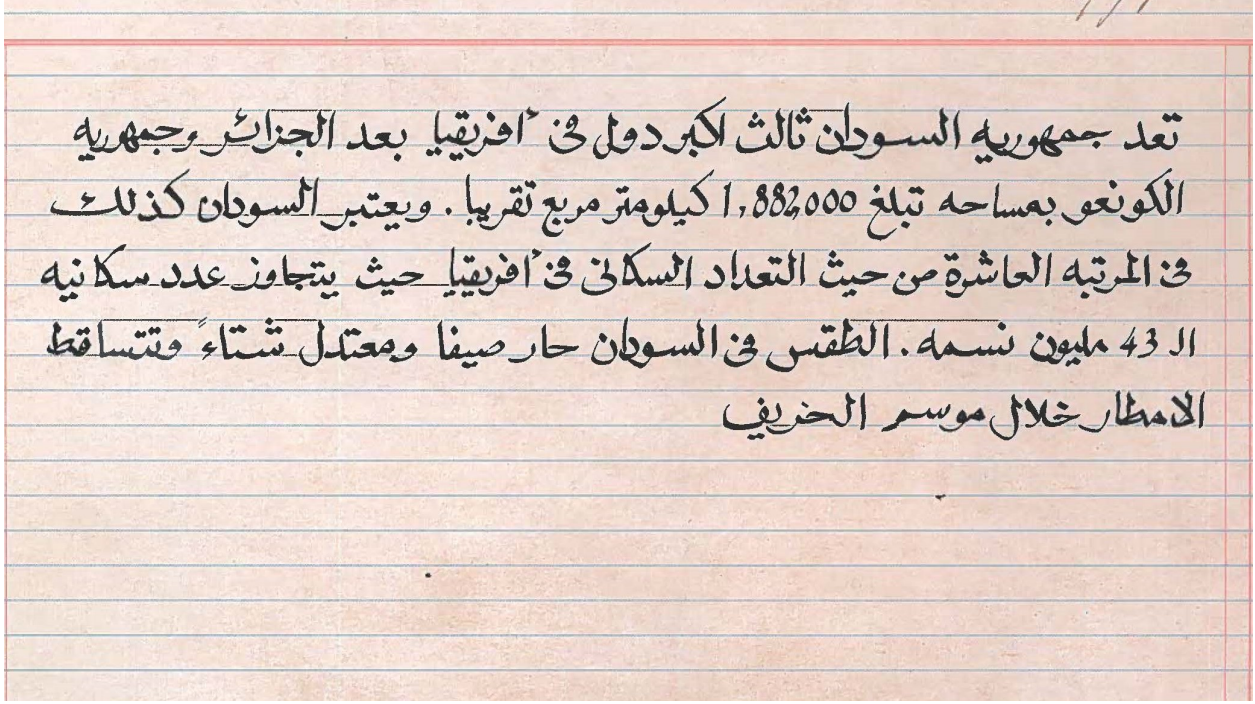


Figure A.1: Control Image

Translation: [The Republic of Sudan is the third-largest country in Africa after Algeria and the Democratic Republic of the Congo, with an area of approximately 1,882,000 square kilometers. Sudan is also ranked tenth in terms of population in Africa, where its population exceeds 43 million. The weather in Sudan is hot in summer and mild in winter, and rain falls during the autumn season.]

A.1.3.2 Religious Extrinsic Text

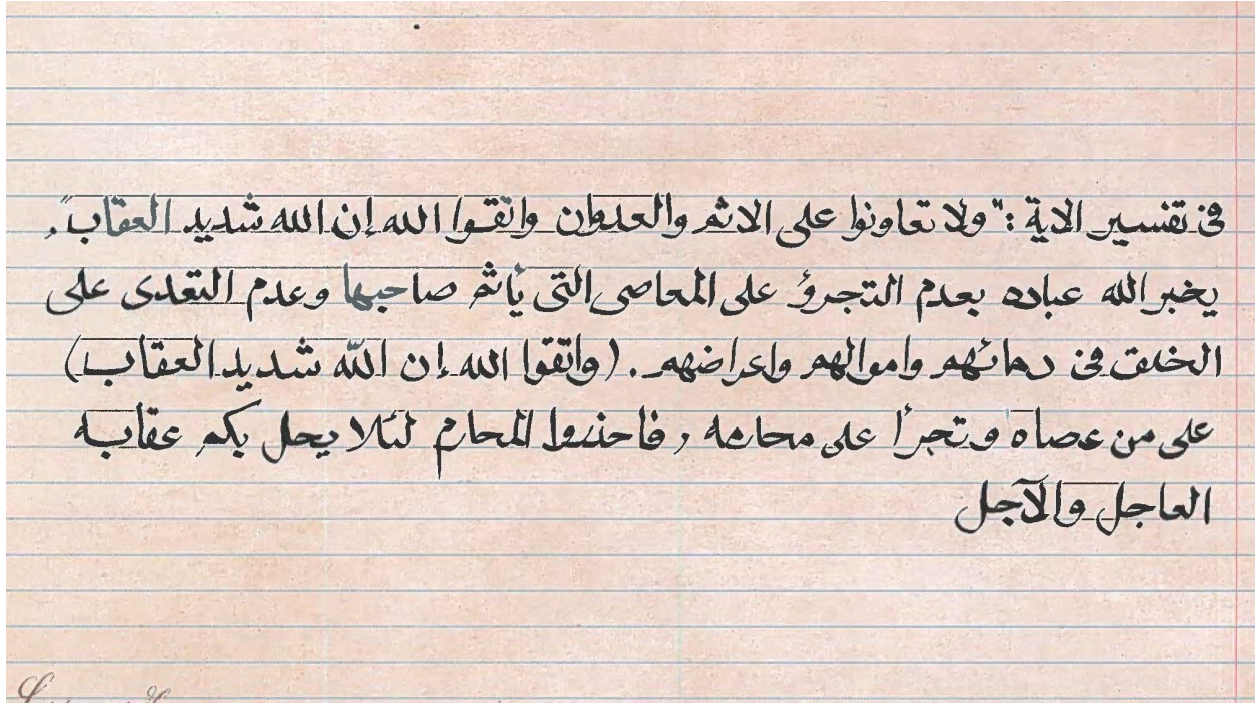


Figure A.2: Religious Extrinsic Image

Translation: [In the interpretation of the verse: "And do not cooperate in sin and aggression, and fear Allah, for Allah is severe in punishment." Allah tells His servants not to dare to commit deeds that are sinful and not to transgress against creation in their blood, money and honor. (And fear Allah, for Allah is severe in punishment) on whoever disobeys him and dares to transgress his forbidden things, so beware of the forbidden lest his immediate and future punishment befall you.]

A.1.3.3 Religious Intrinsic Text

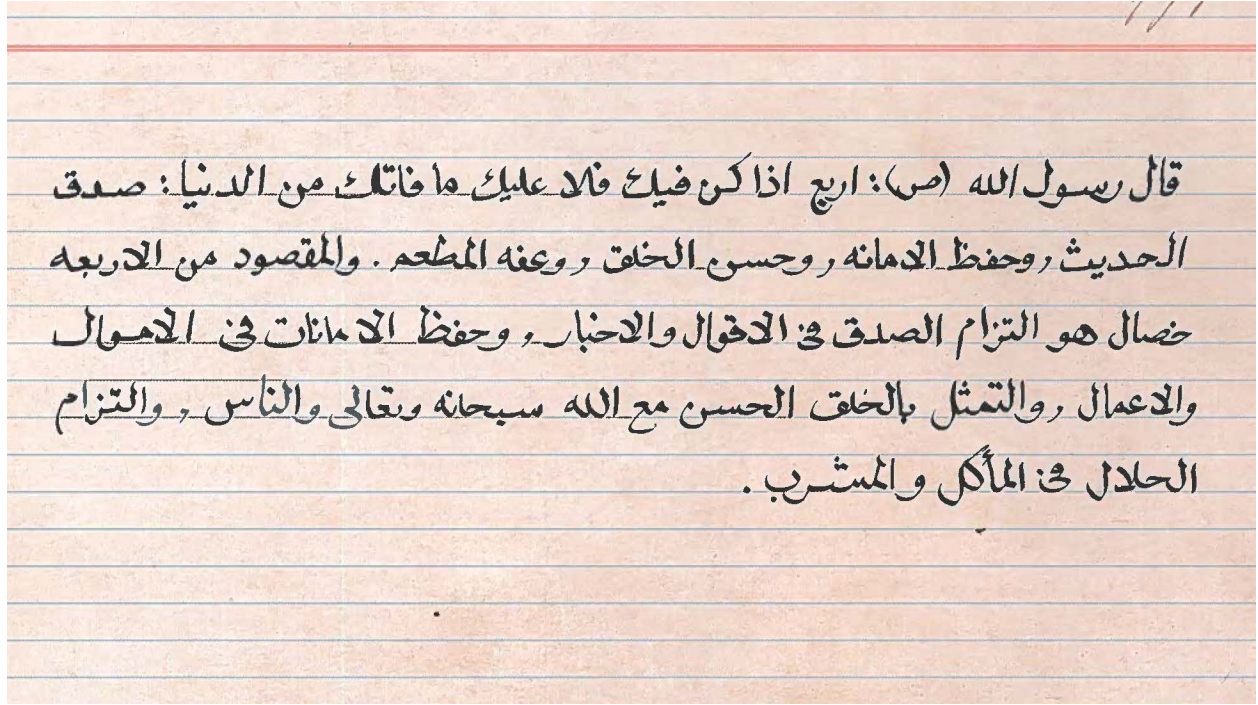


Figure A.3: Religious Intrinsic Image

Translation: [The Messenger of Allah (peace be upon him) said: If there are four things in you, then you do not have to worry about what you have missed from the world: truthfulness in what you say, preservation of trust, good manners, and chastity in what you eat. What is meant by the four characteristics is adherence to truthfulness in what ones says, keeping trust in money and deeds, emulating good manners with Allah, the Almighty and people, and adhering to lawful food and drink.]

A.1.3.4 Non-religious Extrinsic Text

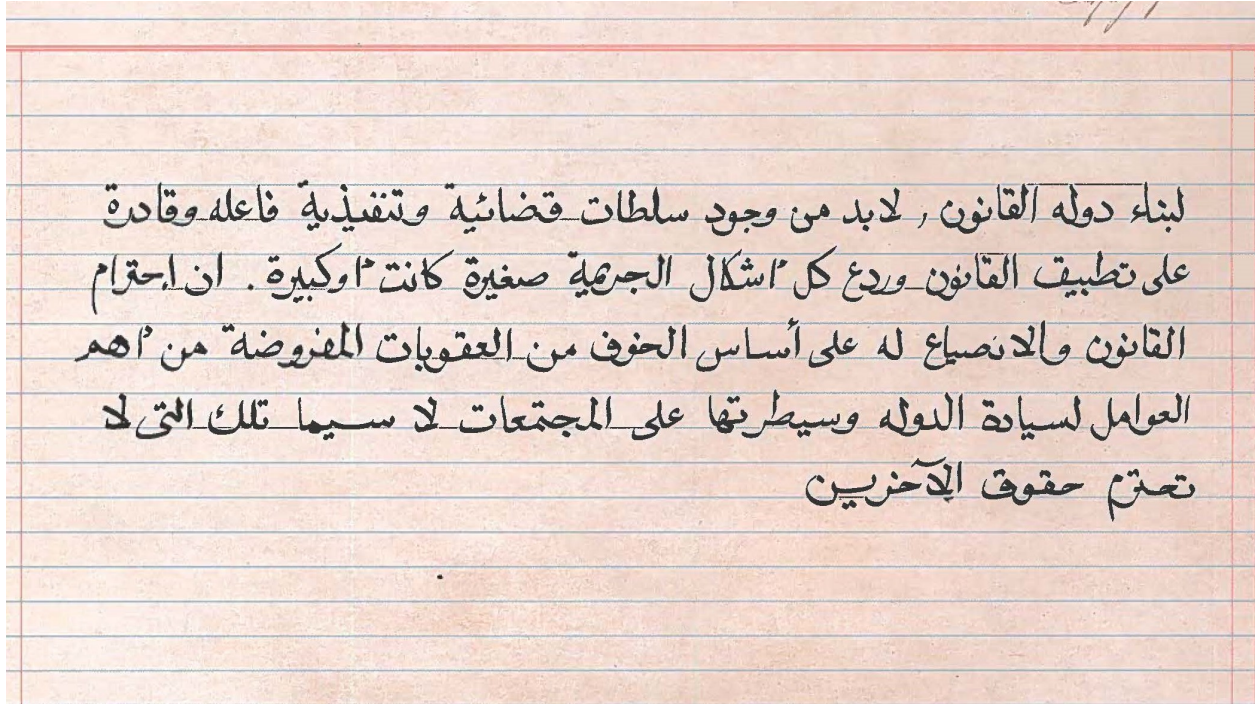


Figure A.4: Non-religious Extrinsic Image

Translation: [To establish the rule of law, there must be effective judicial and executive authorities capable of applying the law and deterring all forms of crime, small or large. Respecting the law and obeying it based on fear of imposed penalties is one of the most important factors for state sovereignty and control over societies, especially those that do not respect the rights of others.]

A.1.3.5 Non-religious Intrinsic Text

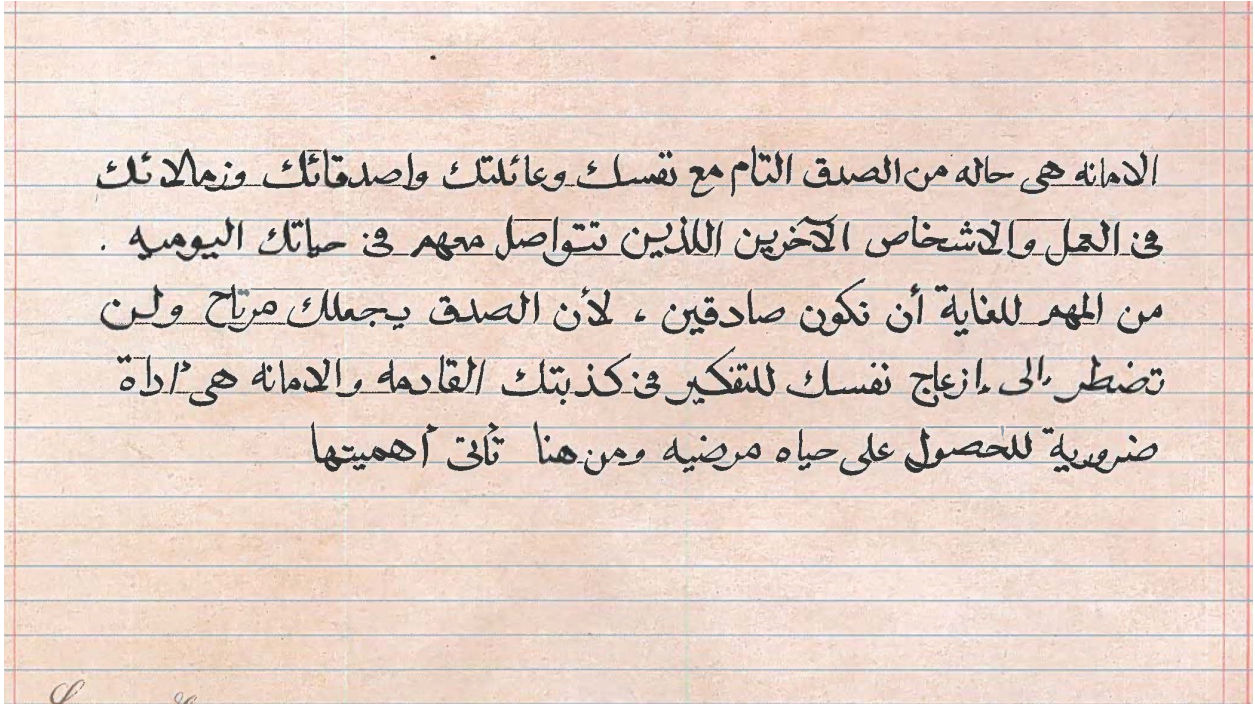


Figure A.5: Non-religious Intrinsic Image

Translation: [Trustworthiness is a state of being completely honest with yourself, your family, your friends, your co-workers, and the other people you come into contact with in your daily life. It is very important to be honest, because honesty makes you comfortable and you won't have to bother thinking about your next lie. Honesty is a necessary tool for having a fulfilling life hence its importance.]

A.1.4 Remaining Text

- Please write a paragraph about the meaning of the above text?

- Please write down the full text in the image in the given space below, without errors!

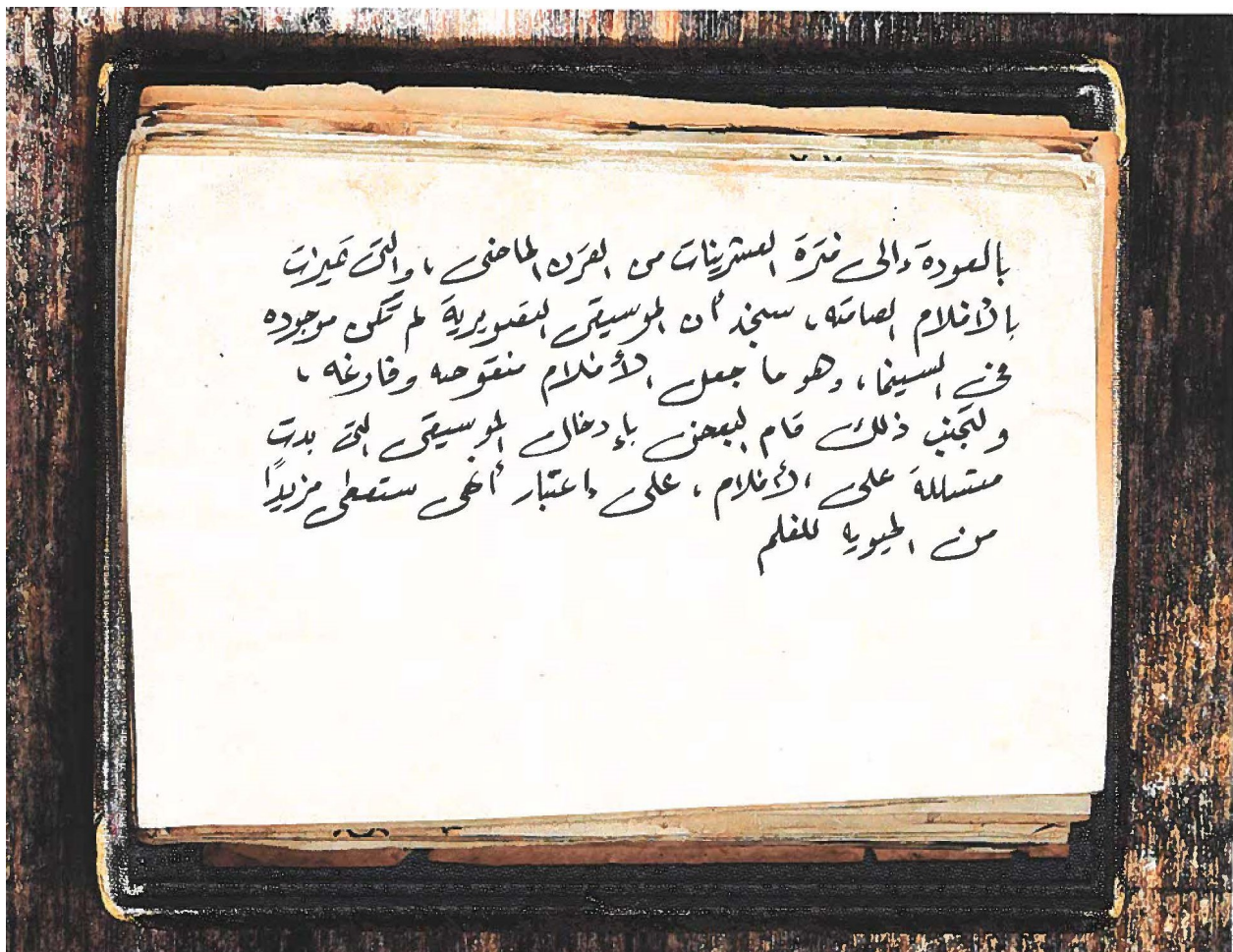


Figure A.6: Second Image: Standard Across Treatments

Translation: [Going back to the twenties of the last century, which was characterized by silent films, we will find that the soundtrack was not present in the cinema, which made the films incom-

plete and empty. To avoid this, some inserted music, which at the time seemed intrusive into the films, on the grounds that it would give more vitality to the film.]

- Please write a paragraph about the meaning of the above text?

- Thank you for completing the study. You will now be paid 500 S.D.G. in mobile credit, which will appear as a text message to your mobile phone within [24-48 hours]. This payment is guaranteed.
- A group of Sudanese-American researchers would like to promote online survey participation. As a bonus, you can earn additional credit if you participate in the coin-flipping game and survey that's coming next. This survey takes around 5 minutes!
- Press enter to continue!

A.1.5 Post Transcription Section

A.1.5.1 Coin-Flipping Game

- Try your luck with coin-flipping!
- Use one of those sites (<https://justflipacoin.com/>, <https://flipsimu.com/>, or <https://g.co/kgs/m24ZvT>) or any other website you know to flip a virtual coin 10 times and report how many heads you get and for every head you get, you earn 50 S.D.G in mobile credit. For example, if you get 0 heads, you earn 0 S.D.G in mobile credit; if you get 5 heads, you earn 250 S.D.G in mobile credit.; and if you get 10 heads, you earn 500 S.D.G. in mobile credit.
- **Please make sure to come back to this window once you finish playing the coin-flipping game so that you can complete the survey and receive the additional bonus you earned!**

- Did you play the coin-flipping game and if so how many heads did you get?
 - I completed the coin-flipping game: [specify the number of heads] 0-10
(698 out of 790, 88.35%) _____
(mean: 7.174)
 - I did not complete coin-flipping *(92 out of 790, 11.65%)*
- Finally, we would like you to answer a few questions about yourself in the next section.

A.1.5.2 Post Survey

- Which of the following Allah’s attributes do you think of?
 - The Forgiving *(298 out of 752, 39.57%)*
 - The Just *(121 out of 752, 20.20%)*
 - The Absolute Truth *(37 out of 752, 6.18%)*
 - The Provider *(162 out of 752, 27.05%)*
 - The All-knowing *(42 out of 752, 7.01%)*
- One of the most important human traits is ...
 - Honesty *(279 out of 751, 37.15%)*
 - Love *(39 out of 751, 5.19%)*
 - Kindness *(46 out of 751, 37.15%)*
 - Respect *(319 out of 751, 42.48%)*
 - Loyalty *(68 out of 751, 9.05%)*
- One of the most important religious virtues is ...
 - reaching out to your family *(250 out of 749, 33.38%)*

- feeding the poor (*122 out of 749, 16.29%*)
- keeping the trust (*187 out of 749, 24.97%*)
- supporting the oppressed (*89 out of 749, 11.88%*)
- responding back to those who say peace (*101 out of 749, 13.48%*)
- One of the most important roles of government is ...
 - to implement the law (*207 out of 747, 27.71%*)
 - to fight corruption (*156 out of 747, 20.88%*)
 - to provide health and education services (*225 out of 747, 30.12%*)
 - to protect the country from foreign powers (*65 out of 747, 8.70%*)
 - to maintain political stability (*94 out of 747, 12.58%*)
- Page Break
- At this moment, you feel Allah is mostly associated with ...
 - Love (*126 out of 749, 16.82%*)
 - Both (*579 out of 749, 77.30%*)
 - Fear (*44 out of 749, 5.87%*)
- Page Break
- Display This Question:
 - If At this moment, you feel Allah is mostly associated with ... = Both
- If you were to pick one, which one would it be?
 - Fear (*124 out of 527, 23.53%*)
 - Love (*403 out of 527, 76.47%*)

- Page Break

- Do you think most people can be trusted or do you need to be very careful in dealing with people?
 - 1. You need to be careful in dealing with people (*508 out of 710, 71.55%*)
 - 2. (*21 out of 710, 2.96%*)
 - 3. (*25 out of 710, 3.52%*)
 - 4. (*6 out of 710, 0.85%*)
 - 5. Most people can be trusted (*150 out of 710, 21.13%*)

- Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?
 - 1. Most people would try to take advantage of you (*467 out of 711, 65.68%*)
 - 2. (*30 out of 711, 4.22%*)
 - 3. (*28 out of 711, 3.94%*)
 - 4. (*7 out of 711, 0.98%*)
 - 5. Most people would try to be fair (*179 out of 711, 25.18%*)

- Most of my friends are closer to
 - Salafie beliefs (*39 out of 711, 5.49%*)
 - Sofie beliefs (*13 out of 711, 1.83%*)
 - Muslim Brotherhood beliefs (*176 out of 711, 24.75%*)
 - Non-believers (*193 out of 711, 27.14%*)
 - Other (*91 out of 711, 12.80%*)
 - Don't know/refuse to answer (*199 out of 711, 27.99%*)

- Which statement describes you...?
 - I pray 3 or more times in a congregation daily (*143 out of 708, 20.20%*)
 - I pray at least once in a congregation daily (*90 out of 708, 12.71%*)
 - I pray at least once every 2-3 days in a congregation (*50 out of 708, 7.06%*)
 - I pray at least once a week in a congregation (*71 out of 708, 10.03%*)
 - I don't pray in a congregation (*248 out of 708, 35.03%*)
 - Don't know/refuse to answer (*106 out of 708, 14.97%*)

- If I borrow money from a friend and failed to return it, my biggest worry would be that my friends would think badly about me
 - Strongly agree (*108 out of 706, 15.30%*)
 - Agree (*168 out of 706, 23.80%*)
 - Neutral (*143 out of 706, 20.25%*)
 - Disagree (*209 out of 706, 29.60%*)
 - Strongly disagree (*78 out of 706, 11.05%*)

- Suppose I had a sudden guest and there was nothing in the house to offer them, I would feel like a bad host
 - Strongly agree (*143 out of 705, 20.28%*)
 - Agree (*216 out of 705, 30.64%*)
 - Neutral (*129 out of 705, 18.30%*)
 - Disagree (*170 out of 705, 24.11%*)
 - Strongly disagree (*47 out of 705, 6.67%*)

- If what I believe to be the right thing causes harm to society, I would still do it

- Strongly agree (*103 out of 706, 14.59%*)
 - Agree (*93 out of 706, 13.17%*)
 - Neutral (*149 out of 706, 21.10%*)
 - Disagree (*274 out of 706, 38.81%*)
 - Strongly disagree (*87 out of 706, 12.32%*)
- Over the next 12 months, Do you expect the national economy to get better, get worse, or stay about the same?
 - Get better (*218 out of 704, 30.97%*)
 - Stay the same (*147 out of 704, 20.88%*)
 - Get worse (*339 out of 704, 48.15%*)
- Page Break

- **Start of Block: List 1**

- Read each of the four statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- I have traveled to Japan along with my family for leisure.
- I meet my friends every now and then in a public place.
- I attended a private primary school where most classes were taught in English.
- Most of the people in my household use public transportation such as buses and mini-vans for their daily commute.

1. I agree with none of the above
2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with all 4 of the above statements

- Read each of the five statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- I have traveled to Japan along with my family for leisure.
- I meet my friends every now and then in a public place.
- It's okay for a needy person to steal as long as they are stealing from someone who is well off.
- I attended a private primary school where most classes were taught in English.
- Most of the people in my household use public transportation such as buses and mini-vans for their daily commute.

1. I agree with none of the above

2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with exactly 4 of the above statements
6. I agree with all 5 of the above statements

• **End of Block: List 1**

- **Start of Block: List 2**

- Read each of the four statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- On a regular day, I sleep at least 12 hours.
- I generally use WhatsApp or other social media platforms as a way to communicate with family and friends.
- Sudan has been ruled by a democratically elected government since its independence in 1956.
- I have a friend or relative who works or lives outside Sudan.

1. I agree with none of the above
2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with all 4 of the above statements

- Read each of the five statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- On a regular day, I sleep at least 12 hours.
- I generally use WhatsApp or other social media platforms as a way to communicate with family and friends.
- I have always acted in a way that is absolutely consistent with my moral values.
- Sudan has been ruled by a democratically elected government since its independence in 1956.
- I have a friend or relative who works or lives outside Sudan.

1. I agree with none of the above
2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with exactly 4 of the above statements
6. I agree with all 5 of the above statements

• **End of Block: List 2**

- **Start of Block: List 3**

- Read each of the four statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- I rode a Rolls Royce several times in my life.
- We eat beans or falafel at least once a week.
- I witnessed the day when Numeri was overthrown and remember clearly what happened.
- At least one of my classmates had a cell phone while in secondary school or college.

1. I agree with none of the above
2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with all 4 of the above statements

- Read each of the five statements below and indicate HOW MANY of them you agree with.

You are NOT being asked to indicate which ones you agree with, just how many of them.

- I rode a Rolls Royce several times in my life.
- We eat beans or falafel at least once a week.
- It is okay to drink alcohol every now and then as long as it is done privately.
- I witnessed the day when Numeri was overthrown and remember clearly what happened.
- At least one of my classmates had a cell phone while in secondary school or college.

1. I agree with none of the above

2. I agree with exactly 1 of the above statements
3. I agree with exactly 2 of the above statements
4. I agree with exactly 3 of the above statements
5. I agree with exactly 4 of the above statements
6. I agree with all 5 of the above statements

- **End of Block: List 3**

- **End of Survey**

- Thank you very much for play the coin-flipping game and completing the additional survey. You'll earn and additional *Reported Number of Heads**50 S.D.G. in mobile credit This concludes our study! You will receive your money within the next 24-48 hours. If for any reason you don't receive it, please contact us at ai-research-sd@umich.edu and we will make sure that you get your money in a timely manner.

A.2 Appendix: Tables and Figures – Honesty in Sudan

A.2.1 Tables

Table A.1: Robustness of the Results: ATE on the Reported Number of Heads based on OLS (out of 10)

	(1)	(2)	(3)
	Reported Heads	Reported Heads	Reported Heads
Religious Extrinsic	-0.804** (0.332)	-0.812** (0.344)	-0.818** (0.346)
Religious Intrinsic	-0.757** (0.329)	-0.748** (0.335)	-0.739** (0.334)
Non-religious Extrinsic	0.00371 (0.315)	-0.0127 (0.326)	0.0239 (0.331)
Non-religious Intrinsic	-0.539* (0.316)	-0.507 (0.329)	-0.500 (0.331)
Constant	7.517*** (0.229)	7.619*** (0.829)	7.603*** (0.829)
N	627	600	600
R ²	0.0186	0.0397	0.0531
Covariates		X	X
Enumerator			X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on reported number of heads based on OLS.

Covariates: gender, age, income, and education.

Column (1): Average treatment effects with no controls,

Column (2): Average treatment effects based after controlling for covariates,

Column (3): Average treatment effects after controlling for covariates and enumerator fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.2: Robustness of the Results: ATE on the Reported Number of Heads based on Tobit (upper limit=10)

	(1)	(2)	(3)
	Reported Heads	Reported Heads	Reported Heads
Religious Extrinsic	-1.195** (0.495)	-1.184** (0.510)	-1.198** (0.509)
Religious Intrinsic	-1.231** (0.484)	-1.213** (0.489)	-1.183** (0.483)
Non-religious Extrinsic	-0.0233 (0.508)	-0.0277 (0.518)	0.00937 (0.522)
Non-religious Intrinsic	-0.882* (0.480)	-0.848* (0.497)	-0.828* (0.496)
Constant	8.500*** (0.378)	8.608*** (1.176)	8.456*** (1.171)
Max(Heads)	12.74*** (0.858)	12.60*** (0.850)	12.40*** (0.831)
N	627	600	600
<i>Pseudo R</i> ²	0.00490	0.00969	0.0137
Covariates		X	X
Enumerator			X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on reported number of heads based on Tobit.

Covariates: gender, age, income, and education.

Column (1): Average treatment effects with no controls,

Column (2): Average treatment effects based after controlling for covariates,

Column (3): Average treatment effects after controlling for covariates and enumerator fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.3: Correlation between Reported Number of Heads and Enumerators based on OLS

	(1) Heads Reported	(2) Heads Reported
E1	0 (.)	0.795** (0.344)
E2	-0.452 (0.378)	0.343 (0.318)
E3	-0.795** (0.344)	0 (.)
E4	-1.014*** (0.335)	-0.218 (0.265)
E5****	-1.272*** (0.449)	-0.477 (0.400)
E6	-1.277** (0.532)	-0.482 (0.491)
Don't Remember	-0.650 (0.412)	0.145 (0.357)
Constant	7.944*** (0.283)	7.148*** (0.196)
N	698	698
R ²	0.0202	0.0202

Standard errors in parentheses

Note: Outlier Analysis: Average number of reported heads by enumerator based on OLS.

E5**** is a group of enumerators who worked for a day or two and did not have a significant number of observations.

Column (1): The omitted variable is the average reported number of heads for the enumerator E1 who did not follow the protocol.

Column (2): The omitted variable is for the enumerator E3 who is closest to the mean of reported heads (7.174) before exclusion.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.4: Enumerator Analysis: Average Reported Heads by Enumerator

	Enumerator	Observations	Mean	S.D.	Min	Max
Reported Number of Heads	Overall	698	7.175	2.569	0	10
	E1*	71	7.944	2.390	1	10
	E2	124	7.492	2.784	0	10
	E3	128	7.148	2.213	2	10
	E4	200	6.930	2.519	0	10
	E5**	70	6.671	2.923	0	10
	E6	30	6.667	2.496	1	10
	Don't Remember	75	7.293	2.593	0	10

* E1 is the enumerator who did not follow the protocol and whose participants had a statistically significantly higher number of reported heads compared to the overall mean

** E5 is a group of enumerators who worked less than two days, mostly as a trial period, and did not have a significant number of observations

Table A.5: Distribution of Reported Number of Heads

(1) Reported Heads	(2) Frequency	(3) Actual Percentage	(4) Expected
0	6	0.96%	0.08%
1	7	1.12%	0.98%
2	11	1.75%	4.39%
3	25	3.99%	11.72%
4	44	7.02%	20.51%
5	114	18.18%	24.61%
6	70	11.16%	20.51%
7	65	10.37%	11.72%
8	52	8.29%	4.39%
9	27	4.31%	0.98%
10	206	32.85%	0.08%

Distribution of reported number of heads used in our main analysis.

Columns (2) and (3) show the frequency and percentage of reported number of heads, respectively.

Column (4) shows the expected percent of reported number of heads.

Table A.6: Attrition Analysis

	(1) Non Missing Flip	(2) Reported Heads
Religious Extrinsic	0.0198 (0.0451)	-0.911*** (0.340)
Religious Intrinsic	0.0728 (0.0442)	-0.793** (0.331)
Non-religious Extrinsic	0.0578 (0.0449)	-0.0844 (0.321)
Non-religious Intrinsic	0.0970** (0.0448)	-0.588* (0.320)
Constant	0.387*** (0.0992)	7.563*** (0.229)
N	1204	600
R^2	0.0176	0.0207

Standard errors in parentheses

Note: Attrition Analysis.

Column (1): Treatment and observed covariates effects on participation in the coin-flipping game.

Column (2): Average treatment effects based on OLS using inverse probability weighting to deal with attrition

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.7: Sensitivity Analysis: Average Treatment Effects on Reported Number of Heads After Exclusion of 0 Heads

	(1)	(2)
	Reported Heads	Reported Heads
Religious Extrinsic	-0.804** (0.332)	-0.748** (0.329)
Religious Intrinsic	-0.757** (0.329)	-0.596* (0.319)
Non-religious Extrinsic	0.00371 (0.315)	0.00371 (0.315)
Non-religious Intrinsic	-0.539* (0.316)	-0.435 (0.310)
Constant	7.517*** (0.229)	7.517*** (0.229)
N	627	621
R ²	0.0186	0.0149
Exclusions	No Exclusions	0 Heads

Standard errors in parentheses

Note: Sensitivity analysis of average treatment effects on number of coin tosses based on OLS.

Column (1): Average treatment effects without exclusions,

Column (2): Average treatment effects after excluding those who reported 0 heads

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.8: Outlier Analysis: Average Treatment Effects on Reported Heads After Exclusion of Outlier Enumerator

	(1) Heads Reported	(2) Heads Reported	(3) Heads Reported
Religious Extrinsic	-0.804** (0.332)	-0.534* (0.316)	1.926** (0.912)
Religious Intrinsic	-0.757** (0.329)	-0.556* (0.312)	1.105 (0.976)
Non-religious Extrinsic	0.00371 (0.315)	0.249 (0.294)	2.330*** (0.674)
Non-religious Intrinsic	-0.539* (0.316)	-0.397 (0.296)	0.710 (0.831)
Constant	7.517*** (0.229)	7.430*** (0.214)	6.824*** (0.605)
N	627	698	71
R^2	0.0186	0.0151	0.127

Standard errors in parentheses

Note: Outlier Analysis: Average treatment effects on number of reported number of heads based on OLS.
 Column (1): Average treatment effects using the data-set after excluding the data of the outlier enumerator,
 Column (2): Average treatment effects using the complete data-set without any exclusions,
 Column (3): Average treatment effects using the observations collected by the outlier enumerator.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.9: Correlation between Selected God's Attributes and Reported Number of Heads

	(1) Reported Heads	(2) Frequency	(3) Percent
The Forgiving	0.650** (0.282)	237	39.57%
The Truth	0.251 (0.436)	37	6.18%
The Provider	0.635** (0.299)	162	27.05%
The All-knowing	1.032** (0.471)	42	7.01%
Constant (The Just)	6.587*** (0.225)	121	20.20%
N	599	599	100%
R^2	0.0135		

Standard errors in parentheses

Note: Investigating the correlation between God's attributes and reported number of heads.

Column (1): OLS regression of reported number of heads on selected God's attribute.

Column (2): Frequency of those who selected a specific God's attribute.

Column (3): Percentage of those who selected a specific God's attribute.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.10: Correlation between Selected Religious Behaviours and Reported Number of Heads

	(1) Reported Heads	(2) Frequency	(3) Percent
Reaching out to family	0.340 (0.278)	198	33.22%
Feeding the poor	0.481 (0.314)	101	16.95%
Supporting the oppressed	0.204 (0.398)	66	11.07%
Responding to those who greet	0.698** (0.355)	79	13.26%
Constant (Being trustworthy)	6.796*** (0.209)	152	25.50%
N	596	596	100%
R ²	0.00781		

Standard errors in parentheses

Note: Investigating the correlation between selected religious rite and reported number of heads.

Column (1): OLS regression of reported number of heads on selected religious rite.

Column (2): Frequency of those who selected a specific religious rite.

Column (3): Percentage of those who selected a specific religious rite.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.11: Correlation between Selected Government Role and Reported Number of Heads

	(1) Reported Heads	(2) Frequency	(3) Percent
to fight corruption	-0.230 (0.317)	116	19.40%
to provide health and education services	-0.471* (0.268)	183	30.60%
to protect the country from foreign powers	-0.0403 (0.378)	54	9.03%
to maintain political stability	-0.891** (0.352)	77	12.88%
Constant (to implement the law)	7.411*** (0.193)	168	28.09%
N	598	598	100%
R^2	0.0132		

Standard errors in parentheses

Note: Investigating the correlation between selected government role and reported number of heads.

Column (1): OLS regression of reported number of heads on selected government role.

Column (2): Frequency of those who selected a specific government role.

Column (3): Percentage of those who selected a specific government role.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.12: Correlation between Selected Human Trait and Reported Number of Heads

	(1) Reported Heads	(2) Frequency	(3) Percent
Love	-0.490 (0.499)	30	5.02%
Kindness	0.957** (0.392)	41	6.86%
Respect	0.416* (0.237)	242	40.47%
Loyalty	0.624* (0.370)	58	9.70%
Constant (Honesty)	6.824*** (0.169)	227	37.96%
N	598	598	100%
R ²	0.0169		

Standard errors in parentheses

Note: Investigating the correlation between selected human trait and reported number of heads.

Column (1): OLS regression of reported number of heads on selected human trait.

Column (2): Frequency of those who selected a specific human trait.

Column (3): Percentage of those who selected a specific human trait.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.13: Simulation based on the Treatment Effects and Sample Size for the Four Conditions

Treatment Arm/ Cheating Level Simulation	50% (relative truthful telling)	65% (incomplete cheating)	80% (incomplete cheating)
Religious Extrinsic	0.005%	0.001%	0.000%
Religious Intrinsic	0.011%	0.004%	0.000%
Non-religious Extrinsic	50.658%	50.617%	50.858%
Non-religious Intrinsic	0.309%	0.237%	0.033%

Table showing the probabilities of observing the results based on the sample size and treatment effects. We compare each treatment effect with 3 simulated samples to represent the control with different underlying cheating rates: 50% (truthful reporting), 65% or 80% (different degrees of cheating). Results from the simulation indicate that it is very unlikely to observe the 3 treatment effects (religious extrinsic, religious intrinsic and non-religious intrinsic) because of random variations.

Table A.14: Gender Analysis: Interaction between Treatments and Gender based on an OLS Specification

	(1)	(2)
	Reported Heads	Reported Heads
Extrinsic	-0.885** (0.376)	
Intrinsic	-0.571 (0.368)	
Male	-0.304 (0.461)	-0.304 (0.463)
Extrinsic × Male	1.024* (0.565)	
Intrinsic × Male	-0.112 (0.563)	
Religious Extrinsic		-1.355*** (0.450)
Religious Intrinsic		-0.828* (0.435)
Non-religious Extrinsic		-0.422 (0.424)
Non-religious Intrinsic		-0.313 (0.418)
Religious Extrinsic × Male		1.155* (0.665)
Religious Intrinsic × Male		0.154 (0.666)
Non-religious Extrinsic × Male		0.912 (0.633)
Non-religious Intrinsic × Male		-0.377 (0.636)
Constant	7.656*** (0.299)	7.656*** (0.300)
Extrinsic treatment effects on men ($\beta_{re} + \beta_{em}$)	0.140 (0.421)	
Intrinsic treatment effects on men ($\beta_{ri} + \beta_{im}$)	-0.682 (0.426)	
Religious Extrinsic treatment effects on men ($\beta_{re} + \beta_{rem}$)		-0.199 (0.490)
Religious Intrinsic treatment effects on men ($\beta_{ri} + \beta_{rim}$)		-0.674 (0.504)
Non-religious Extrinsic treatment effects on men ($\beta_{nre} + \beta_{nrem}$)		0.490 (0.471)
Non-religious Intrinsic treatment effects on men ($\beta_{nri} + \beta_{nrin}$)		-0.690 (0.479)
N	625	625
R ²	0.0188	0.0311

Standard errors in parentheses

Note: Investigating the gender interaction with the treatments.

Column (1): The interaction (heterogeneous) effects of the extrinsic/intrinsic treatments and gender on reported number of heads based on OLS.

Column (2): The interaction (heterogeneous) effects of the treatments and gender on reported number of heads based on OLS.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A.15: Correlation between Affiliated Religious Group of Friends and Reported Number of Heads

	(1) Reported Heads	(2) Frequency	(3) Percent
Salafie beliefs	0.0501 (0.495)	30	7.26%
Sofie beliefs	-0.755 (0.676)	13	3.15%
Muslim Brotherhood beliefs	-0.195 (0.297)	138	33.41%
Other	-0.0832 (0.374)	75	18.16%
Constant (Non-believers)	7.217*** (0.206)	157	38.01%
N	413	413	100%
R^2	0.00337		

Standard errors in parentheses

Note: Investigating the correlation between different religious group friends' affiliation and reported number of heads.

Column (1): OLS regression of reported number of heads on selected religious group.

Column (2): Frequency of those who selected a specific religious group.

Column (3): Percentage of those who selected a specific religious group.

* $p < .1$, ** $p < .05$, *** $p < .01$

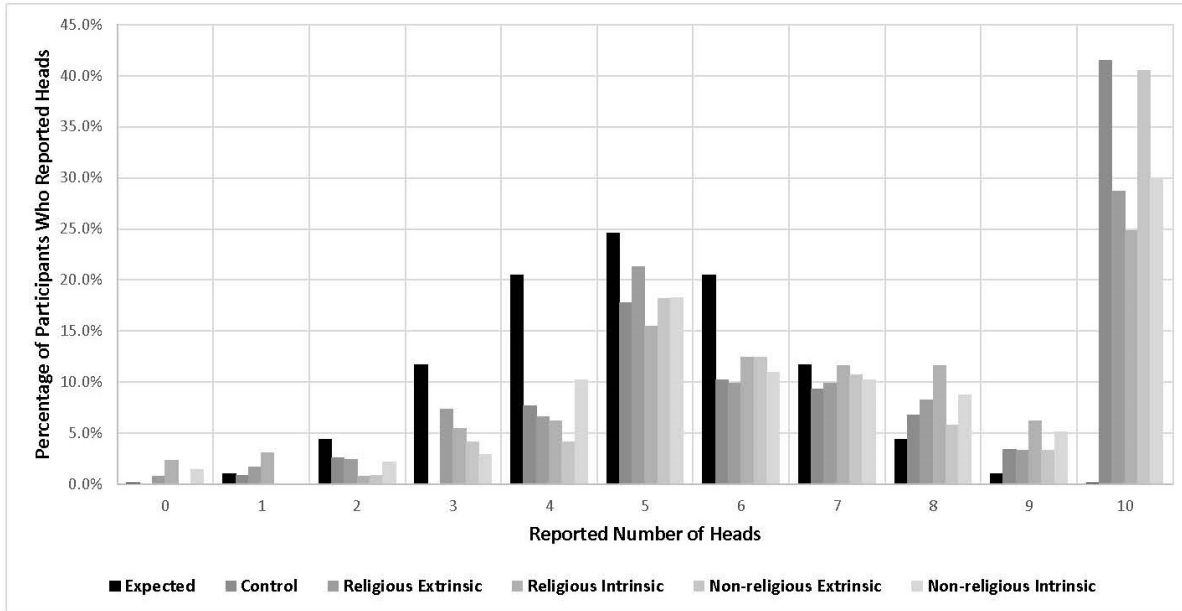


Figure A.7: **Distribution of reported number of heads by treatment condition.**

Across the five conditions, we observe that a significant number of people reported 10 heads with participants in the control and non-religious extrinsic having the highest percentages (around 41% and 40% respectively). Meanwhile, between 25% and 30% of participants in the other three arms (religious extrinsic and intrinsic and non-religious intrinsic reminders) reported 10 heads. We also observe that, overall, under-reporting started at 3 heads, and evens out at 7. Over-reporting starts at 8 and jumps significantly at 10.

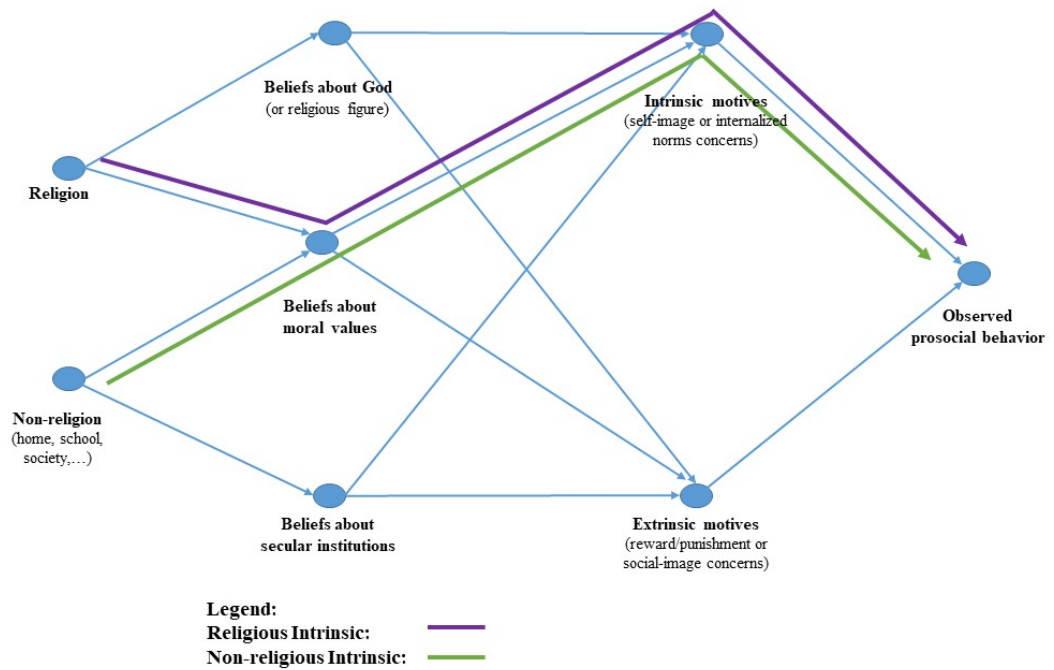


Figure A.8: **Illustration of the potential mechanisms for intrinsic reminders.**

As per the framework, the intrinsic reminders, religious and non-religious, tap into the underlying beliefs about moral values and hence having some effects on the level of honesty, with the religious one having a larger effect, compared to the control. This might be due to the dominant presence of religion as a source of moral values in Sudan.

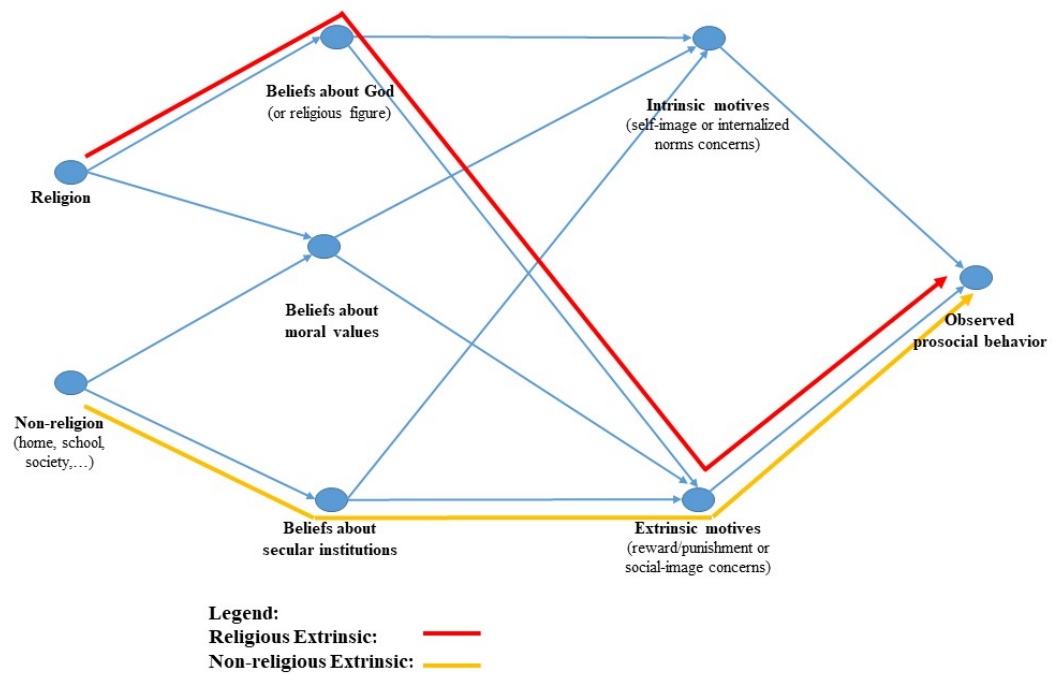


Figure A.9: **Illustration of the potential mechanisms for extrinsic reminders.**

As per the framework, the extrinsic reminders, religious and non-religious, converge at the concerns or motives rather than the underlying beliefs about the underlying agent (government or God), unlike the intrinsic ones that converge at the underlying beliefs about moral values. Therefore, based on the observed outcome of the extrinsic reminders, we suspect that they rely on the beliefs about the underlying agent, being God or the government, for them to be effective.

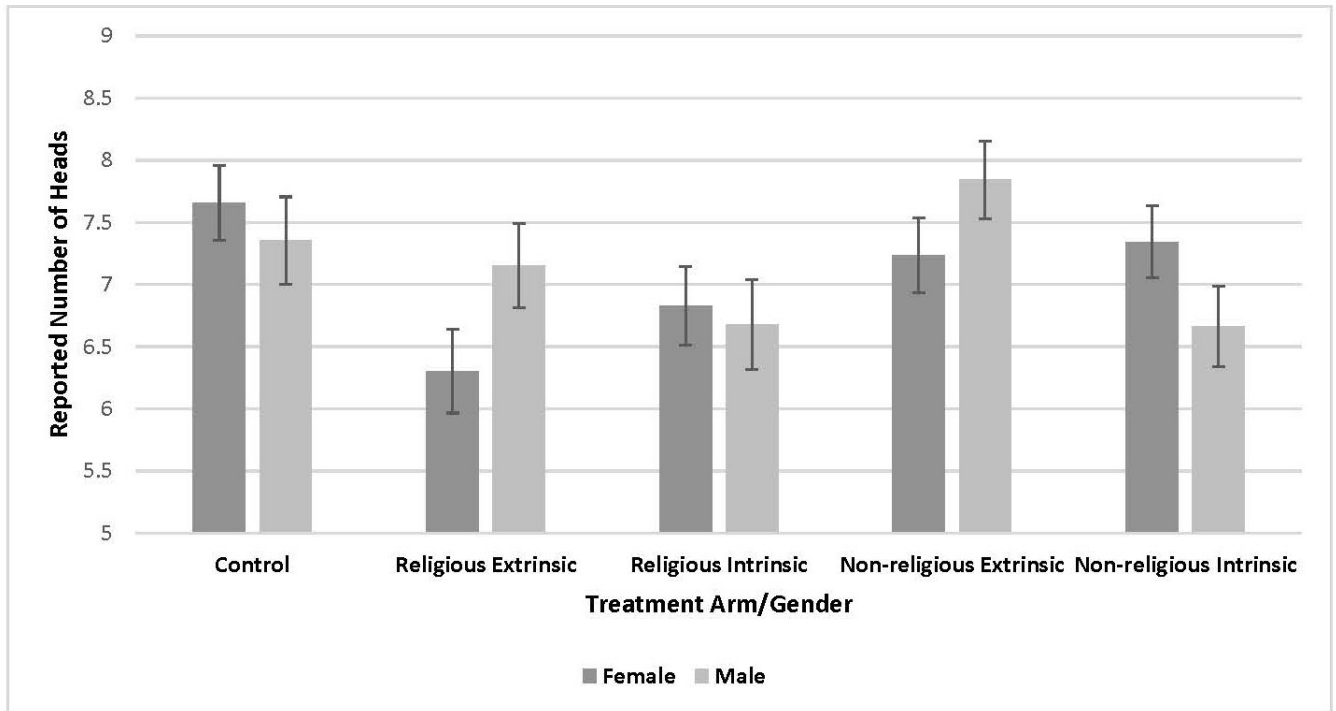


Figure A.10: **Reported number of heads by treatment condition and gender.**

We observe that, among women, both religious reminders have an impact on the level of honesty, with the extrinsic one having a larger effect, compared to the control. For men, we observe that both intrinsic reminders somewhat have an impact on the level of honesty while the extrinsic reminders do not.

Error Bars indicate standard errors.

APPENDIX B

Appendix B: Reducing Prejudice Against Muslims in the United States

B.1 Appendix: In-person and Online Protocols – Reducing Bias Against Muslims in the United States

B.1.1 In-person Protocol

B.1.1.1 In-person Protocol Description

In the introduction section, canvassers began by giving an overview of the study and requesting participant consent. Next, the intervention is a directed conversation adapted from [Broockman and Kalla \(2016\)](#) which in the treatment condition is intended to elicit discussion of topics that might affect anti-Muslim sentiment. These conversations have similar structures with respect to the number and types of questions, the inclusion of a 1-minute video used as a conversational aid, and the open-ended/closed-ended nature of the questions. In the perspective-taking conversation, canvassers asked participants whether they would vote for a Muslim candidate if he or she runs for governor of Michigan. Then, they played a video featuring Muslim Americans telling a bit about their experience in the United States. After that, canvassers shared a story where they themselves faced prejudice because of who they were, and prompted study participants to share a similar story of their own. In the value consistency conversation, participants were asked which of three values

was most important to them: empathy, opportunity or kindness; they were shown a video featuring someone agreeing with the corresponding value, and then prompted to reflect on why the value was important to them. In the placebo conversation, canvassers asked participants whether they would support their city's effort to increase recycling rates, showed a video featuring people expressing pro and con attitudes toward recycling, and prompted a conversation about recycling choices. For full scripts of these conversations, see the in-person protocol in Appendix (B.1.1).

In each intervention, the conversation is followed immediately by a trust game, also known as the trust game. This is a two-player sequential move game used to measure trust in economic decision making (Berg et al., 1995) as well as intergroup trust (Fershtman & Gneezy, 2001). In its basic form, the game proceeds as follows: Each participant is given a fixed amount of money, e.g., \$5. The first mover, the investor, is asked to invest some amount of their money in the second mover, the responder. The amount invested is tripled before it is passed to the responder. The responder then decides how much to return to the investor. The subgame perfect Nash equilibrium prediction is for the investor to invest nothing and the responder to return nothing. Thousands of laboratory and field experiments show, however, that, depending on the context, most investors invest a positive amount, and many responders return positive amounts after receiving an investment.

We adapted the trust game to our door-to-door canvassing setting so as to allow the game to be played asynchronously and remotely, without actual responders present. To do this, we collected responder strategies through real-time two-player trust games conducted at our university and in advance, with two groups — those who were practicing Muslims and had Muslim first names; and those who had non-Muslim names (Chen, YeckehZaare, & Zhang, 2018). We then randomly selected five strategies from each group, discarding any associated with names not easily identified as Muslim or non-Muslim. Names were tested with university students to ensure unambiguous attribution of Muslim identity (Bertrand & Mullainathan, 2004). The selected strategies were placed inside separate envelopes, each labeled with the first name of the responder. During the trust game (Appendix B.1.1.5), the canvasser first explained the flow of the game to the participant. The participant selected one of the ten envelopes, which were placed face down. They were then

shown the name of the responder they chose, and for the remainder of the game, the responder was referred to by name. Participants were then given \$5, told the responder had the same amount, asked if they would like to invest any integer-dollar amount (from 0 to 5) to the responder, and also asked how much they believed the responder would return. The invested amount was tripled, the responder's strategy was consulted, and the amount specified by the strategy was returned to the participant. If the participant's guess about the amount the responder returned was within \$1 of the actual returned amount, she was given a \$2 bonus. This belief elicitation method is incentive compatible and also simple to implement in the field ((Charness & Dufwenberg, 2006b); (Schotter & Trevino, 2014)).

Lastly, participants finished a survey (Appendix B.1.1.7) that included demographic questions and a second measure of bias using the list elicitation method. List elicitation (Appendix B.1.1.8) seeks to measure responses to sensitive questions at the sample level (Glynn, 2013; Kuklinski et al., 1997). Participants are asked questions with the following form: "How many of the following statements do you agree with?" They are not asked to identify the statements they agree with. They are then randomly assigned to see either a baseline set of statements, or the same baseline set with one additional statement intended to gauge a potentially controversial outcome. In our case, one such statement was, "Muslim immigration to the United States should be reduced." Differences in the distribution of these numbers are compared to infer the level of discrimination in the group. This method has been shown to be better at eliciting real attitudes to issues that can be prone to demand characteristics in standard survey questions (Coffman, Coffman, & Ericson, 2016).

Since our goal was to observe anti-Muslim bias among non-Muslim participants, we avoided Muslim participants, as follows: First, when going door-to-door, households were skipped if there was a clear Muslim marker — for example, a sign with a Quranic verse. Second, if a potential participant was obviously Muslim (e.g., wearing a hijab), we asked them only to complete a short survey. Finally, if it became clear that a participant was Muslim during or after the intervention, then we completed the protocol, but excluded the data from our analysis.

In order to measure the longer-term impact of the interventions, we visited participating house-

holds two to three months after initial contact. In the follow-up visits, we asked participants to play a revised version of the trust game, to complete additional survey questions about their social networks, and to respond to the list elicitation questions. The trust game and the list elicitation questions were the same as in the first round. No interventions were performed.

B.1.1.2 Recycling Script - In-person

1. Recycling is an issue that many communities are wrestling with. On the one hand it's good for the environment. On the other hand, recycling itself costs effort and money. We'd like to discuss your views on recycling. To what extent would you support the city of [Dearborn or Warren] efforts to increase recycling rates?

(a) [open-ended response]

2. To be more specific, on a scale from 0-10, where 0 is that you're 100% sure you would NOT support the city's effort to increase recycling rates, 10 is that you 100% sure you would support the city's effort to improve recycling, where would you put yourself?

(a) 0-10 (*Mean: 8.56*)

3. What are the reasons for your answer?

(a) _____

4. It can be difficult to understand all of the complex issues about recycling. Let me show you a video about two views of recycling

[Show video.]

5. Do you know anyone who is either very strongly for recycling or is against it?

(a) Yes (*188 out of 273, 68.86%*)

(b) No (*85 out of 273, 31.14%*)

(c) I don't know

6. Do you know why they feel that way? What do you think of their views? [improvise this should an open conversation]

(a) _____

7. I personally [recycle / don't recycle], and my reasons are... [Tell your own story of why you do or don't recycle.]

(a) _____

8. The reality is that most people try to recycle, but often fail to do so. Can you tell me about a time when you acted differently from what you believe?

(a) _____

9. Now that we've been talking about this, would you support the city of [Dearborn or Warren] efforts to increase recycling rates?

(a) _____

10. To go to the scale again, where on a scale of 0 to 10 would you put yourself? Again, 0 is that you're 100% sure you would NOT support the city's effort to increase recycling rates, 10 is that you 100% sure you would support the city's effort to improve recycling.

(a) 0-10 (*Mean: 8.64*)

11. [If number changed:] Why is that the right number for you? What made you change your mind?

(a) _____

Thank you. That concludes the longest portion of the study. We'll now proceed to a couple of other sections.

B.1.1.3 Perspective-Taking Script - In-person

1. Muslims are often in the news these days. Radical extremists like ISIS call themselves Muslim, but their claims about Islam are challenged by most Muslims around the world. In fact, as you may know, London, in England, has a Muslim mayor who has condemned the ISIS attacks on his city. If a Muslim candidate who was qualified, and who shared most of your views on the issues, were to run for governor of Michigan, would you be willing to vote for him or her?

(a) [open-ended response]

2. How would you indicate that on a scale from 0-10? 0 is that you are 100% sure that you would NOT vote for him or her; 10 is that you are 100% sure you would vote for him or her

(a) 0-10 (*Mean: 8.16*)

3. What are the reasons for your response?

(a) _____

4. It can be hard to understand what it means to be a Muslim, especially if you haven't had a lot of interaction with Muslim people. Let me show you a video that mentions two different perspectives on Muslims in America.

[Show them the video.]

5. Do you personally know someone who is Muslim?

(a) Yes - go to Question (*252 out of 318, 79.25%*)

(b) No - go to Question (*66 out of 318, 20.75%*)

(c) I don't know

6. Do you know people who have religious beliefs different from yours?

[Be conversational. For this question, improvise. Use the following questions as a guide only; feel free to ask different questions.] Is it someone you know well? What do you think of their beliefs? How do their different beliefs make you feel about them? Do you think they are good residents or citizens of this country? How do you think they are treated? How do they treat you?

(a) _____

[If you did Question 7, skip Question 8.]

7. [Be conversational. For this question, improvise. Use the following questions as a guide only; feel free to ask different questions.] How do you know them? Is it someone you know well? What do you think of their beliefs? How do their different beliefs make you feel about them? Do you think they are good residents or citizens of this country? How do you think they are treated? How do they treat you?

(a) _____

8. I am/am not Muslim, but I have felt judged by the way that people perceive me. This one time... [Tell your own story of being judged; be vulnerable. But, keep it short - no more than 1-2 minutes.]

(a) _____

9. The reality is most people experience judgment at some point, and it hurts.

[Be conversational. For this question, improvise. Use the following questions as a guide only; feel free to ask different questions.]

Can you tell me about a time when you felt judged or were treated differently for who you are? Or, if you've never had that kind of experience, have you witnessed someone else being judged? How did you feel about it?

(a) _____

10. Now that we've been talking about this for a bit, would you be willing to vote for a Muslim candidate for governor?

(a) [open-ended response]

11. To go to the scale again, where on a scale of 0 to 10 would you put yourself? 0 is that you are 100% sure you would NOT vote for him or her; 10 is that you are 100% sure you would vote for him or her

(a) 0-10 (*Mean: 8.3*)

12. [If the response changed:] What are the reasons for your response? What made you change your mind?

(a) _____

Thank you. That concludes the longest portion of the study. We'll now proceed to a couple of other sections.

B.1.1.4 Value-consistency Script - In-person

Personal values are the values we live by. They determine who we are and help us make decisions every day. We each have a certain set that we hold dear. We'd like to discuss your personal values.

1. First, I'm going to name three values, and I'd like to ask you to listen for the one that is most important to you. Even if you think more than one value is important, please choose just one. The three values are... kindness, opportunity, and tolerance. Which of these do you most identify with? Again, kindness, opportunity, and tolerance.

(a) Kindness (*228 out of 302, 75.5%*)

(b) Opportunity (*19 out of 302, 6.29%*)

(c) Tolerance (*55 out of 302, 18.21%*)

(d) None

(e) I don't know

2. How important is this value to you on a scale from 0-10, where 0 is that it's completely unimportant, and 10 is that it is extremely important. Where would you put yourself?

(a) 0-10 (*Mean: 8.99*)

3. Why is that value important to you?

(a) _____

4. People have different definitions of these values, including [CHOSEN_VALUE]. Let me show you a video about how some other people define these values.

[Assistant: Show them the video.]

5. Now that you've seen this video, what is your own definition of [CHOSEN_VALUE]?

(a) _____

6. Can you tell me about a time in your life that made you feel that [CHOSEN_VALUE] was really important?

(a) _____

7. Are there any other reasons why you think [CHOSEN_VALUE] is important?

(a) _____

8. I really respect people for whom [CHOSEN_VALUE] is important. I also had an experience in which... [Tell a story in which the value was important because it allowed you to be more accepting of someone different from you.]

(a) _____

9. Can you tell me about a time in your life when [CHOSEN VALUE] affected the way you acted? When was that? What was that like for you?

(a) _____

10. Now that we've been talking about this, would you change your rating of how important this value is to you?

(a) Yes (34 out of 302, 11.26%)

(b) No(268 out of 302, 88.74%)

(c) Undecided

(d) I don't know

11. To go to the scale again, on a scale of 0 to 10, where 0 is that it's completely unimportant, and 10 is that it is extremely important, where would you put yourself?

(a) 0-10 (Mean: 9.14)

12. [If number changed:] Why is that the right number for you? What made you change your mind?

(a) _____

Thank you. That concludes the longest portion of the study. We'll now proceed to a couple of other sections.

B.1.1.5 Trust Game Protocol - In-person

In this game, you will have the opportunity to earn a little bit of cash. You are an Investor, investing in another person called the Responder. The Responder is someone from the metro Detroit area who has already played their part of the game.

1. Let's first find out who your Responder is. Could you pick one of these envelopes? [Assistant: Let the participant pick an envelope, but take it from them, so that you have it in your possession. Show them the name on the envelope.] Can you read the name of the Responder you chose? _____
2. Here's how the game works: Each of you - the Investor and the Responder, [Responder Name] - is given \$5. [Assistant: Hand five \$1 bills to the participant.]
3. As the Investor, you will then have the opportunity to pass some, all or none of your \$5 to the Responder, as you like. Then we, the researchers, will *triple* the amount you give and pass it to the Responder, [Responder Name]. After that, the Responder will give some of the money they have at that point to you. As I mentioned, the responder, [Responder Name] has already played their half of the game by recording their decision in the envelope.
4. For example, the Responder, [Responder Name] will have completed a sheet that looks like this. [Assistant: Show an empty strategy form.] Notice how they have written down their decision based on what you might give them.
5. Is this clear? Let me know if you have any questions about how the game works. [Answer any questions about the way the game works.]
6. OK, let's play.
7. First, please decide how much you would like to pass to the Responder, [Responder Name]. Could you hand them the amount? [Assistant: Take the amount from them. Triple it and add five. Say, " OK, so now the Responder, [THEIR NAME], has \$X." \$_____.
8. Next, can you guess how much the Responder, [Responder Name], has decided to give back to you? You get a bonus for a good guess - if your guess is within \$1 of the actual amount, you will earn an additional \$2. How much do you think the Responder has decided to give back to you? \$_____

9. [Assistant: " Let's look at [Responder Name] decision sheet. You gave [\$X] and for that, they decided to give back \$____. " Point to the right line. " So, you get \$_ from them, and they keep \$____." Give the participant what they are owed. " That is for you to keep."]
10. Thank you for playing the trust game. Would you mind signing this receipt for the university's bookkeeping purposes? We will randomly select a decision from investors, including yours, and send a check to the responder with the amount.

B.1.1.6 Trust Game Form - In-person

Investor contribution	Amount tripled	Money in hand	How much would you pass back to Investor?
\$0	\$0	$\$5 + \$0 = \$5$	
\$1	\$3	$\$5 + \$3 = \$8$	
\$2	\$6	$\$5 + \$6 = \$11$	
\$3	\$9	$\$5 + \$9 = \$14$	
\$4	\$12	$\$5 + \$12 = \$17$	
\$5	\$15	$\$5 + \$15 = \$20$	

B.1.1.7 Survey Questions - In-person

Now we have some final questions about you.

Here's a list. Mark ALL boxes that describe you. **Note, you may mark more than one group.**

1. (a) White (776 out of 898, 86.41%)
- (b) Black or African American (61 out of 898, 6.79%)
- (c) American Indian or Alaska Native (22 out of 898, 2.45%)
- (d) Asian (21 out of 898, 2.34%)
- (e) Native Hawaiian or Pacific Islander (2 out of 898, 0.22%)
- (f) Middle Eastern or North African (17 out of 898, 1.89%)

(g) Other (49 out of 898, 5.46%)

2. If you wish, you may also enter a more specific racial or ethnic identity.

3. Please check ONE circle that describes you the best. If you wish you may also write a more specific religion, such as Orthodox, Catholic, or Sunni, in the space next to a category.

(a) Jewish (4 out of 880, 0.45%)

(b) Christian (653 out of 880, 74.2%)

(c) Other (71 out of 880, 8.07%)

(d) None (152 out of 880, 17.27%)

4. What is the highest level of school you have completed or the highest degree you have received?

(a) Less than high school degree (15 out of 867, 1.73%)

(b) High school graduate (high school diploma or equivalent including GED) (103 out of 867, 11.88%)

(c) Some college but no degree (228 out of 867, 26.3%)

(d) Associate degree in college (2-year) (122 out of 867, 14.07%)

(e) Bachelor's degree in college (4-year) (239 out of 867, 27.57%)

(f) Graduate degree (*160 out of 867, 18.45%*)

5. Which statement best describes your current employment status?

(a) Working full time (*473 out of 873, 54.18%*)

(b) Working part time (*105 out of 873, 12.03%*)

(c) Keeping house (*32 out of 873, 3.67%*)

(d) Student (*33 out of 873, 3.78%*)

(e) Retired (*200 out of 873, 22.91%*)

(f) Unemployed (*30 out of 873, 3.44%*)

6. What is your sex?

(a) Male (*425 out of 906, 46.91%*)

(b) Female (*481 out of 906, 53.09%*)

(c) Other (*0 out of 906, 0%*)

7. In what year were you born?

8. What country were you born in?

For the United States enter US or us

9. What year did you arrive in the US to live?

Research Assistant - PLEASE HANDOVER THE TABLET TO THE PARTICIPANT
AFTER THIS QUESTION!

10. Are you a U.S. citizen?

(a) Yes (*167 out of 182, 91.76%*)

(b) No (*15 out of 182, 8.24%*)

11. Did you vote for a presidential candidate last November?

(a) Yes (*751 out of 874, 85.93%*)

(b) No (*123 out of 874, 14.07%*)

12. Who did you vote for?

(a) Donald Trump (*208 out of 667, 31.18%*)

(b) Hillary Clinton (381 out of 667, 57.12%)

(c) Other (78 out of 667, 11.69%) _____

13. Are your political views generally closer to

(a) The Democrats (378 out of 814, 46.44%)

(b) The Republicans (199 out of 814, 24.45%)

(c) Other (119 out of 814, 14.62%) _____

(d) No preference (118 out of 814, 14.5%)

14. Would you say that over the past year the nation's economy has gotten better, stayed about the same, or gotten worse?

(a) Gotten Better (328 out of 793, 41.36%)

(b) Stayed the Same (325 out of 793, 40.98%)

(c) Gotten Worse (140 out of 793, 17.65%)

15. What about the next 12 months? Do you expect the national economy to get better, get worse, or stay about the same?

(a) Get Better (252 out of 732, 34.43%)

(b) Stay the Same (238 out of 732, 32.51%)

(c) Get Worse (242 out of 732, 33.06%)

16. What is the income of all of the members of your family who live together in this home, before taxes?

- (a) Under \$ 15,000 (*19 out of 722, 2.63%*)
- (b) \$ 15,000 to \$ 39,999 (*92 out of 722, 12.74%*)
- (c) \$ 40,000 to \$ 64,999 (*178 out of 722, 24.65%*)
- (d) \$ 65,000 to \$ 89,999 (*162 out of 722, 22.44%*)
- (e) \$ 90,000 to \$ 124,999 (*151 out of 722, 20.91%*)
- (f) \$ 125,000 and up (*120 out of 722, 16.62%*)

B.1.1.8 List Elicitation Questions - In-person

1. Here's a list of three things that sometimes people oppose or are against. After you read all three, just enter HOW MANY of them you OPPOSE. We do NOT want to know which ones, just HOW MANY.

- (1) The federal government increasing assistance to the poor
- (2) Professional athletes making millions of dollars per year
- (3) Large corporations should be forced to reduce greenhouse gas emissions

- (a) I AGREE with all of these things (*66 out of 254, 25.98%*)
- (b) I am AGAINST one of these things (*119 out of 254, 46.85%*)
- (c) I am AGAINST two of these things (*57 out of 254, 22.44%*)
- (d) I am AGAINST three of these things (*12 out of 254, 4.72%*)

2. Here's a list of four things that sometimes people oppose or are against. After you read all four, just tell us HOW MANY of them you OPPOSE. We do NOT want to know which ones, just HOW MANY.

- (1) The federal government increasing assistance to the poor
- (2) Professional athletes making millions of dollars per year
- (3) Large corporations should be forced to reduce greenhouse gas emissions
- (4) Cutting off all immigration to the U.S.

- (a) I AGREE with all of these things (*22 out of 279, 7.89%*)
- (b) I am AGAINST one of these things (*85 out of 279, 30.47%*)
- (c) I am AGAINST two of these things (*120 out of 279, 43.01%*)
- (d) I am AGAINST three of these things (*46 out of 279, 16.49%*)
- (e) I am AGAINST four of these things (*6 out of 279, 2.15%*)

3. Here's a list of four things that sometimes people oppose or are against. After you read all four, just tell us HOW MANY of them you OPPOSE. We do NOT want to know which ones, just HOW MANY.

- (1) The federal government increasing assistance to the poor
- (2) Professional athletes making millions of dollars per year
- (3) Large corporations should be forced to reduce greenhouse gas emissions
- (4) Muslim immigration to the US should be reduced

- (a) I AGREE with all of these things (*37 out of 279, 13.26%*)
- (b) I am AGAINST one of these things (*102 out of 279, 36.56%*)
- (c) I am AGAINST two of these things (*102 out of 279, 36.56%*)

(d) I am AGAINST three of these things (28 out of 279, 10.04%)

(e) I am AGAINST four of these things (10 out of 279, 3.58%)

B.1.2 Online Protocol

B.1.2.1 Online Protocol Description

The online protocol consisted of five components: 1) an introductory section, 2) a short demographic survey, 3) a 10-minute interactive session varying across experimental conditions, 4) an trust game (Berg et al., 1995) measuring potential bias at the individual level, and 5) a post-experiment survey, which includes the list elicitation measure of bias at the group level (Glynn, 2013; Kuklinski et al., 1997). The complete script for each experimental condition is included in the online protocol Section (Appendix B.1.2). In what follows, we summarize each component of our protocol.

In the introduction section, we provide an overview of the study, and elicit the subject's consent to participate (Appendix B.1.2.2). We follow that with a short demographic survey (Appendix B.1.2.3) to ensure that we have a representative sample of the United States population. Particularly, we use quotas based on gender, race and education to determine whether the subject should continue their participation or not. We also use the demographic information to test the robustness of the results.

Following the demographic survey, we move to the intervention. In this section, we randomly assign participants to one of three conditions: perspective taking (Appendix B.1.2.5), value consistency (Appendix B.1.2.6), or control (recycling) (Appendix B.1.2.4). These conditions have similar structures (number and types of questions, length of videos) and all are adapted from the in-person study in their content. In this section, participants respond to a set of questions (multiple choice, scale or open-ended) and watch a video.

Following the intervention, participants play the trust game (Appendix B.1.2.7). during which a

participant randomly selects from ten different icons (five associated with Muslim sounding names and five with non-Muslim soundings names) to find out the responder's first name. After that we follow the same sequence as the in-person study where we give the participant \$5 and tell her that she can invest, some, all or none of the \$5 to the responder. Whatever amount she invests, we triple it and pass it to the responder, who also had an initial endowment of \$5. We also inform the participant that the responder had decided how much to return based on the invested amount and that her response is pre-recorded in the system.

Once a participant makes a choice of how much she wants to pass to the responder, we ask the participant to guess how much the responder decided to return. The actual amount is then revealed. If the guess is within \$1 of the actual returned amount, the participant earns a \$2 bonus for guessing correctly. This belief elicitation method is incentive compatible and also simple to implement in the field ([Charness & Dufwenberg, 2006a](#)).

At the end of the trust game, participants finish a short survey about their social networks and general beliefs (Appendices B.1.2.8, and B.1.2.9). The survey also contains a second measure of bias, namely, the list elicitation method. List randomization elicits responses to sensitive questions at the sample level ([Coffman et al., 2016](#); [Glynn, 2013](#); [Kuklinski et al., 1997](#)). We use three lists: one with four statements, one with the same four statements and one additional statement about reducing immigration to the United States, and one with the same four statements and one additional statement about reducing Muslim immigration. Each participant is randomized to only one list, which she responds to by stating the number of statements she disagrees with, but not which one(s). We compare the difference in the distribution of these numbers to infer the level of discrimination. Following that, we elicit their attitudes towards COVID-19 and anti-Asian bias. Finally, we asked them to enter their personal information (name and address) to send them the check with the money they earned in the trust game.

B.1.2.2 Consent Form - Online

Consent to Participate in Research Study

- **Title of the Project:** Decision-making experiment Principal Investigator: Yan Chen, Daniel Kahneman Collegiate Professor, University of Michigan School of Information Co-investigators: Mohamed Abbadi, Ph.D. Student, University of Michigan School of Information; Ann Chih Lin, Associate Professor of Public Policy, University of Michigan School of Public Policy; Kentaro Toyama, W. K. Kellogg Professor, University of Michigan School of Information
- **Invitation to Participate in a Research Study** Researchers from the University of Michigan invite you to be part of an online research study to better understand how different types of conversations affect how we perceive or treat each other. The study is funded by the Russell Sage Foundation.
- **Description of Your Involvement** If you agree to be part of the research study, you will be prompted to participate in a short demographic survey to determine your eligibility. If you are eligible, you will engage in an online writing activity and a brief research game, and respond to a short questionnaire. The total time taken today will be about 30 minutes. In addition, we will send you a follow-up survey in about three months' time that will take about 15-20 minutes.
- **Compensation for Participation:** After you qualify and during one part of this research project, you will have the opportunity to receive a small amount of cash. To receive the funds, you will be asked at the end of the survey to provide your name and address, which will be used to mail you a check for the amount received. We will NOT use your name or address for purposes other than to address and mail the check. After the check is redeemed, we will delete your name and address from our records. Your personal information will NOT be used as data in our research.
- **Benefits of Participation** Although you may not directly benefit from being in this study, others may benefit because the results from the study may inform public policy.

- **Risks and Discomforts of Participation** Some of the survey questions may touch on sensitive topics and cause you discomfort. However, we stress that your participation is entirely voluntary. You may choose at any time to abandon the study or to skip a particular question.
- **Confidentiality** The results of this study will be published. We will not include any information that would identify you. Your privacy will be protected and your research records will be confidential. It is possible that other people may need to see the information you give us as part of the study, such as organizations responsible for making sure the research is done safely and properly like the University of Michigan or the study sponsor, the Russell Sage Foundation.
- **Storage and Future Use of Data** We will store your answers for possible use in future research studies, for a period of up to ten years. Your study answers will be secured and stored at the University of Michigan School of Information. Only the researchers involved in this study will have access to your research files and data. Research data may be shared with other investigators but will never contain any information that could identify you.
- **Voluntary Nature of the Study** Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You can also skip any question you do not want to answer. Your data will not be used if you abandon the survey before reaching the end.
- **Contact Information for the Study Team** If you have questions about this research after completing the study, including questions about your compensation for participating, you may contact Prof. Yan Chen (email: yanchen@umich.edu; phone: (734) 764-9488). The University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board (IRB) has determined that this research is exempt from IRB oversight.
- **Consent** By checking the box, you agree to participate in the study. You understand that if you complete it, you will be re-contacted for a follow-up in about three months. You also

understand that your responses will be saved after the expiration of the study, for a period of up to ten years.

1. I agree to participate
2. I don't agree to participate

B.1.2.3 Demographic Survey - Online

1. Q1 What is your sex?

- (a) Male (*869 out of 1796, 48.39%*)
- (b) Female (*919 out of 1796, 51.17%*)
- (c) Other (*8 out of 1796, 0.45%*)

2. Q2 How would you describe your race?

- (a) White (*1385 out of 1788, 77.46%*)
- (b) Black or African American (*228 out of 1788, 12.75%*)
- (c) American Indian or Alaska Native
- (d) Asian (*114 out of 1788, 6.38%*)
- (e) Other (*48 out of 1788, 2.68%*)
- (f) Mixed (*13 out of 1788, 0.73%*)

3. Q3 Please select the religion that describes you best.

- (a) Jewish (*94 out of 1765, 5.33%*)
- (b) Christian (*1234 out of 1765, 69.92%*)
- (c) Muslim (*0 out of 1765, 0.0%*)

(d) Other (134 out of 1765, 7.59%)

(e) None (303 out of 1765, 17.17%)

4. Q4 What is the highest level of school you have completed or the highest degree you have received?

(a) Less than high school (46 out of 1788, 2.57%)

(b) High school graduate (high school diploma or equivalent including GED) (488 out of 1788, 27.29%)

(c) Some college (659 out of 1788, 36.86%)

(d) Bachelor's degree (4 years) (383 out of 1788, 21.42%)

(e) Graduate degree (212 out of 1788, 11.86%)

5. Q5 Which statement best describes your current employment status?

(a) Working full time (375 out of 1788, 20.97%)

(b) Working part time (187 out of 1788, 10.46%)

(c) Keeping house (58 out of 1788, 3.24%)

(d) Student (44 out of 1788, 2.46%)

(e) Retired (961 out of 1788, 53.75%)

(f) Unemployed (163 out of 1788, 9.12%)

6. Q6 In which year were you born? _____

7. Q7 What country were you born in?

(a) United States of America (1696 out of 1788, 94.85%)

(b) Other (please specify) (92 out of 1788, 5.15%)

Q8 If you were not born in the United States, what year did you arrive in the US to live?

B.1.2.4 Recycling Script - Online

1. Recycling is an issue that many communities are wrestling with. On the one hand, it's good for the environment. On the other hand, recycling itself costs effort and money. Would you support efforts in your own city or town to increase the rate at which people recycle?

(a) Yes (*512 out of 612, 83.66%*)

(b) No (*45 out of 612, 7.35%*)

(c) Unsure (*55 out of 612, 8.99%*)

2. Please indicate, on a scale from 0-10, how sure you are that you would support recycling efforts, where 0 means that you're 100% sure you WOULD NOT support efforts to improve recycling, and 10 means that you're 100% sure you WOULD support efforts to improve recycling.

(a) 0-10 (*Mean: 8.07*)

3. What are the reasons for your answer?

(a) _____

4. Please watch this video that shows two views of recycling.

[Show video.]

5. Think of someone you know personally who has strong feelings about recycling one way or the other. Please write 50-150 words about what you know about them, answering some or all of the following questions: What are their views on recycling? Why do they feel that way? What do you think of their views?

(a) _____

6. The reality is that most people try to recycle, but often fail to do so. Please write 50-150 words about a time when you acted differently from how you would like to act with respect to recycling. Or, if you've never deviated from your personal views on recycling, please write about why your beliefs about recycling are so important to you.

(a) _____

7. Please answer again: Would you support efforts in your own city or town to increase the rate at which people recycle?

(a) Yes (*507 out of 603, 84.08%*)

(b) No (*45 out of 603, 7.46%*)

(c) Unsure (*51 out of 603, 8.46%*)

8. [In case you changed your mind] What made you change your mind?

(a) _____

B.1.2.5 Perspective-Taking Script - Online

1. Muslims are often in the news these days. Radical extremists like ISIS call themselves Muslim, but their claims about Islam are challenged by most Muslims around the world. As you may know, London has a Muslim mayor who has condemned the ISIS attacks on his city. If a Muslim candidate who was qualified, and who shared most of your views on issues, were to run for mayor in your city or town, would you be willing to vote for him or her?

(a) Yes (*343 out of 616, 55.68%*)

(b) No (*119 out of 616, 19.32%*)

(c) Unsure (*154 out of 616, 25.00%*)

2. Please indicate, on a scale from 0-10, how sure you are that you would vote for him or her. 0 means you are 100% sure that you WOULD NOT vote for him or her; 10 means that you are 100% sure you WOULD vote for him or her.

(a) 0-10 (*Mean: 6.13*)

3. What are the reasons for your response?

(a) _____

4. Please watch this video that shows two different perspectives on Muslims in America.

[Show video.]

5. Think of someone you know personally who is Muslim, or who has a religious belief different from yours. Please write 50-150 words about what you know about them, answering some or all of the following questions: What do you think of their beliefs? How do their different beliefs make you feel about them? Do you think they are good residents or citizens of this country? How do they treat you? How do you think they are treated?

(a) _____

6. Most people experience judgment at some point, and it can hurt. Please write 50-150 words about a time when you felt judged or were treated differently for who you are, and how you felt about it. Or, if you've never had that kind of experience, write 50-150 words about when you witnessed someone else being judged, and how you felt about it.

(a) _____

7. Now that we've been talking about this for a bit, would you be willing to vote for a Muslim candidate for governor?

(a) _____

8. Please answer again: Would you be willing to vote for a Muslim candidate for mayor who shares your views on issues?

(a) Yes (359 out of 609, 58.95%)

(b) No (121 out of 609, 19.87%)

(c) Unsure (129 out of 609, 21.18%)

9. [In case you changed your mind] What made you change your mind?

(a) _____

B.1.2.6 Value-consistency Script - Online

Personal values are the values we live by. They determine who we are and help us make decisions every day. We each have a certain set that we hold dear. We'd like to discuss your personal values.

1. Personal values are the values we live by. They determine who we are and help us make decisions every day. Of the values below, please indicate which one is most important to you. (Even if you think more than one value is important, please choose just one.)

(a) Kindness (463 out of 568, 81.51%)

(b) Tolerance (105 out of 568, 18.49%)

2. How important is [CHOSEN_VALUE] to you on a scale from 0-10, where 0 is that it's completely unimportant, and 10 is that it is extremely important. Where would you put yourself?

(a) 0-10 (Mean: 8.59)

3. Why is the [CHOSEN_VALUE] important to you?

(a) _____

4. Please watch this video about how some other people define these values.

[Show video.]

5. Think of someone you know for whom [CHOSEN_VALUE] is a really important value. Please write 50-150 words about that person, answering some or all of the following questions: Who are they? How do they express this value? How do you feel about the way they express this value?

(a) _____

6. Most people believe in [CHOSEN_VALUE] to some degree. Please write 50-150 words about a time when you felt this value was very important to you. You can answer some or all of the following questions: What was the relevant context? How did the context affect how you expressed or felt about this value? How did you feel about [CHOSEN_VALUE] as a value after this incident or time period?

(a) _____

7. Please answer again: Of the values below, please indicate which one is most important to you.

(a) Kindness (*444 out of 546, 81.32%*)

(b) Tolerance (*102 out of 546, 18.68%*)

8. [In case you changed your mind] What made you change your mind?

(a) _____

B.1.2.7 trust game Protocol - Online

Next, we will ask you to play a game in which you have the opportunity to earn a little bit of cash. You are playing with another person from an American city. They have been told about the game and have already made a decision about how to respond to every one of your potential

- Let's first find out whom you're playing with.
- Click on one of the icons on the right!
- [Show 10 identical icons]
- You have been matched with [Responder Name]
- Here's how the game works:
 - You and [Responder Name] start with \$5 each.
 - You then have the opportunity to pass some, all, or none of your \$5 to [Responder Name], as you like.
 - We will triple the amount you give and pass it to [Responder Name].
 - You then discover whether [Responder Name] has chosen to give some of the money they have at that point to you.
- **Reminder**
 - You and [Responder Name] start with \$5 each.
 - You then have the opportunity to pass some, all, or none of your \$5 to [Responder Name], as you like.
 - We will triple the amount you give and pass it to [Responder Name].
 - After that, you will discover if [Responder Name] decided to give some of the money they have to you.
 - OK, let's play.
- You now have \$5. How much you would like to pass to [Responder Name]?
- Please use the slider at the right to make a decision!

- Next, guess how much [Responder Name] will give back to you. You receive a bonus for an accurate guess – if your guess is within \$1 of the actual amount, you will earn an additional \$2. How much do you think [Responder Name] has decided to give back to you?
- Please use the slider at the right to make a guess!
- You decided to pass \$[xx] to [Responder Name].
- [Responder Name] decided to return \$ [yy].
- You guessed that [Responder Name] would return \$ [zz].
- Your guess is [is not] within \$1 of how much [Responder Name] decided to give back to you.
- Therefore you earned \$[5 - xx]+\$[yy]+\$[\$0 or \$2] in total. We will send you a check after you finish today's survey.
- [Responder Name] will also receive a check!

B.1.2.8 List Elicitation - Online

1. Read each of the four statements below and indicate HOW MANY of them you agree with. You are NOT being asked to indicate which ones you agree with, just how many of them.
 - Some corporal punishment (e.g., spanking) is an important element of good child-rearing.
 - I remember when the first Star Wars movie ("A New Hope") was in movie theaters.
 - When I was in high school, I owned my own personal music player (e.g., a Walkman, portable CD player, MP3 player, iPod, smartphone, or similar device that is usually used with earphones).
 - I have traveled to a country other than the United States.

(a) I agree with none of the above. (51 out of 562, 9.07%)

- (b) I agree with exactly 1 of the above statements. *(129 out of 562, 22.95%)*
- (c) I agree with exactly 2 of the above statements. *(200 out of 562, 35.59%)*
- (d) I agree with exactly 3 of the above statements. *(128 out of 562, 22.78%)*
- (e) I agree with all 4 of the above statements. *(54 out of 562, 9.61%)*

2. Read each of the five statements below and indicate HOW MANY of them you agree with. You are NOT being asked to indicate which ones you agree with, just how many of them.

- Some corporal punishment (e.g., spanking) is an important element of good child-rearing.
- I remember when the first Star Wars movie (“A New Hope”) was in movie theaters.
- Muslim immigration to the United States should be further reduced.
- When I was in high school, I owned my own personal music player (e.g., a Walkman, portable CD player, MP3 player, iPod, smartphone, or similar device that is usually used with earphones).
- I have traveled to a country other than the United States.

- (a) I agree with none of the above. *(42 out of 528, 7.95%)*
- (b) I agree with exactly 1 of the above statements. *(79 out of 528, 14.96%)*
- (c) I agree with exactly 2 of the above statements. *(151 out of 528, 28.60%)*
- (d) I agree with exactly 3 of the above statements. *(166 out of 528, 31.44%)*
- (e) I agree with exactly 4 of the above statements. *(65 out of 528, 12.31%)*
- (f) I agree with all 5 of the above statements. *(25 out of 528, 4.73%)*

3. Read each of the five statements below and indicate HOW MANY of them you agree with. You are NOT being asked to indicate which ones you agree with, just how many of them.

- Some corporal punishment (e.g., spanking) is an important element of good child-rearing.
 - I remember when the first Star Wars movie (“A New Hope“) was in movie theaters.
 - Immigration to the United States should be further reduced.
 - When I was in high school, I owned my own personal music player (e.g., a Walkman, portable CD player, MP3 player, iPod, smartphone, or similar device that is usually used with earphones).
 - I have traveled to a country other than the United States.
- (a) I agree with none of the above. *(42 out of 552, 7.61%)*
- (b) I agree with exactly 1 of the above statements. *(102 out of 552, 18.48%)*
- (c) I agree with exactly 2 of the above statements. *(162 out of 552, 29.35%)*
- (d) I agree with exactly 3 of the above statements. *(139 out of 552, 25.18%)*
- (e) I agree with exactly 4 of the above statements. *(80 out of 552, 14.49%)*
- (f) I agree with all 5 of the above statements. *(42 out of 552, 7.61%)*

B.1.2.9 Post Survey - Online

1. Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?
 - (a) Most people can be trusted *(858 out of 1650, 52.00%)*
 - (b) Can't be too careful *(792 out of 1650, 48.00%)*

2. Where do you get most of your news? (check all that apply)

- ABC, NBC, or CBS
- CNN
- Fox News
- Local TV or radio
- MSNBC
- NPR (National Public Radio) or PBS
- Newspapers, online or in paper
- Facebook
- Twitter
- Other

3. Are your political views generally closer to

- (a) The Democrats (*719 out of 1656, 43.42%*)
- (b) The Republicans (*665 out of 1656, 40.16%*)
- (c) Other (*272 out of 1656, 16.43%*)
- (d) No preference (*118 out of 814, 14.5%*)

4. Are you a U.S. citizen?

- (a) Yes (*1657 out of 1682, 98.51%*)
- (b) No (*25 out of 1682, 1.49%*)

5. Did you vote for a presidential candidate in the last election?

(a) Yes (*751 out of 874, 85.93%*)

(b) No (*123 out of 874, 14.07%*)

6. Whom did you vote for?

(a) Donald Trump (*703 out of 1514, 46.43%*)

(b) Hillary Clinton (*680 out of 1514, 44.91%*)

(c) Other (*131 out of 1514, 8.65%*)

7. Do you approve or disapprove of the way Donald Trump is handling his job as president?

(a) Approve (*695 out of 1622, 42.85%*)

(b) Disapprove (*927 out of 1622, 57.15%*)

8. Over the next 12 months, do you expect the national economy to get better, get worse, or stay about the same?

(a) Get Better (*578 out of 1579, 36.60%*)

(b) Stay the Same (*313 out of 1579, 19.82%*)

(c) Get Worse (*688 out of 1579, 43.57%*)

9. Are there Muslims living in your neighborhood?

- (a) Many (*73 out of 1144, 6.38%*)
- (b) Some (*530 out of 1144, 46.33%*)
- (c) None at all (*541 out of 1144, 47.29%*)

10. Do you have Muslim co-workers?

- (a) Many (*53 out of 1336, 3.97%*)
- (b) Some (*250 out of 1336, 18.71%*)
- (c) None at all (*1033 out of 1336, 77.32%*)

11. Have you, personally, ever been treated unfairly due to your race, ethnicity, or religion?

- (a) Yes (*514 out of 1610, 31.93%*)
- (b) No (*1096 out of 1610, 68.07%*)

12. Do you think people of your race or ethnicity are treated unfairly?

- (a) Often (*226 out of 1616, 13.99%*)
- (b) Sometimes (*602 out of 1616, 37.25%*)
- (c) Seldom (*589 out of 1616, 36.45%*)
- (d) Never (*199 out of 1616, 12.31%*)

13. Do you think people of your religion are treated unfairly?

- (a) Often (*182 out of 1496, 12.17%*)
- (b) Sometimes (*570 out of 1496, 38.10%*)
- (c) Seldom (*483 out of 1496, 32.29%*)
- (d) Never (*261 out of 1496, 17.45%*)

14. How concerned are you about the rise of Islamic extremism in the U.S.?

- (a) Very concerned (*403 out of 1580, 25.51%*)
- (b) Somewhat concerned (*522 out of 1580, 33.04%*)
- (c) Not too concerned (*401 out of 1580, 25.38%*)
- (d) Not concerned (*254 out of 1580, 16.08%*)

15. In general, how well do you think the American government is doing in reducing the threat of terrorism?

- (a) Very well (*223 out of 1549, 14.40%*)
- (b) Fairly well (*759 out of 1549, 49.00%*)
- (c) Not very well (*368 out of 1549, 23.76%*)
- (d) Not well at all (*199 out of 1549, 12.85%*)

The following questions elicit your responses in light of the COVID-19 pandemic:

1. The virus causing COVID-19 was a bio-weapon designed by China to wage war on the United States.

- (a) strongly disagree (*481 out of 1504, 31.98%*)
- (b) disagree (*368 out of 1504, 24.47%*)
- (c) neutral (*300 out of 1504, 19.95%*)
- (d) agree (*213 out of 1504, 14.16%*)
- (e) strongly agree (*142 out of 1504, 9.44%*)

2. Who is more to blame for the COVID-19 pandemic in the United States?

- The Chinese government (*602 out of 1496, 40.24%*)
- The United States government (*389 out of 1496, 26.00%*)
- They are equally responsible (*505 out of 1496, 33.76%*)

3. Now that the U.S. has experienced shortages of medical equipment, we should share our masks, ventilators, and other lifesaving equipment with other countries after the virus subsides here.

- (a) strongly disagree (*93 out of 1603, 5.80%*)
- (b) disagree (*145 out of 1603, 9.05%*)
- (c) neutral (*349 out of 1603, 21.77%*)
- (d) agree (*663 out of 1603, 41.36%*)
- (e) strongly agree (*353 out of 1603, 22.02%*)

4. COVID-19 can only be beaten if countries cooperate in finding treatments and a vaccine.

- (a) strongly disagree (*91 out of 1639, 5.55%*)
- (b) disagree (*62 out of 1639, 3.78%*)
- (c) neutral (*203 out of 1639, 12.39%*)
- (d) agree (*515 out of 1639, 31.42%*)

(e) strongly agree (768 out of 1639, 46.86%)

5. Suppose you are in charge of the local hospital. You are beginning to see patients with severe cases of COVID-19. Unfortunately, the hospital has a limited supply of ventilators, and you know that you will have to make hard choices about who will get them very soon. How would you set hospital policy for members of the following groups...?

- Patients over 65

(a) 1 = never gets a ventilator (17 out of 1492, 1.14%)

(b) 2 = (35 out of 1492, 2.35%)

(c) 3 = (422 out of 1492, 28.28%)

(d) 4 = (286 out of 1492, 19.17%)

(e) 5 = always gets a ventilator (732 out of 1492, 49.06%)

- Non-U.S. citizens

(a) 1 = never gets a ventilator (50 out of 1451, 3.45%)

(b) 2 = (104 out of 1451, 7.17%)

(c) 3 = (519 out of 1451, 35.77%)

(d) 4 = (257 out of 1451, 17.71%)

(e) 5 = always gets a ventilator (521 out of 1451, 35.91%)

B.2 Appendix: Tables and Figures – Reducing Bias Against Muslims in the United States

B.2.1 Outcome Variables Summary

Table B.1: Summary Statistics: Outcome Variables

	Treatment Group	Observations	Mean	S.D.	Min	Max
<i>Panel A: In-person</i>						
Investment Amount	Overall	922	4.024	1.414	0	5
	Control	293	3.966	1.443	0	5
	Value-Consistency	303	4.248	1.216	0	5
	Perspective-Taking	326	3.868	1.533	0	5
Investor Guess	Overall	918	7.317	5.038	0	20
	Control	290	6.586	4.552	0	20
	Value-Consistency	302	8.086	5.335	0	20
	Perspective-Taking	326	7.255	5.080	0	20
Investor Guess Proportion	Overall	918	0.416	0.252	0	1
	Control	290	0.383	0.231	0	1
	Value-Consistency	302	0.442	0.264	0	1
	Perspective-Taking	326	0.421	0.257	0	1
Investor Guess Difference	Overall	917	-0.578	4.811	-15	15
	Control	290	-1.221	4.629	-15	11
	Value-Consistency	302	-0.149	5.094	-15	15
	Perspective-Taking	325	-0.403	4.651	-12	15
Investor Guess Within Range	Overall	908	0.341	0.474	0	1
	Control	287	0.355	0.479	0	1
	Value-Consistency	296	0.297	0.458	0	1
	Perspective-Taking	325	0.369	0.483	0	1
<i>Panel B: Online</i>						
Investment Amount	Overall	1796	2.659243	1.718238	0	5
	Control	612	2.550654	1.680459	0	5
	Value-Consistency	568	2.889085	1.748778	0	5
	Perspective-Taking	616	2.555195	1.708955	0	5
Investor Guess	Overall	1716	5.48951	4.851786	0	20
	Control	593	5.143339	4.781513	0	20
	Value-Consistency	534	5.734082	5.125121	0	20
	Perspective-Taking	589	5.616299	4.651692	0	20
Investor Guess Proportion	Overall	1716	.4012558	.2972846	0	1
	Control	593	.3867262	.3005446	0	1
	Value-Consistency	534	.3939229	.2939181	0	1
	Perspective-Taking	589	.4225322	.2963199	0	1
Investor Guess Difference	Overall	1716	.1095571	4.387858	-15	15
	Control	593	-.0286678	4.329447	-15	13
	Value-Consistency	534	-.0299625	4.642071	-15	15
	Perspective-Taking	589	.3752122	4.200356	-15	15
Investor Guess Within Range	Overall	1716	.3426573	.4747364	0	1
	Control	593	.3423272	.474889	0	1
	Value-Consistency	534	.3558052	.4792055	0	1
	Perspective-Taking	589	.3310696	.470998	0	1

B.2.2 Tables - In-person Experiment

Table B.2: Sample Characteristics and Balance Check - In-person Experiment (Round 1) - Orthogonality Test

Category	Subgroup	(1) Overall Sample	(2) Control	(3) Value- Consistency	(4) Perspective- Taking	(5) Orthogonality Test <i>p</i> -value	(6) US Population	(7) Proportional Test <i>p</i> -value
Number	N		293	303	326			
Age	Overall (mean)	48.911	49.276	47.812	49.601	0.435	38.50	0.000
Gender	Male	0.469	0.433	0.465	0.482	0.479	0.492	0.168
	Female	0.531	0.554	0.527	0.514	0.600	0.508	0.168
Race	Black	0.068	0.077	0.055	0.072	0.551	0.134	0.000
	White	0.864	0.847	0.866	0.878	0.527	0.763	0.000
Religion	Christian	0.742	0.734	0.714	0.776	0.208	0.706	0.019
	Other	0.085	0.097	0.097	0.064	0.251	0.074	0.203
	None	0.173	0.169	0.190	0.160	0.624	0.158	0.231
Work Status	Unemployed	0.034	0.040	0.041	0.022	0.362	0.029	0.373
	Student	0.038	0.036	0.038	0.038	0.989	0.092	0.000
	Retired	0.229	0.219	0.199	0.258	0.215	0.235	0.540
	Part Time	0.120	0.083	0.141	0.131	0.074	0.107	0.261
	House Keeping	0.037	0.047	0.031	0.032	0.526	0.0003	0.000
	Full Time	0.542	0.568	0.533	0.510	0.357	0.537	0.952
Income	\$15,000 to \$39,999	0.154	0.154	0.131	0.094	0.085	0.284	0.060
	\$40,000 to \$64,999	0.247	0.179	0.253	0.173	0.027	0.177	0.000
	\$65,000 to \$89,999	0.224	0.200	0.149	0.198	0.193	0.092	0.000
	\$90,000 to \$124,999	0.209	0.168	0.149	0.192	0.368		
	\$125,000 and up	0.166	0.118	0.145	0.142	0.583	0.138	0.000
Education	High School Degree	0.136	0.156	0.112	0.139	0.305	0.283	0.000
	Some College (No Degree)	0.263	0.268	0.255	0.263	0.945	0.171	0.000
	Associate Degree	0.141	0.141	0.129	0.149	0.790	0.100	0.000
	Bachelors Degree	0.276	0.271	0.269	0.282	0.935	0.222	0.000
	Graduate Degree	0.185	0.164	0.227	0.161	0.067	0.128	0.000

Notes:

1) In Column (6), we used US Census 2020 data for Age, Gender, Race, Income, and Education; we used the Religious Landscape Study conducted by The Pew Research Center for Religion; we used data from the US Bureau of Labor Statistics and the US Department of Health and Human Services for Work Status.

2) In Column (6), we counted for all US population in [Age](#), [Gender](#), [Race](#), and [Religion](#), but only counted people over 18 in [Work Status](#), [Income](#) (see [Total Work Experience](#)), and [Education](#).

3) For categories in Work Status, we counted for people who work full-time, part-time, and house keeping with data from [Labor Force Statistics from the Current Population Survey](#). For Unemployed, see this [link](#). For Students, see this [link](#). For Retired, see this [link \(click on the 2020 Profile\)](#).

Table B.3: Sample Characteristics and Balance Check - In-person Experiment (Round 2)

Category	Subgroup	(1) Overall Sample	(2) Control	(3) Value- Consistency	(4) Perspective- Taking	(5) Orthogonality Test <i>p</i> -value	(6) US Population	(7) Proportional Test <i>p</i> -value
Number	N		104	130	117			
Response Rate	Control vs Perspective-taking		35.49%	35.89%		0.950		
	Control vs Value-consistency		35.49%		42.90%	0.250		
Age	Overall (mean)	49.562	51.602	46.824	50.741	0.082	38.50	0.000
Gender	Male	0.468	0.548	0.400	0.444	0.073	0.492	0.374
	Female	0.532	0.447	0.591	0.544	0.090	0.508	0.374
Race	Black	0.041	0.029	0.056	0.060	0.508	0.134	0.000
	White	0.869	0.913	0.879	0.914	0.589	0.763	0.000
Religion	Christian	0.704	0.703	0.690	0.721	0.879	0.706	0.940
	Other	0.110	0.119	0.119	0.090	0.729	0.074	0.013
	None	0.186	0.178	0.190	0.189	0.969	0.158	0.152
Work Status	Unemployed	0.040	0.051	0.041	0.027	0.669	0.029	0.262
	Student	0.040	0.031	0.049	0.036	0.764	0.092	0.001
	Retired	0.248	0.265	0.180	0.297	0.100	0.235	0.685
	Part Time	0.132	0.071	0.172	0.135	0.086	0.107	0.182
	House Keeping	0.034	0.031	0.041	0.027	0.827	0.0003	0.000
	Full Time	0.508	0.551	0.484	0.477	0.506	0.537	0.199
Income	\$15,000 to \$39,999	0.132	0.117	0.128	0.088	0.617	0.284	0.000
	\$40,000 to \$64,999	0.256	0.243	0.240	0.168	0.307	0.177	0.050
	\$65,000 to \$89,999	0.235	0.184	0.200	0.212	0.877	0.092	0.000
	\$90,000 to \$124,999	0.208	0.184	0.152	0.195	0.666		
	\$125,000 and up	0.170	0.126	0.120	0.186	0.295	0.138	0.000
Education	High School Degree	0.099	0.093	0.081	0.123	0.541	0.283	0.000
	Some College (No Degree)	0.271	0.247	0.282	0.272	0.843	0.171	0.000
	Associate Degree	0.133	0.124	0.129	0.140	0.935	0.100	0.054
	Bachelors Degree	0.295	0.309	0.258	0.316	0.568	0.222	0.002
	Graduate Degree	0.202	0.227	0.234	0.140	0.146	0.128	0.000

Notes:

1) In Column (6), we used US Census 2020 data for Age, Gender, Race, Income, and Education; we used the Religious Landscape Study conducted by The Pew Research Center for Religion; we used data from the US Bureau of Labor Statistics and the US Department of Health and Human Services for Work Status.

2) In Column (6), we counted for all US population in Age, Gender, Race, and Religion, but only counted people over 18 in Work Status, Income (see Total Work Experience), and Education.

3) For categories in Work Status, we counted for people who work full-time, part-time, and house keeping with data from Labor Force Statistics from the Current Population Survey. For Unemployed, see this link. For Students, see this link. For Retired, see this link (click on the 2020 Profile).

Table B.4: Balance Check - In-person Experiment (Round 2) Attrition

	(1)	(2)	(3)	(4)
	Follow up	Follow up	Follow up	Follow up
Value-Consistency	0.074* (0.0399)	0.138** (0.056)	0.041 (0.049)	0.109 (0.069)
Perspective-Taking	0.004 (0.039)	0.07 (0.055)	0.02 (0.047)	0.078 (0.068)
Muslim Responder		0.057 (0.056)		0.073 (0.07)
Value-Consistency × Muslim Responder		-0.128 (0.08)		-0.134 (0.098)
Perspective-Taking × Muslim Responder		-0.128* (0.077)		-0.19** (0.095)
Constant	0.355*** (0.028)	0.327*** (0.039)	0.397*** (0.034)	0.36*** (0.049)
N	922	921	635	634
<i>Pseudo R</i> ²	0.00364	0.00715	0.0320	0.0374
Covariates			X	X

Standard errors in parentheses

Column (1) shows the probability of participation in round 2 of the experiment based on experimental condition.

Column (2) shows the probability of participation in round 2 of the experiment based on experimental condition and identity of the receiver in the trust game.

Column (3) shows the probability of participation in round 2 of the experiment based on experimental condition, after controlling for covariates.

Column (4) shows the probability of participation in round 2 of the experiment based on experimental condition and identity of the receiver in the trust game, after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.2.1 Contact Effects - In-person Experiment

Table B.5: Contact: City Effects on Trust Game Outcomes - In-person Experiment

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
Warren	0.183 (0.132)	0.461 (0.358)	-0.00690 (0.0236)	-0.451 (0.451)	0.105** (0.046)
Muslim Responder	0.179 (0.132)	0.451 (0.359)	0.0322 (0.0236)	0.177 (0.451)	-0.074* (0.044)
Warren \times Muslim Responder	-0.264 (0.187)	-0.654 (0.507)	0.0208 (0.0332)	0.404 (0.636)	-0.079 (0.062)
Constant	3.906*** (0.0947)	5.448*** (0.268)	0.398*** (0.0169)	-0.541* (0.323)	0.346*** (0.032)
Warren effects on Muslim Responders ($\beta_w + \beta_{wm}$)	-0.081 (0.132)	-0.192 (0.36)	0.014 (0.023)	-0.046 (0.448)	0.026 (0.042)
N	921	921	917	917	907
R^2	0.00276		0.00760	0.00271	
<i>Pseudo R</i> ²		0.000876			0.0164

Standard errors in parentheses

Column (1): City effects on investment amount based on OLS.

Column (2): City effects on investment amount based on Tobit.

Column (3): City effects on investor guess proportion based on OLS.

Column (4): City effects on difference between the guess and actual strategy outcome based on OLS.

Column (5): City effects on probability of making the right guess (or within a dollar).

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.2.2 Robustness of Results - In-person Experiment

Table B.6: Robustness of Results: Average Treatment Effects on Investment Amount (OLS) - In-person Experiment

	(1)	(2)	(3)	(4)
	Investment Amount	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.282** (0.115)	0.202 (0.130)	0.205 (0.131)	0.212 (0.131)
Perspective-Taking	-0.0978 (0.113)	-0.0451 (0.127)	0.0206 (0.128)	0.0460 (0.127)
Constant	3.966*** (0.0822)	4.075*** (0.0927)	4.680*** (0.320)	4.614*** (0.400)
N	922	639	639	638
R ²	0.0131	0.00677	0.0682	0.149
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses.

Note: Robustness of the Results: Average treatment effects on Investment Amount based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for them.

Column (3): ATE based on data subset in (2) after controlling for covariates.

Column (4): ATE based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.7: Robustness of Results: Average Treatment Effects on Investment Amount (Tobit) - In-person Experiment

	(1)	(2)	(3)	(4)
	Investment Amount	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.642** (0.317)	0.333 (0.359)	0.342 (0.355)	0.300 (0.345)
Perspective-Taking	-0.229 (0.304)	-0.159 (0.346)	-0.0543 (0.343)	-0.0990 (0.332)
Constant	5.613*** (0.240)	5.787*** (0.279)	6.720*** (1.002)	6.734*** (1.152)
N	922	639	639	638
Pseudo R ²	0.00340	0.00127	0.0199	0.0574
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on Investment Amount based on Tobit.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for these covariates.

Column (3): ATE based on data subset in (2) after controlling for covariates.

Column (4): ATE based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.8: Robustness of Results: Average Treatment Effects on Investor Guess Proportion (OLS) - In-person Experiment

	(1)	(2)	(3)	(4)
	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion
Value-Consistency	0.0598*** (0.0207)	0.0888*** (0.0245)	0.0881*** (0.0253)	0.0912*** (0.0256)
Perspective-Taking	0.0387* (0.0203)	0.0664*** (0.0239)	0.0660*** (0.0247)	0.0686*** (0.0250)
Constant	0.383*** (0.0148)	0.371*** (0.0176)	0.342*** (0.0616)	0.355*** (0.0781)
N	918	637	637	636
R ²	0.00929	0.0219	0.0435	0.0941
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on Investment Guess Proportion based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for these covariates.

Column (3): ATE based on data subset in (2) after controlling for covariates.

Column (4): ATE based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.9: Robustness of Results: Heterogeneous Treatment Effects on Investment Amount (OLS)
- In-person Experiment

	(1)	(2)	(3)	(4)
	Investment Amount	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.202 (0.163)	0.0378 (0.183)	0.0413 (0.185)	0.0825 (0.185)
Perspective-Taking	-0.214 (0.161)	-0.234 (0.180)	-0.226 (0.183)	-0.203 (0.182)
Muslim Responder	-0.0821 (0.164)	-0.192 (0.186)	-0.258 (0.187)	-0.233 (0.186)
Value-Consistency × Muslim Responder	0.160 (0.231)	0.328 (0.259)	0.318 (0.261)	0.254 (0.261)
Perspective-Taking × Muslim Responder	0.223 (0.227)	0.365 (0.253)	0.472* (0.257)	0.486* (0.255)
Constant	4.007*** (0.116)	4.172*** (0.132)	4.812*** (0.331)	4.726*** (0.408)
N	921	638	638	637
R ²	0.0146	0.0111	0.0738	0.154
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investment amount based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

Column (4): Heterogeneous effects based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.10: Robustness of Results: Heterogeneous Treatment Effects on Investment Amount (Tobit) - In-person Experiment

	(1)	(2)	(3)	(4)
	Investment Amount	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.351 (0.446)	-0.230 (0.509)	-0.250 (0.503)	-0.154 (0.486)
Perspective-Taking	-0.586 (0.433)	-0.769 (0.495)	-0.738 (0.494)	-0.757 (0.474)
Muslim Responder	-0.302 (0.443)	-0.660 (0.510)	-0.824 (0.507)	-0.695 (0.489)
Value-Consistency \times Muslim Responder	0.586 (0.633)	1.112 (0.718)	1.145 (0.709)	0.893 (0.687)
Perspective-Taking \times Muslim Responder	0.688 (0.609)	1.174* (0.693)	1.294* (0.688)	1.281* (0.663)
Constant	5.762*** (0.331)	6.123*** (0.392)	7.180*** (1.042)	7.123*** (1.180)
N	921	638	638	637
<i>Pseudo R</i> ²	0.00415	0.00356	0.0223	0.0594
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investment amount based on Tobit.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

Column (4): Heterogeneous effects based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.11: Robustness of Results: Heterogeneous Treatment Effects on Investor Guess Proportion (OLS) - In-person Experiment

	(1)	(2)	(3)	(4)
	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion
Value-Consistency	0.0566* (0.0291)	0.0808** (0.0345)	0.0768** (0.0357)	0.0751** (0.0361)
Perspective-Taking	0.00159 (0.0287)	0.0210 (0.0339)	0.0167 (0.0353)	0.0103 (0.0355)
Muslim Responder	0.0156 (0.0294)	-0.00625 (0.0350)	-0.0158 (0.0361)	-0.0214 (0.0363)
Value-Consistency × Muslim Responder	0.00636 (0.0412)	0.0159 (0.0488)	0.0206 (0.0501)	0.0300 (0.0510)
Perspective-Taking × Muslim Responder	0.0703* (0.0404)	0.0867* (0.0477)	0.0938* (0.0494)	0.111** (0.0497)
Constant	0.375*** (0.0208)	0.374*** (0.0248)	0.357*** (0.0636)	0.371*** (0.0795)
N	917	636	636	635
R ²	0.0205	0.0314	0.0520	0.106
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investor guess proportion based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

Column (4): Heterogeneous effects based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.12: Robustness of Results: Treatment Effects on List Elicitation (OLS) - In-Person Experiment

	(1)	(2)	(3)	(4)
	# Agreed Statements	# Agreed Statements	# Agreed Statements	# Agreed Statements
Value-Consistency	0.197 (0.139)	0.0227 (0.161)	0.0318 (0.163)	0.0670 (0.170)
Perspective-Taking	0.113 (0.137)	0.0164 (0.154)	0.0701 (0.156)	0.0767 (0.162)
Immigrant Statement	0.394*** (0.139)	0.229 (0.162)	0.245 (0.164)	0.325* (0.172)
Muslim Statement	0.653*** (0.138)	0.547*** (0.163)	0.581*** (0.164)	0.564*** (0.172)
Value-Consistency × Immigrant Statement	-0.227 (0.197)	-0.0184 (0.228)	-0.0250 (0.232)	-0.118 (0.242)
Value-Consistency × Muslim Statement	-0.256 (0.193)	-0.0906 (0.229)	-0.130 (0.229)	-0.149 (0.240)
Perspective-Taking × Immigrant Statement	-0.0381 (0.190)	0.142 (0.219)	0.113 (0.221)	0.0515 (0.230)
Perspective-Taking × Muslim Statement	-0.153 (0.192)	0.110 (0.223)	0.0264 (0.228)	0.0510 (0.239)
Constant	1.841*** (0.0961)	1.926*** (0.110)	2.238*** (0.264)	2.262*** (0.326)
N	812	603	603	602
R ²	0.0556	0.0633	0.121	0.149
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Treatment effects on list elicitation using the in-person panel.

In the list elicitation, we randomly showed participants one of three sets of statements

(1) a base set with 3 general policy statements,

(2) a base set with a sensitive statement that reads "Muslim immigration to the US should be reduced"

or (3) a base set with a sensitive statement that reads "Cutting off all immigration to the U.S."

and asked the participant how many statements does s/he disagree with, not which ones

For consistency with the online panel presentation, we reversed the responses from "disagree" to "agree"

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Treatment effects based on full data set.

Column (2): Treatment effects based on data subset that has all covariates without controlling for them.

Column (3): Treatment effects based on data subset in (2) after controlling for covariates.

Column (4): Treatment effects based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.13: Robustness of Results: City Effects on Investor Guess Within Range (Probit) - In-person Experiment

	(1)	(2)	(3)	(4)
	Guess Within Range	Guess Within Range	Guess Within Range	Guess Within Range
Warren	0.105** (0.046)	0.144*** (0.055)	0.132** (0.056)	0.146** (0.060)
Muslim Responder	-0.074* (0.044)	-0.066 (0.051)	-0.070 (0.052)	-0.067 (0.052)
Warren × Muslim Responder	-0.079 (0.062)	-0.087 (0.075)	-0.079 (0.076)	-0.083 (0.076)
Constant	0.346*** (0.032)	0.329*** (0.039)	0.335*** (0.040)	0.336*** (0.040)
N	907	629	629	614
<i>Pseudo R</i> ²	0.0164	0.0213	0.0375	0.0770
Covariates			X	X
Interviewer Fixed Effects				X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investor guess within range in the in-person experiment based on Probit.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

Column (4): Heterogeneous effects based on data subset in (2) after controlling for covariates and interviewer fixed effects.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.2.3 Interviewer Effects - In-person Experiment

Table B.14: Impact of the Treatments and Hijab Interviewers

	(1)	(2)	(3)	(4)
	Investment Amount	Investor Guess Proportion	Investor Guess Difference	Guess Within Range
Value-Consistency	0.209 (0.163)	0.0560* (0.0291)	0.773 (0.557)	-0.301** (0.149)
Perspective-Taking	-0.210 (0.161)	0.00117 (0.0288)	0.110 (0.550)	-0.155 (0.146)
Muslim Responder	-0.0793 (0.165)	0.0153 (0.0294)	-0.287 (0.563)	-0.565*** (0.155)
Value-Consistency × Muslim Responder	0.151 (0.231)	0.00728 (0.0412)	0.581 (0.789)	0.296 (0.219)
Perspective-Taking × Muslim Responder	0.217 (0.227)	0.0710* (0.0405)	1.387* (0.775)	0.422** (0.210)
Hijab Canvasser	0.0766 (0.0955)	-0.00848 (0.0170)	-0.328 (0.325)	-0.0700 (0.0889)
Constant	3.957*** (0.132)	0.380*** (0.0235)	-0.872* (0.449)	-0.0600 (0.119)
N	921	917	917	907
R ²	0.0153	0.0207	0.0149	

Standard errors in parentheses

Column (1): Average treatment effects along with hijab canvasser fixed effects on investment amount.

Column (2): Average treatment effects along with hijab canvasser fixed effects on investor guess proportion.

Column (3): Average treatment effects along with hijab canvasser fixed effects on difference between the guess and actual strategy outcome.

Column (4): Average treatment effects along with hijab canvasser fixed effects on probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.15: Treatment and Hijab Interviewers Effects on Trust Game Outcomes

	(1)	(2)	(3)	(4)
	Investment Amount	Investor Guess Proportion	Investor Guess Difference	Guess Within Range
Value-Consistency	0.536** (0.262)	0.0773 (0.0497)	1.858* (0.973)	0.268 (0.266)
Perspective-Taking	-0.178 (0.258)	0.0750 (0.0488)	2.031** (0.956)	0.606** (0.254)
Hijab Canvasser	0.308 (0.235)	0.00898 (0.0447)	0.0740 (0.875)	0.271 (0.239)
Value-Consistency × Hijab Canvasser	-0.286 (0.333)	-0.0229 (0.0631)	-0.813 (1.236)	-0.431 (0.333)
Perspective-Taking × Hijab Canvasser	0.273 (0.325)	-0.00533 (0.0618)	-0.851 (1.209)	-0.535* (0.317)
Constant	3.737*** (0.184)	0.385*** (0.0348)	-1.404** (0.682)	-0.842*** (0.193)
N	462	461	461	457
R ²	0.0321	0.0148	0.0198	

Standard errors in parentheses

Column (1): Heterogeneous effects of treatment and hijab canvasser on investment amount.

Column (2): Heterogeneous effects of treatment and hijab canvasser on investor guess proportion.

Column (3): Heterogeneous effects of treatment and hijab canvasser on difference between the guess and actual strategy outcome.

Column (4): Heterogeneous effects of treatment and hijab canvasser on probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.16: Treatment and Hijab Interviewers Effects on Trust Game Outcomes

	(1)	(2)	(3)	(4)
	Investment Amount	Investor Guess Proportion	Investor Guess Difference	Guess Within Range
Value-Consistency	0.271** (0.115)	0.0592*** (0.0206)	1.073*** (0.395)	-0.163 (0.109)
Perspective-Taking	-0.112 (0.113)	0.0368* (0.0203)	0.819** (0.388)	0.0471 (0.105)
Hijab Canvasser	-0.148 (0.134)	-0.0160 (0.0240)	-0.148 (0.458)	-0.0605 (0.122)
Muslim Responder	-0.238 (0.149)	0.0327 (0.0267)	0.594 (0.510)	-0.312** (0.139)
Hijab Canvasser × Muslim Responder	0.463** (0.190)	0.0165 (0.0341)	-0.324 (0.651)	-0.00824 (0.178)
Constant	4.037*** (0.126)	0.371*** (0.0225)	-1.327*** (0.430)	-0.181 (0.115)
N	921	917	917	907
R ²	0.0207	0.0169	0.0116	

Standard errors in parentheses

Column (1): Heterogeneous effects of treatment and hijab canvasser on investment amount.

Column (2): Heterogeneous effects of treatment and hijab canvasser on investor guess proportion.

Column (3): Heterogeneous effects of treatment and hijab canvasser on difference between the guess and actual strategy outcome.

Column (4): Heterogeneous effects of treatment and hijab canvasser on probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.2.4 Other Results - In-person Experiment

Table B.17: Impact of Beliefs on Investment Amount: In-person

	(1) OLS Investment Amount	(2) OLS Investment Amount	(3) OLS Investment Amount	(4) OLS Investment Amount
Value-Consistency	0.282** (0.115)	0.116 (0.104)	0.202 (0.163)	0.0747 (0.147)
Perspective-Taking	-0.0978 (0.113)	-0.170* (0.102)	-0.214 (0.161)	-0.185 (0.145)
Investor Guess		0.125*** (0.00831)		0.125*** (0.00837)
Muslim Responder			-0.0821 (0.164)	-0.0914 (0.148)
Value-Consistency × Muslim Responder			0.160 (0.231)	0.0814 (0.207)
Perspective-Taking × Muslim Responder			0.223 (0.227)	0.0298 (0.204)
Constant	3.966*** (0.0822)	3.133*** (0.0919)	4.007*** (0.116)	3.177*** (0.118)
N	922	918	921	917
R ²	0.0131	0.209	0.0146	0.210

Standard errors in parentheses

Note: The impact of beliefs about trustworthiness of the receiver on investment amount

Column (1): Average treatment effects on investment amount.

Column (2): Average treatment effects on investment amount and the impact of the guess on investment amount.

Column (3): Heterogeneous treatment effects on investment amount.

Column (4): Heterogeneous treatment effects on investment amount and the impact of the guess on investment amount.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.18: Correlation between Chosen Value and trust game Outcomes - In-person Experiment

	(1) Investment Amount	(2) Investor Guess Proportion	(3) Investor Guess Difference	(4) Guess Within Range
Opportunity	-0.434 (0.289)	-0.185*** (0.0638)	-2.716** (1.236)	0.0598 (0.112)
Tolerance	-0.311* (0.182)	-0.0562 (0.0391)	-0.323 (0.758)	0.115* (0.0694)
Constant	4.329*** (0.0803)	0.464*** (0.0172)	0.105 (0.334)	0.274*** (0.0306)
N	302	301	301	295
R ²	0.0152	0.0314	0.0161	0.00975

Standard errors in parentheses

Column (1): Correlation between chosen value and investment amount.)

Column (2): Correlation between chosen value and investor guess proportion.

Column (3): Correlation between chosen value and difference between the guess and actual strategy outcome.

Column (4): Correlation between chosen value and the probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.19: Impact of the Treatments on The Long Run - In-person Experiment

	(1)	(2)	(3)
	Investor Guess Proportion	Investor Guess Proportion	# Agreed Statements
Value-Consistency	0.0492*** (0.0184)	0.0532** (0.0253)	0.181 (0.118)
Perspective-Taking	0.0371** (0.0182)	0.0202 (0.0251)	0.110 (0.117)
Muslim Responder		0.0163 (0.0249)	
Value-Consistency × Muslim Responder		-0.00775 (0.0344)	
Perspective-Taking × Muslim Responder		0.0326 (0.0342)	
Immigrant Statement			0.428*** (0.118)
Muslim Statement			0.595*** (0.117)
Value-Consistency × Immigrant Statement			-0.177 (0.163)
Value-Consistency × Muslim Statement			-0.188 (0.164)
Perspective-Taking × Immigrant Statement			-0.0580 (0.162)
Perspective-Taking × Muslim Statement			-0.0858 (0.162)
Constant	0.407*** (0.0133)	0.398*** (0.0183)	1.847*** (0.0838)
Observations	1269	1268	1151

Standard errors in parentheses

Column (1): Medium to long term effects: Average treatment effect on investor guess proportion.

Column (2): Heterogeneous treatment effect on investor guess proportion.

Column (3): Treatment effects on list elicitation.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.3 Tables - Online Experiment

B.2.3.1 Summary Statistics and Sample Characteristics - Online Experiment

Table B.20: Sample Characteristics and Balance Check in the Online Experiment - Orthogonality Test

Category	Subgroup	(1) Overall Sample	(2) Control	(3) Value- Consistency	(4) Perspective- Taking	(5) Orthogonality Test <i>p</i> -value	(6) US Population	(7) Proportional Test <i>p</i> -value
Number	N		612	568	616			
Age	Overall (mean)	59.77	60.613	58.389	60.211	0.046	38.50	0.000
Gender	Male	0.484	0.493	0.460	0.497	0.371	0.508	0.490
	Female	0.512	0.502	0.537	0.498	0.344	0.492	0.754
	Other	0.005	0.005	0.004	0.005	0.922	N/A	N/A
Race	Black	0.128	0.131	0.148	0.114	0.217	0.134	0.644
	White	0.775	0.783	0.741	0.802	0.039	0.763	0.189
	Asian	0.064	0.065	0.076	0.058	0.488	0.059	0.192
	Mixed	0.007	0.008	0.009	0.005	0.688	0.028	0.000
	Other	0.027	0.025	0.032	0.024	0.675	0.016	0.000
Religion	Christian	0.699	0.696	0.714	0.688	0.544	0.706	0.079
	Jewish	0.053	0.052	0.063	0.046	0.448	0.019	0.000
	Other	0.076	0.09	0.082	0.056	0.069	0.055	0.921
	None	0.172	0.163	0.141	0.209	0.009	0.158	0.213
Work Status	Unemployed	0.091	0.075	0.099	0.099	0.255	0.029	0.000
	Student	0.025	0.018	0.026	0.029	0.417	0.092	0.000
	Retired	0.538	0.557	0.505	0.541	0.192	0.235	0.000
	Part Time	0.105	0.105	0.104	0.104	0.999	0.107	0.673
	House Keeping	0.032	0.028	0.040	0.029	0.405	0.0003	0.000
	Full Time	0.210	0.209	0.222	0.196	0.562	0.537	0.000
Education	Below High School Degree	0.026	0.023	0.021	0.032	0.407	0.096	0.000
	High School Degree	0.273	0.242	0.273	0.300	0.070	0.283	0.284
	Some College (No Degree)	0.367	0.355	0.391	0.357	0.358	0.171	0.000
	Bachelors Degree	0.214	0.242	0.204	0.193	0.094	0.222	0.373
	Graduate Degree	0.119	0.136	0.104	0.114	0.220	0.128	0.198

Notes:

- 1) In Column (6), we used US Census 2020 data for Age, Gender, Race, and Education; we used the Religious Landscape Study conducted by The Pew Research Center for Religion; we used data from the US Bureau of Labor Statistics and the US Department of Health and Human Services for Work Status.
- 2) In Column (6), we counted for all US population in [Age](#), [Gender](#), [Race](#), and [Religion](#), but only counted people over 18 in Work Status and [Education](#).
- 3) For categories in Work Status, we counted for people who work full-time, part-time, and house keeping with data from [Labor Force Statistics from the Current Population Survey](#). For Unemployed, see this [link](#). For Students, see this [link](#). For Retired, see this [link \(click on the 2020 Profile\)](#).

B.2.3.2 Contact Effects - Online Experiment

Table B.21: Contact Hypothesis: Based on Muslim Neighbors using Online Panel

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
Some	0.358** (0.144)	0.529** (0.223)	0.00512 (0.0245)	.069 (0.366)	0.059 (0.041)
Many	0.766*** (0.291)	1.152** (0.462)	-0.127** (0.0498)	-2.425*** (0.743)	0.077 (0.084)
Muslim Responder	0.0515 (0.145)	0.0919 (0.226)	0.00881 (0.0248)	-0.425 (0.37)	0.035 (0.041)
Some × Muslim Responder	-0.241 (0.206)	-0.362 (0.321)	-0.0194 (0.0352)	-0.008 (0.526)	-0.025 (0.059)
Many × Muslim Responder	-0.739* (0.421)	-1.154* (0.666)	0.0969 (0.0718)	2.20** (1.073)	-0.172 (0.116)
Constant	2.550*** (0.101)	2.682*** (0.157)	0.410*** (0.0172)	0.425* (0.26)	0.318*** (0.028)
N	1144	1144	1144	1144	1144
R ²	0.0107		0.00689	0.0104	
Pseudo R ²		0.00257			0.00345

Standard errors in parentheses

Column (1): Correlation between having (None, Some, or Many) Muslim neighbors and investment amount based on OLS.

Column (2): Correlation between having (None, Some, or Many) Muslim neighbors and investment amount based on Tobit.

Column (3): Correlation between having (None, Some, or Many) Muslim neighbors and investor guess proportion.

Column (4): Correlation between having (None, Some, or Many) Muslim neighbors and difference between the guess and actual strategy outcome.

Column (5): Correlation between having (None, Some, or Many) Muslim neighbors and probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.22: Contact Hypothesis: Based on Muslim Coworkers using Online Panel

	(1) OLS Investment Amount	(2) Tobit Investment Amount	(3) OLS Investor Guess Proportion	(4) OLS Investor Guess Difference	(5) Probit Guess Within Range
Some	0.197 (0.172)	0.261 (0.269)	-0.0158 (0.0300)	-0.138 (0.445)	0.081* (0.049)
Many	0.150 (0.317)	0.0666 (0.493)	-0.0852 (0.0553)	-1.834** (0.821)	-0.020 (0.086)
Muslim Responder	-0.0483 (0.106)	-0.0607 (0.165)	0.0127 (0.0184)	0.128 (0.274)	0.038 (0.030)
Some × Muslim Responder	0.115 (0.239)	0.174 (0.374)	0.0354 (0.0417)	-0.103 (0.619)	-0.124* (0.067)
Many × Muslim Responder	-0.655 (0.481)	-1.008 (0.758)	0.0289 (0.0839)	2.096* (1.245)	0.053 (0.135)
Constant	2.683*** (0.0716)	2.887*** (0.112)	0.406*** (0.0125)	0.3 (0.185)	0.32*** (0.02)
N	1336	1336	1336	1336	1336
R ²	0.00575		0.00419	0.00361	
Pseudo R ²		0.00142			0.00261

Standard errors in parentheses

Column (1): Correlation between having (None, Some, or Many) Muslim coworkers and investment amount based on OLS.

Column (2): Correlation between having (None, Some, or Many) Muslim coworkers and investment amount based on Tobit.

Column (3): Correlation between having (None, Some, or Many) Muslim coworkers and investor guess proportion.

Column (4): Correlation between having (None, Some, or Many) Muslim coworkers and difference between the guess and actual strategy outcome.

Column (5): Correlation between having (None, Some, or Many) Muslim coworkers and probability of making the right guess based on Probit.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.3.3 Robustness of Results - Online Experiment

Table B.23: Robustness of Results: Average Treatment Effects on Investment Amount (OLS) - Online Experiment

	(1)	(2)	(3)
	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.338*** (0.0997)	0.333*** (0.101)	0.379*** (0.100)
Perspective-Taking	0.00454 (0.0977)	-0.0141 (0.0989)	0.00111 (0.0981)
Constant	2.551*** (0.0692)	2.576*** (0.0701)	2.140*** (0.227)
N	1796	1747	1747
R ²	0.00828	0.00848	0.0491
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on Investment Amount in the online experiment based on OLS.

Covariates: Age, race, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for these covariates.

Column (3): ATE based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.24: Robustness of Results: Average Treatment Effects on Investment Amount (Tobit) - Online Experiment

	(1)	(2)	(3)
	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.519*** (0.159)	0.513*** (0.161)	0.596*** (0.159)
Perspective-Taking	-0.0197 (0.155)	-0.0487 (0.157)	-0.0295 (0.154)
Constant	2.701*** (0.110)	2.741*** (0.111)	1.865*** (0.360)
N	1796	1747	1747
<i>Pseudo R</i> ²	0.00216	0.00224	0.0136
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on Investment Amount in the online experiment based on Tobit.

Covariates: City, age, race, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for these covariates.

Column (3): ATE based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.25: Robustness of Results: Average Treatment Effects on Investor Guess Proportion (OLS) - Online Experiment

	(1)	(2)	(3)
	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion
Value-Consistency	0.00720 (0.0177)	0.0134 (0.0179)	0.0138 (0.0180)
Perspective-Taking	0.0358** (0.0173)	0.0412** (0.0175)	0.0396** (0.0176)
Constant	0.387*** (0.0122)	0.385*** (0.0124)	0.277*** (0.0421)
N	1716	1670	1670
<i>R</i> ²	0.00277	0.00344	0.0170
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Average treatment effects on Investment Guess Proportion in the online experiment based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): ATE based on full data set.

Column (2): ATE based on data subset that has all covariates without controlling for these covariates.

Column (3): ATE based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.26: Robustness of Results: Heterogeneous Treatment Effects on Investment Amount (OLS) - Online Experiment

	(1)	(2)	(3)
	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.193 (0.138)	0.192 (0.140)	0.237* (0.138)
Perspective-Taking	-0.201 (0.137)	-0.205 (0.139)	-0.225 (0.138)
Muslim Responder	-0.270* (0.138)	-0.254* (0.140)	-0.290** (0.139)
Value-Consistency × Muslim Responder	0.286 (0.200)	0.278 (0.203)	0.278 (0.200)
Perspective-Taking × Muslim Responder	0.414** (0.196)	0.382* (0.198)	0.454** (0.196)
Constant	2.689*** (0.0990)	2.707*** (0.100)	2.274*** (0.237)
N	1796	1747	1747
R ²	0.0110	0.0108	0.0523
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investment amount in the online experiment based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.27: Robustness of Results: Heterogeneous Treatment Effects on Investment Amount (Tobit) - Online Experiment

	(1)	(2)	(3)
	Investment Amount	Investment Amount	Investment Amount
Value-Consistency	0.282 (0.220)	0.279 (0.223)	0.349 (0.219)
Perspective-Taking	-0.328 (0.217)	-0.332 (0.220)	-0.374* (0.216)
Muslim Responder	-0.407* (0.219)	-0.381* (0.222)	-0.449** (0.218)
Value-Consistency × Muslim Responder	0.469 (0.318)	0.464 (0.323)	0.487 (0.317)
Perspective-Taking × Muslim Responder	0.619** (0.309)	0.564* (0.313)	0.691** (0.308)
Constant	2.910*** (0.157)	2.937*** (0.159)	2.066*** (0.375)
N	1796	1747	1747
<i>Pseudo R</i> ²	0.00283	0.00282	0.0144
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investment amount in the online experiment based on Tobit.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.28: Robustness of Results: Heterogeneous Treatment Effects on Investor Guess Proportion (OLS) - Online Experiment

	(1)	(2)	(3)
	Investor Guess Proportion	Investor Guess Proportion	Investor Guess Proportion
Value-Consistency	0.0356 (0.0244)	0.0456* (0.0247)	0.0453* (0.0248)
Perspective-Taking	0.0347 (0.0242)	0.0446* (0.0246)	0.0400 (0.0247)
Muslim Responder	0.0323 (0.0244)	0.0359 (0.0247)	0.0332 (0.0248)
Value-Consistency \times Muslim Responder	-0.0597* (0.0356)	-0.0674* (0.0360)	-0.0666* (0.0361)
Perspective-Taking \times Muslim Responder	0.00499 (0.0346)	-0.00463 (0.0350)	0.00168 (0.0351)
Constant	0.370*** (0.0174)	0.367*** (0.0176)	0.260*** (0.0438)
N	1716	1670	1670
R^2	0.00579	0.00652	0.0203
Covariates			X

Standard errors in parentheses

Note: Robustness of the Results: Heterogeneous treatment effects on investor guess proportion in the online experiment based on OLS.

Covariates: City, age, race, income, education, gender, working status, and religion.

Column (1): Heterogeneous effects based on full data set.

Column (2): Heterogeneous effects based on data subset that has all covariates without controlling for these covariates.

Column (3): Heterogeneous effects based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table B.29: Robustness of Results: Treatment Effects on List Elicitation (OLS): Online Experiment

	(1)	(2)	(3)
	# Agreed Statements	# Agreed Statements	# Agreed Statements
Value-Consistency	-0.0190 (0.129)	-0.0179 (0.130)	0.0690 (0.130)
Perspective-Taking	-0.0955 (0.124)	-0.0858 (0.124)	-0.00752 (0.124)
Immigrant Statement	0.687*** (0.123)	0.718*** (0.124)	0.779*** (0.124)
Muslim Statement	0.505*** (0.124)	0.520*** (0.124)	0.549*** (0.125)
Value-Consistency × Immigrant Statement	-0.310* (0.177)	-0.348** (0.177)	-0.414** (0.177)
Value-Consistency × Muslim Statement	0.163 (0.182)	0.150 (0.182)	0.0415 (0.183)
Perspective-Taking × Immigrant Statement	-0.0915 (0.174)	-0.180 (0.175)	-0.238 (0.176)
Perspective-Taking × Muslim Statement	0.121 (0.173)	0.0729 (0.173)	-0.0183 (0.174)
Constant	1.837*** (0.0889)	1.851*** (0.0890)	2.160*** (0.208)
N	1588	1550	1550
R ²	0.0562	0.0573	0.154
Covariates			X

Standard errors in parentheses

Note: Treatment effects on list elicitation using the online panel.

In the list elicitation, we randomly showed participants one of three sets of statements

(1) a base set with 4 general policy statements,

(2) a base set with a sensitive statement that reads (Muslim immigration to the United States should be further reduced.) or

(3) a base set with a sensitive statement that reads (Immigration to the United States should be further reduced.)

and asked the participant how many statements does s/he agree with, not which ones

Covariates: age, education, gender, working status, race and religion.

Column (1): Treatment effects based on full data set.

Column (2): Treatment effects based on data subset that has all covariates without controlling for them.

Column (3): Treatment effects based on data subset in (2) after controlling for covariates.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.3.4 Other Results - Online Experiment

Table B.30: Impact of Beliefs on Investment Amount: Online

	(1) OLS Investment Amount	(2) OLS Investment Amount	(3) OLS Investment Amount	(4) OLS Investment Amount
Value-Consistency	0.338*** (0.0997)	0.245*** (0.0861)	0.193 (0.138)	0.0788 (0.119)
Perspective-Taking	0.00454 (0.0977)	-0.0649 (0.0840)	-0.201 (0.137)	-0.231** (0.118)
Investor Guess		0.189*** (0.00719)		0.189*** (0.00719)
Muslim Responder			-0.270* (0.138)	-0.296** (0.118)
Value-Consistency × Muslim Responder			0.286 (0.200)	0.332* (0.173)
Perspective-Taking × Muslim Responder			0.414** (0.196)	0.328* (0.168)
Constant	2.551*** (0.0692)	1.598*** (0.0698)	2.689*** (0.0990)	1.749*** (0.0919)
N	1796	1716	1796	1716
R ²	0.00828	0.293	0.0110	0.296

Standard errors in parentheses

Note: The impact of beliefs about trustworthiness of the receiver on investment amount

Column (1): Average treatment effects on investment amount.

Column (2): Average treatment effects on investment amount and the impact of the guess on investment amount.

Column (3): Heterogeneous treatment effects on investment amount.

Column (4): Heterogeneous treatment effects on investment amount and the impact of the guess on investment amount.

* $p < .1$, ** $p < .05$, *** $p < .01$

B.2.4 Figures - In-person and Online

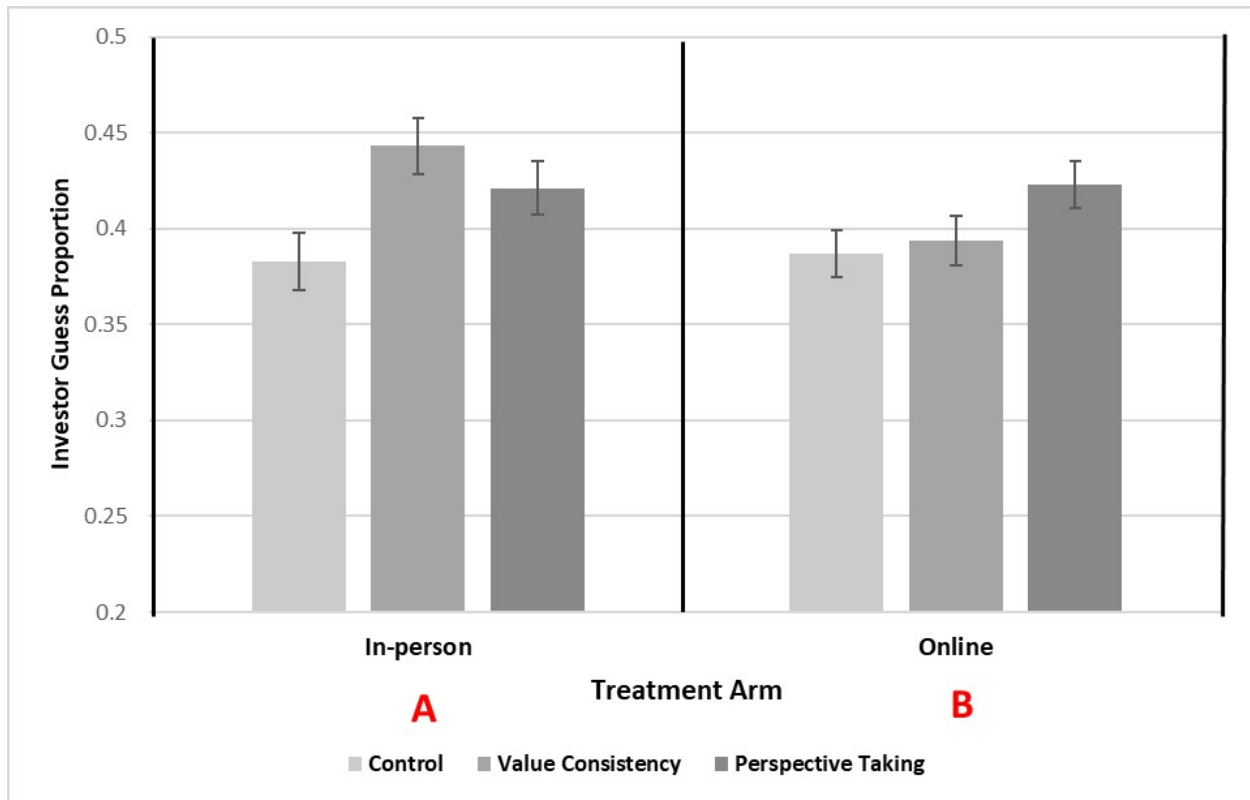


Figure B.1: **Investor guess as a proportion of the overall endowment by experimental condition.**

Plots **A** and **B** show the proportion our participants believed they will get from the receivers' endowment by experimental condition in the in-person and online experiments, respectively. Effect sizes are based on Table 3.2 Column (3) Panels A and B. We observe that the value-consistency treatment increases beliefs about trustworthiness in the receiver, compared to the control, in the in-person experiment ($p < 0.05$). Moreover, we observe that the perspective-taking treatment increases beliefs about trustworthiness in the receiver in both experiments, with the in-person result being marginally significant ($p < 0.10$) and the online one statistically significant ($p < 0.05$).

Error bars indicate standard errors.

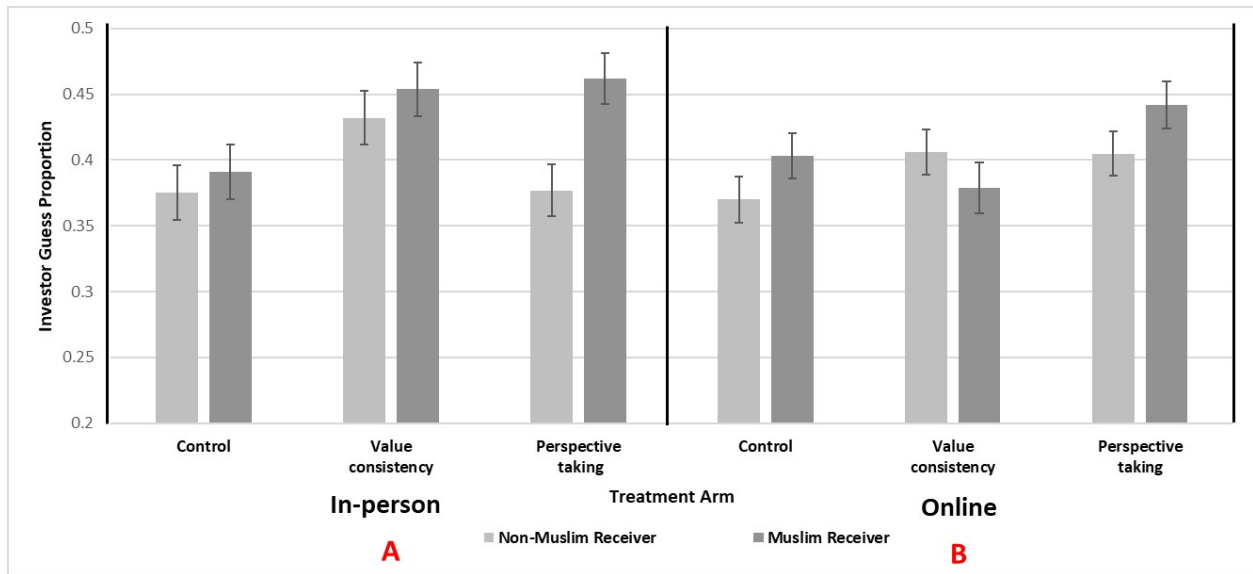


Figure B.2: **Investment guess as a proportion of the overall endowment by experimental condition and identity of receiver (Muslim or non-Muslim).**

Plots **A** and **B** show the proportion our participants believed they will get from the receivers' endowment by experimental condition and identity of receiver (Muslim or non-Muslim) in the in-person and online experiments, respectively. Effect sizes are based on Tables 3.3 and 3.4 Column (3). We observe that the value-consistency treatment increases beliefs about trustworthiness in Muslim and non-Muslim receivers in the in-person experiment ($p < 0.05$). Moreover, we observe that the perspective-taking treatment increases beliefs about trustworthiness in Muslim receivers in the in-person experiment ($p < 0.05$). Finally, while there are some indications that perspective taking might increase beliefs about Muslim receivers' trustworthiness in the online experiment, however, the result is not statistically significant ($p = 0.108$).

Error bars indicate standard errors.

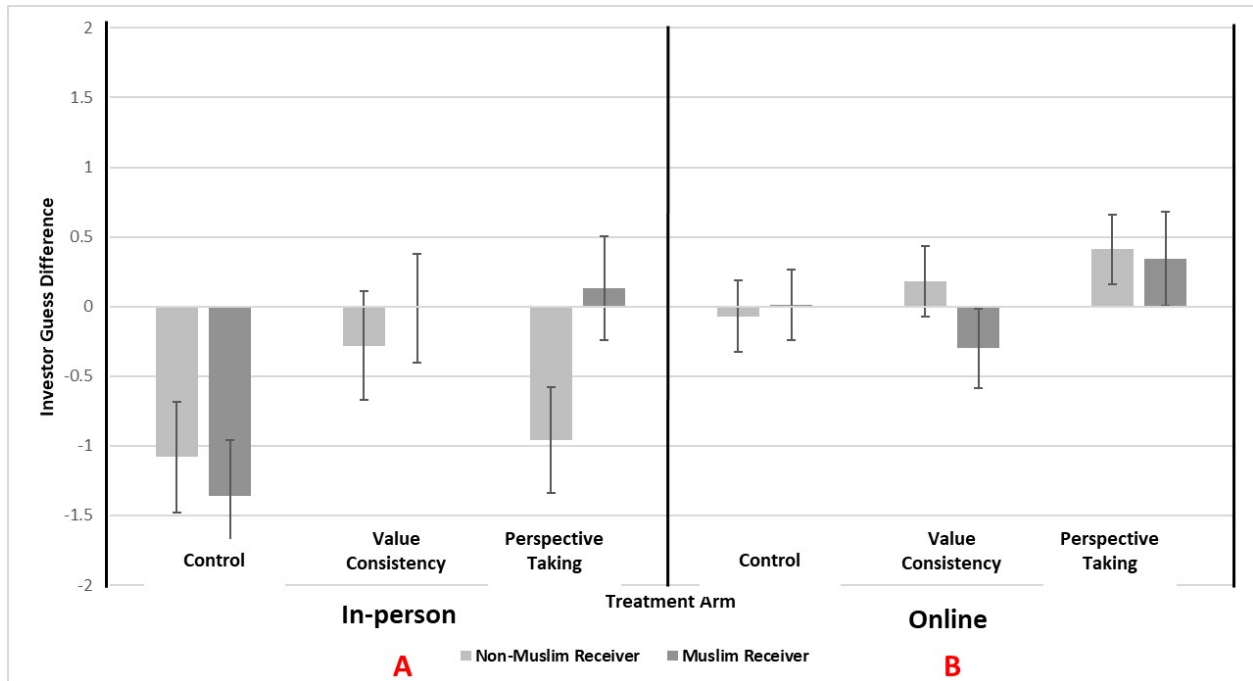


Figure B.3: **Investor Guess Difference, which is defined as investor guess – actual amount returned by experimental condition and identity of receiver (Muslim or non-Muslim).**

Plots **A** and **B** show the difference between how much our participants believed they will get back from the receivers and the actual amount the receivers decided to give back in the in-person and online experiments, respectively. Effect sizes are based on Tables 3.3 and 3.4 Column (4). We observe that participants in the control group underestimate the amount returned to them by the receivers in the in-person experiment, irrespective of the receiver’s identity. We also observe that value-consistency significantly lessens this underestimation for both Muslim and non-Muslim receivers ($p < 0.05$) while perspective-taking reduces it for Muslims primarily ($p < 0.01$) in the in-person experiment. Plot We do not observe a similar trend of underestimation in the online experiment.

Error bars indicate standard errors.

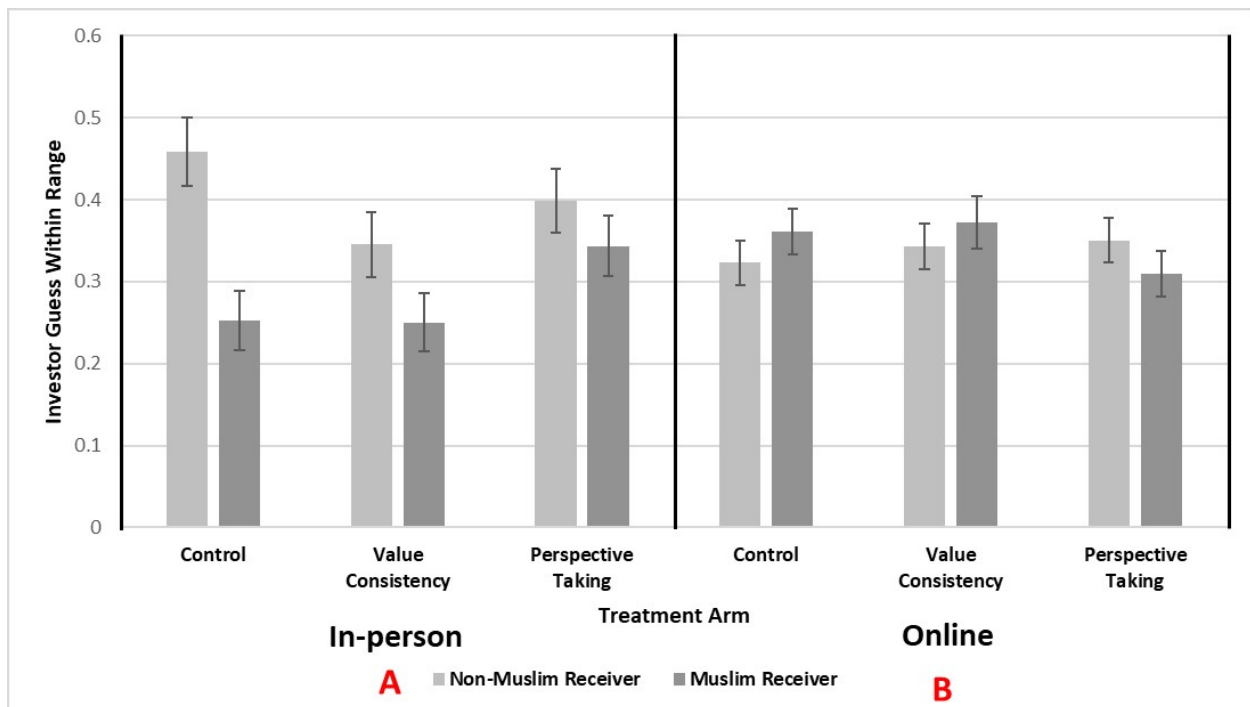


Figure B.4: Accuracy of Guess (guess within range) by experimental condition and identity of receiver (Muslim or non-Muslim).

Plots A and B show the probability of participants making the right guess (or within \$1) of how much they would get back from Muslim and non-Muslim receivers in the in-person and online experiments, respectively. Effect sizes are based on Specification (5) Tables 3.3 and 3.4. In the in-person experiment, we observe that the gap in the probability of participants making the right guess in the control group is big and that both perspective-taking and value-consistency reduce this gap with perspective-taking having a larger impact ($p < 0.05$). We do not observe a similar gap in the online experiment.

Error bars indicate standard errors.

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